

2687 - CID510122_CityofManassas_CFPF

Application Details

Funding Opportunity:	2337-Virginia Community Flood Preparedness Fund - Study Grants - CY24 Round 5
Funding Opportunity Due Date:	Jan 24, 2025 11:59 PM
Program Area:	Virginia Community Flood Preparedness Fund
Status:	Under Review
Stage:	Final Application
Initial Submit Date:	Jan 23, 2025 8:11 PM
Initially Submitted By:	Ami Billman
Last Submit Date:	
Last Submitted By:	

Contact Information

Primary Contact Information

Active User*:	Yes
Type:	External User
Name*:	Mrs. Ami Billman <small>Salutation First Name Middle Name Last Name</small>
Title:	Stormwater Program Adminsitrator
Email*:	abillman@ci.manassas.va.us
Address*:	9027 Center Street Manassas Virginia 20110 <small>City State/Province Postal Code/Zip</small>
Phone*:	703-257-8316 Ext. <small>Phone</small> ###-###-####
Fax:	###-###-####
Comments:	

Organization Information

Status*:	Approved
Name*:	City of Manassas
Organization Type*:	City Government
Tax ID*:	54-6001411
Unique Entity Identifier (UEI)*:	EUD6N1LLGKM5
Organization Website:	https://www.manassasva.gov/engineering/all_about_stormwater/index.php

Address*: 9027 Center Street

Manassas Virginia 20110-
City State/Province Postal Code/Zip

Phone*: 703-257-8316 Ext.
#####

Fax: ### ### #####

Benefactor:

Vendor ID:

Comments:

VCFPF Applicant Information

Project Description

Name of Local Government*: City of Manassas

Your locality's CID number can be found at the following link: [Community Status Book Report](#)

NFIP/DCR Community Identification Number (CID)*: 510122

If a state or federally recognized Indian tribe,

Name of Tribe:

Authorized Individual*: Ami Billman
First Name Last Name

Mailing Address*: 9027 Center Street
Address Line 1
Address Line 2

Manassas Virginia 20110
City State Zip Code

Telephone Number*: 703-257-8316

Cell Phone Number*: 571-229-6539

Email*: abillman@manassasva.gov

Is the contact person different than the authorized individual?

Contact Person*: No

Enter a description of the project for which you are applying to this funding opportunity

Project Description*:

A study to assess flood hazards and flood risks for a selected watershed within the City and identify potential flood mitigation measures that could be implemented to reduce flood risks within the watershed. This study will address both riverine and pluvial flooding, urban flooding, drainage issues, and identify measures for the mitigation of the flood hazards. The chose study area is the Flat Branch Tributary A watershed which is identified as a critical flood hazard location.

Low-income geographic area means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Is the proposal in this application intended to benefit a low-income geographic area as defined above?

Benefit a low-income geographic area*: Yes

Information regarding your census block(s) can be found at census.gov

Census Block(s) Where Project will Occur*: C51683

Is Project Located in an NFIP Participating Community?* Yes

Is Project Located in a Special Flood Hazard Area?* :	Yes
Flood Zone(s) (if applicable):	Zone AE
Flood Insurance Rate Map Number(s) (if applicable):	51153C0113 D

Eligibility - Round 4

Eligibility

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)?

Local Government*: Yes
Yes - Eligible for consideration
No - Not eligible for consideration

If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?

Letters of Support*: Yes
Yes - Eligible for consideration
No - Not eligible for consideration

Has this or any portion of this project been included in any application or program previously funded by the Department?

Previously Funded*: No
Yes - Not eligible for consideration
No - Eligible for consideration

Has the applicant provided evidence of an ability to provide the required matching funds?

Evidence of Match Funds*: Yes
Yes - Eligible for consideration
No - Not eligible for consideration
N/A - Match not required

Scope of Work - Studies - Round 4

Scope of Work

Upload your Scope of Work

Please refer to Part IV, Section B. of the grant manual for guidance on how to create your scope of work

Scope of Work*: [CID510122_City of Manassas_CFPF_Scope of Work Narrative.pdf](#)

Comments:

Project Scope of Work addressing proposed activity, importance of activity, goals & objectives, work plan, and future evaluation related to the study to assess flood hazards and flood risks for Flat Branch Tributary A.

Budget Narrative

Budget Narrative Attachment*: [CID510122_City of Manassas_CFPF_Budget Narrative.pdf](#)

Comments:

Project Budget Narrative providing a detailed budget related to the study to assess flood hazards and flood risks for Flat Branch Tributary A.

Scoring Criteria for Studies - Round 4

Scoring

Revising floodplain ordinances to maintain compliance with the NRP 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 Floodplain Ordinances*: Yes
Select

Mapping Platform*: No
SelectHydrologic and Hydraulic Studies*: Yes
Select

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.

Updating Precipitation Data and IDF Information*: No
Select

Projections*: No
Select

Vulnerability Analysis*:

Flash Flood Studies*: Yes
Select

Stream Gauge Monitoring*: ☐ No ☐ Select

Delineations of Areas of Recurrent Flooding*:

Regional Flood Studies*: No
Select

Regional Hydrologic and Hydraulic Studies of Floodplains*:

Potential Land Use Strategies*: Yes
Select

Pluvial Studies*: ☐ Yes ☐ SelectOther Proposals*: ☐ No ☐ Select

Very Low Social Vulnerability (Less than -1.0)

Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFP?

NFIP*: No

Is the proposed project in a low-income geographic area as defined below?

"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Low-Income Geographic Area*: Yes

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?

Reduction of Nutrient and Sediment No

Pollution*:

Comments:

This is a study that will identify and prioritize future watershed capital improvement projects for the City. These projects would be evaluated and remediations chosen to obtain nutrient removal credit supporting the Chesapeake Bay TMDL goals.

Scope of Work Supporting Information - Studies

Scope of Work Supporting Information

Is the proposed study a new study or updates on a prior study?

New or Updated Study*: New Study

Describe 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

**Relationship of Study to Priorities
Contained in this Manual*:**

The Flood Hazard Assessment and Mitigation Study is going to support the local government's (City of Manassas) 2040 goal to protect, enhance, and restore the integrity of the City's water resources. It will investigate and assess current and future possible flood hazards within the Flat Branch Tributary A watershed in the City of Manassas, and suggest possible mitigation plans to address identified flooding issues.

Describe the qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications

**Qualifications of Individuals Conducting
Study*:**

Jeff Cowan PE, has extensive experience as a Water Resources Engineer, including drainage design, stormwater management, and floodplain management. He is responsible for managing the planning and design of water resources projects, including stormwater management facilities, lakes and dams, drainage structures, channel improvements, and hydraulic structures. Jeff has been a consultant to local municipalities for the purpose of establishing and updating local stormwater and floodplain management criteria and policies. Mr. Cowan's particular expertise is in the design and rehabilitation of dams and stormwater management facilities.

BS - Civil Engineering

PE - VA License # 0402019977

43 years

Lora Baumgartner, PE, CFM; is a senior water resource engineer, recently promoted to project manager, with experience in hydrologic and hydraulic modeling, floodplain studies, design and analysis of stormwater management and best management practice facilities, minor site plans, dam inspection, dam break analysis, dam retrofit design, and stream stabilization.

BS - Civil Engineering

PE - VA License # 0402062357; Certified Floodplain Manager; DEQ Combined SWM; DEQ Combined ECS

8 years

Karsten Zuidema, EIT, CFM; is a Water Resources Engineer with a strong emphasis towards floodplain management and stormwater management. Since joining Dewberry in 2022, he has worked on multiple dam break studies, FEMA and county floodplain studies, stormwater management facility designs, and other stormwater related projects. His software skills include ArcGIS Pro, PondPack, Civil3D, HEC-HMS, 1-D and 2-D HEC-RAS, HY-8, Flowmaster, SITES, Excel VBA, and Python.

EIT - VA License # 0402062357; Certified Floodplain Manager

3 years

Azbina Rahman, PHD; is a Water Resources Engineer specializing in hydrology and land surface modeling, water resource management, and climate change adaptation. She has specialized experience in hydraulic and hydrological modeling, data assimilation, and land surface modeling (using the NASA Land Information System). She has led several projects funded by prestigious organizations such as NASA, USDA, and CUAHSI, focusing on satellite data assimilation within a land surface model, extreme event mitigation, agricultural water management, and sustainable development.

PhD - Civil and Infrastructure Engineering

8 years

Describe 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

Expected use of Study Results*:

The study is to assess flood hazards and flood risks for a critical watershed within the City and identify potential flood mitigation measures that could be implemented to reduce flood risks within the watershed. This work will address both riverine and pluvial flooding, urban flooding, drainage issues, and identify possible measures for the mitigation of the flood hazards. The study area has been chosen as the Flat Branch Tributary A watershed which is identified as a critical flood hazard location by the City of Manassas. A similar project (flood hazard assessment) is currently underway for the City's Cockrell Branch watershed which the City considers to be a pilot program, the results of which will inform the scope of future watershed flood hazard assessments. Accordingly, the work for the Flat Branch Tributary A Watershed Flood Hazard Assessment will be similar to the pilot project but informed by lessons learned during the pilot project.

In this study both the urban and riverine flood hazards will be identified. The floodplain mapping is currently being revised based on updated hydrologic and hydraulic analysis. With that, the storm water network will be investigated to identify any major issues contributing to flooding. After analyzing the reported and prospective flood hazards, conceptual flood mitigation plans will be developed for those locations judged to be subject to the greatest flood risks. This will be helpful for the City and residents of this watershed to identify sustainable solutions to mitigate repetitive flood incidents and to take actions that could reduce susceptibility to future flood risks. It is hoped the results of this study will identify both sustainable and resilient measures that when implemented will reduce the impact of regular flood events, as well as losses from excessive future floods resulting from extreme storm events.

If applicable, describe how the study may improve Virginia's flood protection and prevention abilities in a statewide context (type N/A if not applicable)

Statewide Improvements*:

N/A

Provide a list of repetitive and/or severe repetitive loss properties. Do not provide the addresses for the properties, but include an exact number of repetitive and/or severe repetitive loss structures within the project area

Repetitive Loss and/or Severe Repetitive Loss Properties*: [CID510122_CityofManassas_Rep Loss_Sub Loss.pdf](#)

Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic, economic, or social value. Provide an exact number of these structures in the project area

Residential and/or Commercial Structures*:

The Flat Branch Tributary A watershed, consists of Tributary A flowing towards Sumner Lake and Tributary No. 3 flowing towards the confluence of Tributary A. The watershed starts from Mathis Avenue at the south and ends at the Lomond South Drive at the north, just downstream of Sumner Lake. The total area of the watershed is approximately 0.813 sq. miles. The watershed is mostly covered by suburban development (primarily single family detached residential) with some higher density residential areas (for example, apartment buildings, and townhouses) at the south-east and south-west parts of the watershed. There are also commercial buildings and shopping centers at the south, upstream end along Mathis Avenue. The approximate imperviousness of the total watershed is 40%. The watershed is comprised of 2817 residential structures, a variety of single family and multi-use housing. In regards to commercial properties, there are seventeen commercial structures plus one school, Weems elementary School.

Though much of the infrastructure in this watershed is old, a major part of the watershed area has been developed significantly within the last three decades, most notably including the Sumner Lake subdivision. Approximately 20% of the watershed was converted from open space to residential development (i.e. the Sumner Lake subdivision).

There is one park that is within the City's historic area, Nelson Park. Weems Elementary School provide education for approximately 700 students. The area is recognized as moderate socially vulnerable by running the VFRIS (Virginia Flood Risk Information System) social vulnerability index. The southern portion of Flat Branch Tributary A (FB12 per the City's Critical Watershed Map, within the Scope Narrative) is designated as an Opportunity Zone per the U.S. Secretary of the Treasury.

Per the 2026-2020 American Community Survey 5-year Estimate (Transportation Board): The Flat Branch Tributary A watershed is bordered on all sides by areas with a higher concentration of low-income, traditionally disadvantaged racial and ethnic population groups. While this is not directly related to the watershed, impacts within Flat Branch Tributary A watershed could have negative impacts on surrounding low-income areas.

If there are critical facilities/infrastructure within the project area, describe each facility

Critical Facilities/Infrastructure*:

There are approximately fifty lots along the mapped floodplain in addition to the Sumner Lake Regional Area. The Sumner Lake subdivision was developed on farmland in the early 2000s and included construction of a regional stormwater management wet pond (i.e. Sumner Lake). Even though the Sumner Lake Regional SWM Facility was developed to manage storm water and reduce downstream flood impacts, some areas of the watershed upstream of Sumner Lake are susceptible to both fluvial and pluvial flood hazards. Sumner Lake is recognized as a critical component of the City's stormwater management system. Sumner Lake Dam is in the process of becoming a state regulated dam with a High hazard classification.

Weems Elementary School, although not adjacent to Flat Branch Tributary A, it is adjacent to the area. Weems Elementary is an elementary school providing services to over 700 students in grades pre-Kindergarten through fourth grade. Adjacent to Flat Branch Tributary A, on a city owned parcel, a pump station is located between Birchwood Court and Weir Street.

In addition, the watershed is mostly covered by suburban development (primarily single family detached residential) with some higher density residential areas (for example, apartment buildings, and townhouses) at the south-east and south-west parts of the watershed. There are also commercial buildings and shopping centers at the south, upstream end along Mathis Avenue. The approximate imperviousness of the total watershed is 40%. These areas lead to the road system being a critical structure for the residents and surrounding areas.

Budget

Budget Summary

Grant Matching Requirement*:	Flood Prevention and Protection Studies - Fund 50%/Match 50%
Is a match waiver being requested?	
Match Waiver Request	No
Note: Only low-income communities are eligible for a match waiver	
*:	
Total Project Amount (Request + Match)*:	\$185,397.00
	**This amount should equal the sum of your request and match figures
REQUIRED Match Percentage Amount:	\$92,698.50

BUDGET TOTALS

Before submitting your application be sure that you meet the match requirements for your project type.

Match Percentage:	50.00%
	Verify that your match percentage matches your required match percentage amount above.
Total Requested Fund Amount:	\$92,698.50
Total Match Amount:	\$92,698.50
TOTAL:	\$185,397.00

Personnel

Description	Requested Fund Amount	Match Amount	Match Source
City Drainage Complaints Review and Reconnaissance	\$11,107.00	\$11,107.00	Stormwater Fund
Topo Base Map and Sink Analysis	\$7,825.50	\$7,825.50	Stormwater Fund
Limited Field Survey of Storm Drain Network	\$8,020.50	\$8,020.50	Stormwater Fund
Peak Discharge Computations	\$7,897.50	\$7,897.50	Stormwater Fund
Assessment of Pipe Conditions	\$5,922.00	\$5,922.00	Stormwater Fund
Assessment of Flood Hazards	\$34,058.00	\$34,058.00	Stormwater Fund
Preparation of Report	\$17,868.00	\$17,868.00	Stormwater Fund
	\$92,698.50	\$92,698.50	

Fringe Benefits

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Travel

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Equipment

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Supplies

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Construction

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Contracts

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Pre-Award and Startup Costs

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Other Direct Costs

Description	Requested Fund Amount	Match Amount	Match Source
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No Data for Table

Supporting Documentation

Supporting Documentation

Named Attachment	Required	Description	File Name
Detailed map of the project area(s) (Projects/Studies)		A detailed map of the Flat Branch Tributary A watershed	CD510122_CityofManassas study area.pdf

FIRMette of the project area(s) (Projects/Studies)	City of Manassas FIRMette	CID510122_CityofManassas
Historic flood damage data and/or images (Projects/Studies)	City of Manassas Flat Branch Tributary A Watershed - Historical Flood Information	CID510122_City of Manassas_CFPF_Historical Data_Information.pdf
A link to or a copy of the current floodplain ordinance	City of Manassas Floodplain Ordinance	Chapter_66___FLOODS.pdf
Maintenance and management plan for project		
A link to or a copy of the current hazard mitigation plan	City of Manassas Hazard Mitigation Plan: 2022 Northern Virginia Hazard Mitigation Plan, Debris Management Plan, Damage Assessment Plan, Emergency Operations Plan	CID510122_CityofManassas Mitigation Plan_Cobined.pdf
A link to or a copy of the current comprehensive plan	City of Manassas Comprehensive Plan https://www.manassasva.gov/community_development/planning_and_zoning/comprehensive_plan_update.php	City of Manassas Comprehensive Plan.docx
Social vulnerability index score(s) for the project area	Social Vulnerability Index data for the City of Manassas	CID510122_CityofManassas Vulnerability Index table.pdf
Authorization to request funding from the Fund from governing body or chief executive of the local government	Authorization by COM City Manager to pursue the funding opportunity and verification of ability to match funds by utilizing the Stormwater Fund.	CID510122_CFPF_COM/Letter_Matching Funds_011
Signed pledge agreement from each contributing organization		
Maintenance Plan		
<i>Benefit-cost analysis must be submitted with project applications over \$2,000,000. in lieu of using the FEMA benefit-cost analysis tool, applicants may submit a narrative to value. The narrative must explicitly indicate the risk reduction benefits of a flood mitigation project and compares those benefits to its cost-effectiveness.</i>		
Benefit Cost Analysis		
Other Relevant Attachments	Complete CFPF Application Package: Virginia Flood Preparedness Fund Grant Application: Preparation of a Flood Assessment and Mitigation Study for Flat Branch Tributary - A Watershed in the City of Manassas	CD510122_CityofManassas

Letters of Support

Description	File Name	Type	Size	Upload Date
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No files attached.

Virginia Community Flood Preparedness Fund Grant Application

Preparation of a Flood Hazard Assessment and Mitigation Study for the Flat Branch Tributary-A Watershed in the City of Manassas



1. Scope of Work Narrative

1.1 Project information/ problems

The City of Manassas has 8 primary watersheds, further divided into regional sub-watersheds. Figure 7 shows the watershed map of the City of Manassas. Some of the watersheds are identified as critical watershed areas (red hatched in the map, Figure 7), with reports of repetitive flood issues in the City's Maintenance Log data. For this work, one of these critical watershed areas is chosen for further assessment. The chosen watershed is within the Flat Branch primary watershed and is known as Tributary A to Flat Branch. The Flat Branch Tributary A watershed includes the Sumner Lake Regional Stormwater Management Facility at the northern, downstream end.

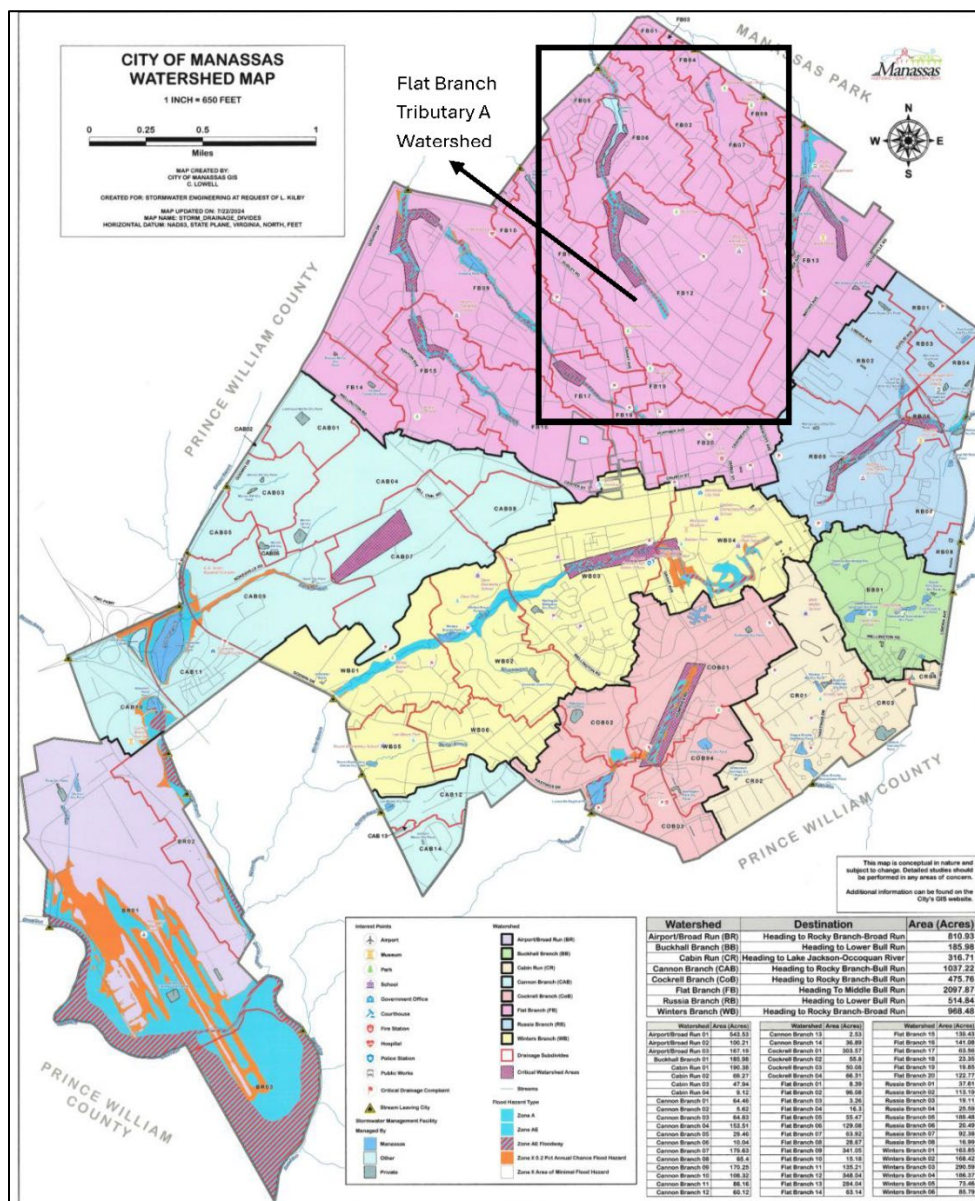


Figure 7: City of Manassas Watershed Map including the critical watershed areas. Flat Branch Trib A as the selected study site is marked.

Site description: The Flat Branch Tributary A watershed, consists of Tributary A flowing towards Sumner Lake and Tributary No. 3 flowing towards the confluence of Tributary A. The watershed starts from Mathis Avenue at the south and ends at the Lomond South Drive at the north, just downstream of Sumner Lake. The total area of the watershed is approximately 0.813 sq. miles. The watershed is mostly covered by suburban development (primarily single family detached residential) with some higher density residential areas (for example, apartment buildings, and townhouses) at the south-east and south-west parts of the watershed. There are also commercial buildings and shopping centers at the south, upstream end along Mathis Avenue. The approximate imperviousness of the total watershed is 40%. The area was recognized as moderate socially vulnerable by running the VFRIS (Virginia Flood Risk Information System) social vulnerability index.

Though much of the infrastructure in this watershed is old, a major part of the watershed area has been developed significantly within the last three decades, most notably including the Sumner Lake subdivision. A historic timeline of the aerial view shows the changes in the landscape from 1991 to present in Figure 8. Approximately 20% of the watershed was converted from open space to residential development (i.e. the Sumner Lake subdivision).

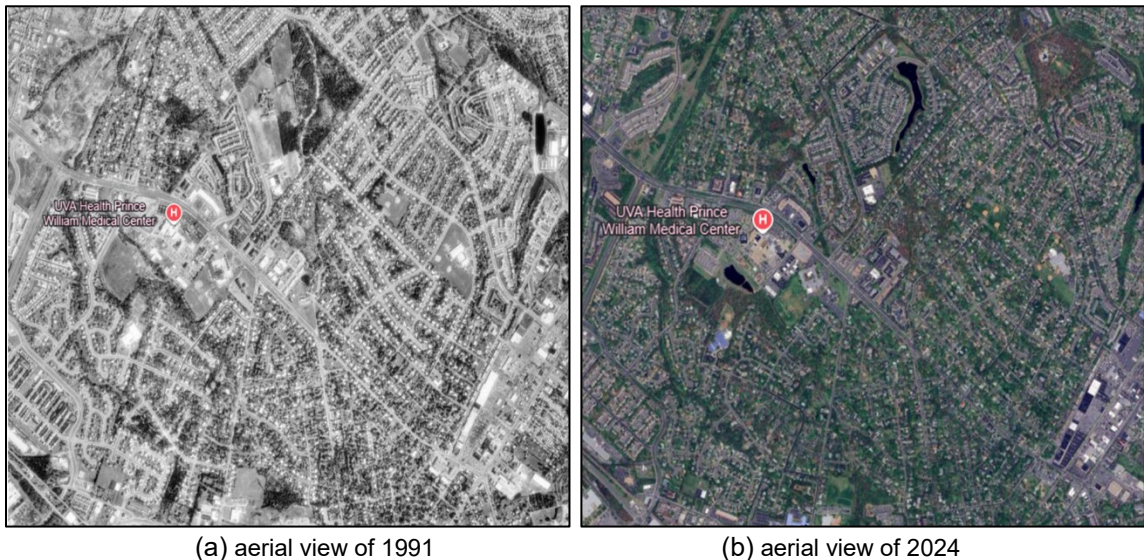


Figure 8: Historic timeline of the aerial view of Flat Branch Trib A watershed area. (a) is the aerial view of 1991 and (b) is of 2024.

The Sumner Lake (Figure 9) subdivision was developed on farmland in the early 2000s and included construction of a regional stormwater management wet pond (i.e. Sumner Lake). Even though the Sumner Lake Regional SWM Facility was developed to manage storm water and reduce downstream flood impacts, some areas of the watershed upstream of Sumner Lake are susceptible to both fluvial and pluvial flood hazards. Sumner Lake is recognized as a critical component of the City's stormwater management system. Sumner Lake Dam is a state regulated dam with a High hazard classification.



Figure-9: Sumner Lake (developed in early 2000s)

Specific problem and contributing factors: The current “effective” FEMA floodplain mapping is based on hydraulic analysis performed in 1977, which is outdated and does not reflect a significant amount of land development that has occurred since that time. Accordingly, the City is pursuing an application for a Letter of Map Revision (LOMR) to update the FEMA floodplain mapping within the Flat Branch Tributary A watershed and has retained Dewberry Engineers to perform updated floodplain analysis and prepare the LOMR application. While working on the LOMR application Dewberry Engineers performed field investigations along fluvial floodplain areas within the watershed which revealed that numerous obstructions have been constructed within the floodplain by homeowners. For example, some owners have built fences across the floodplain, and some have extended backyards and patios into the floodplain, creating obstructions that reduce flood conveyance and potentially increase flood hazards (Figure 10).



Figure-10: A wood fence and a chain link across the stream and the flood plain constructed by a homeowner, which might increase the flood hazard.

The City of Manassas has received flooding reports/complaints within the Flat Branch Tributary A Watershed. The issues typically concern undersized storm water pipes, deterioration of storm drainage infrastructure (e.g. major storm pipe joint displacements), and residential structures and fences in the floodplain. The reported flood issues include both riverine and urban (pluvial) flooding, resulting from both natural and human induced causes.

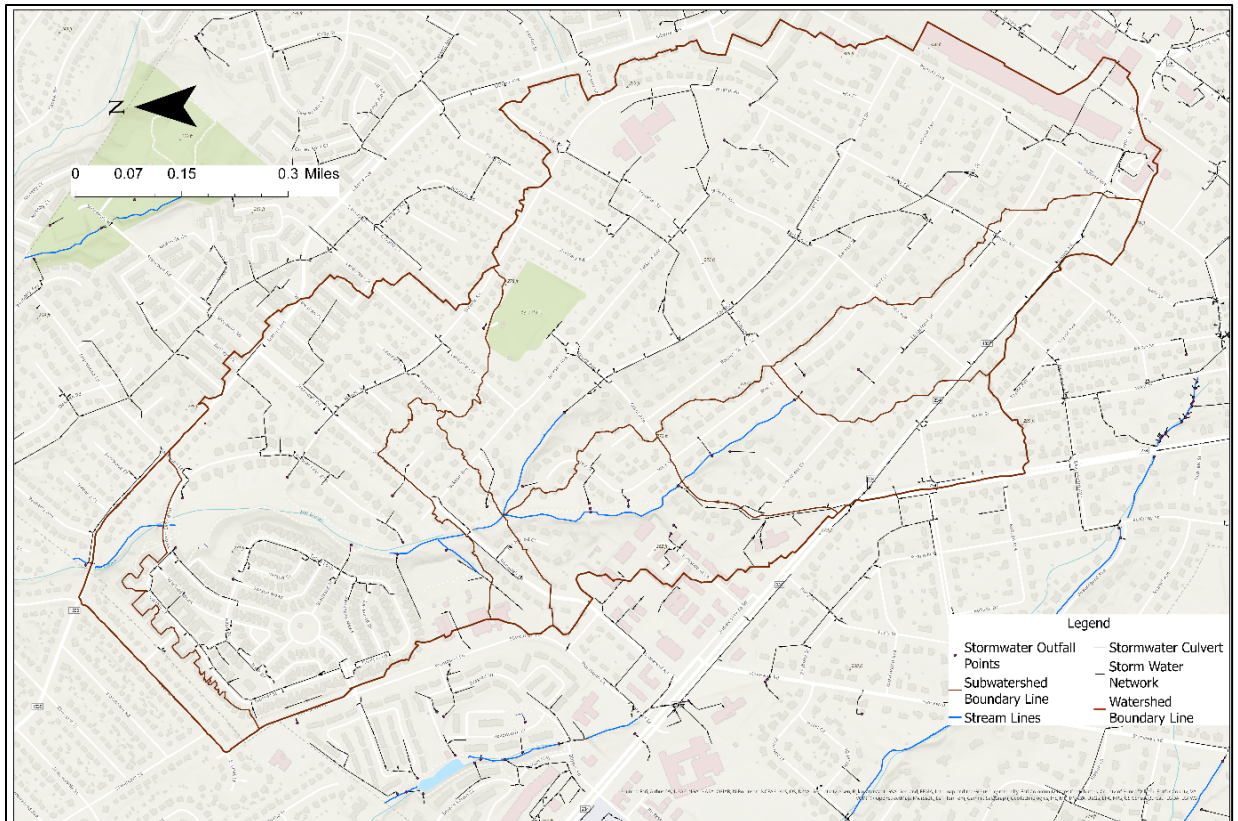


Figure 11: Flat Branch Trib A watershed drainage area map and storm sewer layout.

Need for the project: The need of the project is to protect the residents and businesses within the watershed from ongoing or future flood hazards and reduce the impact of extreme storm events in this area. In this regard, updated floodplain mapping and hydrologic/hydraulic analyses associated with the LOMR application will be used to assess flood hazards in the watershed. The stormwater network (SWN) within the watershed will be reviewed to investigate possible causes of the reported flood issues and to identify possible inadequacies within the existing stormwater conveyance system. In this study the stormwater network will also be evaluated to identify possible causes of ongoing urban flood incidents. Additional hydrologic and hydraulic analysis will be performed to determine peak discharges and potential flood elevations in urban areas subject to pluvial flooding (e.g. sinks and minor storm drainage systems outside of the fluvial floodplain areas). After analyzing all the reported and prospective flood hazards, conceptual flood mitigation plans will be developed for those locations judged to be subject to the greatest flood risk.

1.2 Goals and objectives

Following are the primary goals and objectives of the project:

- To closely investigate potential areas of flooding (riverine and urban) in the watershed by doing topographic base map analysis and field survey.
- To collect data on flooding from citizen complaints and identify deficiencies in the City's storm drainage system based on preliminary engineering analysis and review of CCTV inspection data.
- To perform a sink analysis using the City GIS data coupled with VGIN terrain data to identify overland relief pathways and sump areas that may be flood prone during storm events exceeding the capacity of the City's storm drainage system.
- To perform preliminary hydrologic and hydraulic analysis of portions of the watershed subject to pluvial flooding using the results of the GIS sink analysis to identify overland

relief paths, coupled with the City's storm sewer network data, for the purpose of identifying areas of inadequate storm sewer capacity and/or overland relief.

- To assess the future flood risk for the study area based on updated hydrologic and hydraulic analysis depicting ultimate watershed development.
- To evaluate measures for minimizing present and future flood vulnerability.
- To develop alternatives for reducing identified flood risk in the watershed.
- To develop conceptual plans for potential flood mitigation projects.
- To help the City of Manassas in achieving its environmental goal for 2040, by protecting the floodplain, developing updated floodplain maps, improving wildlife habitat, and engaging the community for better understanding and implementation of the flood mitigation plans.
- For the flood mitigation plans, nature-based solutions will be considered when appropriate and practical.

1.3 Work plan / major tasks

Task 1 – Review of City Drainage Complaints, CCTV Data, and Field Reconnaissance

In this task the City database for flood complaints will be reviewed to identify the on-going or repetitive flood incidents. The work steps are as followed:

- a) To review the watershed with the help of City of Manassas (COM) staff to identify known drainage and flooding issues.
- b) To review the list of flood complaints by citizens within the Watershed.
- c) To review pipes, streams and channels in the vicinity of the noted complaints using the City's GIS database.
- d) To conduct field investigations of the areas identified in the drainage complaints and identified by City staff.
- e) To do an initial review of the CCTV data for the pipes in the vicinity of the noted complaints using the City's CCTV database.

Task 2 – Preparation of Topographic Base Map and Sink Analysis

A high-resolution Digital Elevation Model (DEM) data will be collected for the study area. A topographic base map of the watershed will be prepared using the DEM and the GIS topographic data. The sinks or depressions will be identified within the DEM. A sink is a cell in the map whose flow direction cannot be assigned, occurring when the neighboring cells are higher than the processing cell. Afterwards, the flow direction will be identified, and flow accumulation will be performed to determine the overland relief flow paths. The municipalities' drainage systems are divided into minor and major drainage systems. Whereas the minor systems consist of storm sewer network or culverts, the major systems are the overland relief paths that convey the larger storms which might exceed the capacity of the minor systems. Adequate overland relief occurs when this excess runoff can be conveyed overland with little or no flooding of habitable structures or critical infrastructure. Within this task, the overland flow areas will be identified.

Task 3 - Limited Field Survey of Storm Drain Network

Based on the findings from Task 1 and Task 2 the locations of flood complaints will undergo preliminary survey on the storm drain networks. Field Survey may also include determination of storm drain inlet geometry (inverts, throat lengths, etc.) and storm sewer pipe geometry (size, type, inverts, etc.). Field survey data collected under this task will be used to analyze the minor drainage system and identify potential areas of concern.

Task 4 – Computation of Peak Discharges

Natural Resource Conservation Service (NRCS) Hydrologic Methods will be utilized to compute rainfall runoff amounts and associated peak flows at locations susceptible to flooding, including locations where flooding complaints have been reported. The hydraulic and hydrologic analysis will be performed using revised streamlines based on the updated topographic survey, updated NOAA_C rainfall distribution, and rainfall depths as published in NOAA Atlas 14. The obstructions or structures in the channels and floodplain will be identified and checked to determine if they are making the flood situation worse. Peak flows will be computed for 24-hour duration design storms having 2-, 10-, 25-, 50-, 100-yr, and 500-yr recurrence intervals.

Task 5 – Assessment of Pipe Conditions in Flooding Areas

This task will be performed to investigate in more detail the conditions of the storm network pipes and structures. Any damaged pipes or structures in need of repairs, potentially causing repetitive flooding conditions, will be identified from this detailed survey. Together the CCTV database and flood reports within the City of Manassas will be used to identify the locations of repetitive flooding or drainage issues in the watershed.

Task 6 – Assessment of Flooding Issues and Development of Potential Resilient Plan for Flood Mitigation

Under this task, flooding issues identified in Task 1 will be reviewed and possible remedial measures to alleviate the flooding will be developed. There could be one or multiple reasons for each of the flooding incidents and those will be identified in this study. Potential flooding issues may be due to undersized pipes or culverts, undersized conveyance channels, floodplain encroachment or partial blockage of storm conveyance systems, limited overland relief or a combination of these factors.

Flood mitigation measures will be developed for locations comparatively judged to have the most significant flood hazard potential within the Flat Branch Tributary A watershed. Based on the results of Tasks 1 - 5, a list of potential flood mitigation projects for the selected locations with significant flood hazard to alleviate localized flooding issues will be developed. For the flood mitigation plans, nature-based solutions (e.g., infiltration practices such as rain gardens, porous pavements etc.) will get considered alongside more conventional structural solutions where appropriate and practical. Conceptual drawings of the proposed flood mitigation projects will be prepared. Conceptual level design will be performed and used to develop approximate (order-of-magnitude) construction cost estimates.

Task 7 – Preparation of Report

Under this task, a report summarizing the list of identified flooding issues and potential mitigation projects will be prepared. One-page conceptual drawings of the proposed flood mitigation projects will be incorporated along with approximate cost estimates as attachments to the report.

1.4 Future more detailed evaluation of proposed flood mitigation projects

After completion of the proposed Flood Hazard Assessment report that is the subject of this grant application, more detailed evaluation of the effectiveness of the proposed flood mitigation concepts will be performed which may include the following actions.

- More detailed hydraulic and hydrological modeling may be performed to better assess the effectiveness of the proposed mitigation measures. More detailed modeling will better quantify the proposed project's impact on flood levels. With the help of more detailed modeling, project benefits can be more accurately quantified.
- Modeling the 1000 yr return period flood event can also be used to check the effectiveness and efficiency of a proposed mitigation project and determine if the

mitigation measure is sufficiently robust to reduce the impacts of storm events larger than the design storm.

- A cost-benefit analysis may be done to evaluate the return on investment by comparing the project's cost with the financial savings from the on-going or assumed reduced flood damage.
- Surveys and/or public meetings may be conducted to obtain citizen feedback on proposed mitigation projects and answer any questions they may have concerning impacts and benefits.

Virginia Community Flood Preparedness Fund Grant Application

Preparation of a Flood Hazard Assessment and Mitigation Study for the
Flat Branch Tributary-A Watershed in the City of Manassas



1. Budget Narrative:

A detailed budget narrative is included below and contains the required information outlined in the 2024 Funding Manual for the Virginia Community Flood Preparedness Fund. Estimated Total Project Cost: The total identified project cost to complete the Flat Branch Tributary A Flood Hazard Study is \$185,397.

1.1 City drainage complaints review and reconnaissance:

This includes gathering all the complaint reports and CCTV footages, then reviewing them for better understanding the issues. This might include the kick-off meeting with City staff, monthly project coordination meetings, and advisory committee formation and meetings.

Contractor Hours	Contractor Cost	Total Cost
134	\$22,214	\$22,214

1.2 Topo base map and sink analysis:

This task includes the collection of high-resolution DEM data and GIS topographic data. With the help of the data the expertise of the engineers will be used for sink analysis.

Contractor Hours	Contractor Cost	Total Cost
107	\$15,651	\$15,651

1.3 Limited field survey of storm drain network:

This task will require limited field survey of specific flood prone areas and the involvement of residents to identify and characterize flooding issues, and issues related storm drainage system capacity.

Contractor Hours	Contractor Cost	Total Cost
79	\$16,041	\$16,041

1.4 Peak discharge computations:

This part will require hydraulic and hydrologic analysis with the help of the collected GIS and survey data.

Contractor Hours	Contractor Cost	Total Cost
100	\$15,795	\$15,795

1.5 Assessment of pipe conditions:

This will need detailed field survey and more detailed review of CCTV footages on the identified locations.

Contractor Hours	Contractor Cost	Total Cost
67	\$11,844	\$11,844

1.6 Assessment of flood hazards:

This will need involvement of engineers, planners, and stakeholders to assess the flood hazards and develop possible mitigation plans. The plan will be consistent with the requirements for a resilience plan as articulated in the guidance manual.

Contractor Hours	Contractor Cost	Total Cost
416	\$68,116	\$68,116

1.7 Preparation of report:

A report will be prepared by the contractor summarizing the results of the tasks outlined above, along with conceptual drawings of flood mitigation proposals for each of the selected locations.

Contractor Hours	Contractor Cost	Total Cost
210	\$35,736	\$35,736

1.8 Summary Budget Narrative:

In the budget narrative a breakdown of fund required for different steps of the project are provided. The total project budget will be funded through a 50-50 match, where the 50% of the cost will be secured by the City through the Stormwater Fund, and the remainder will be secured through CFPF grant as mentioned in the authorization letter from the Acting City Manager. The budget included the labor hours, which is the actual cost of the project. Other costs for example- activity fringe benefits, travel, equipment, supplies, construction, contracts are not applicable for this project. Also, no indirect costs have been added in the budget narrative. This application is also not requesting any loan.



Repetitive Loss and Substantial Loss

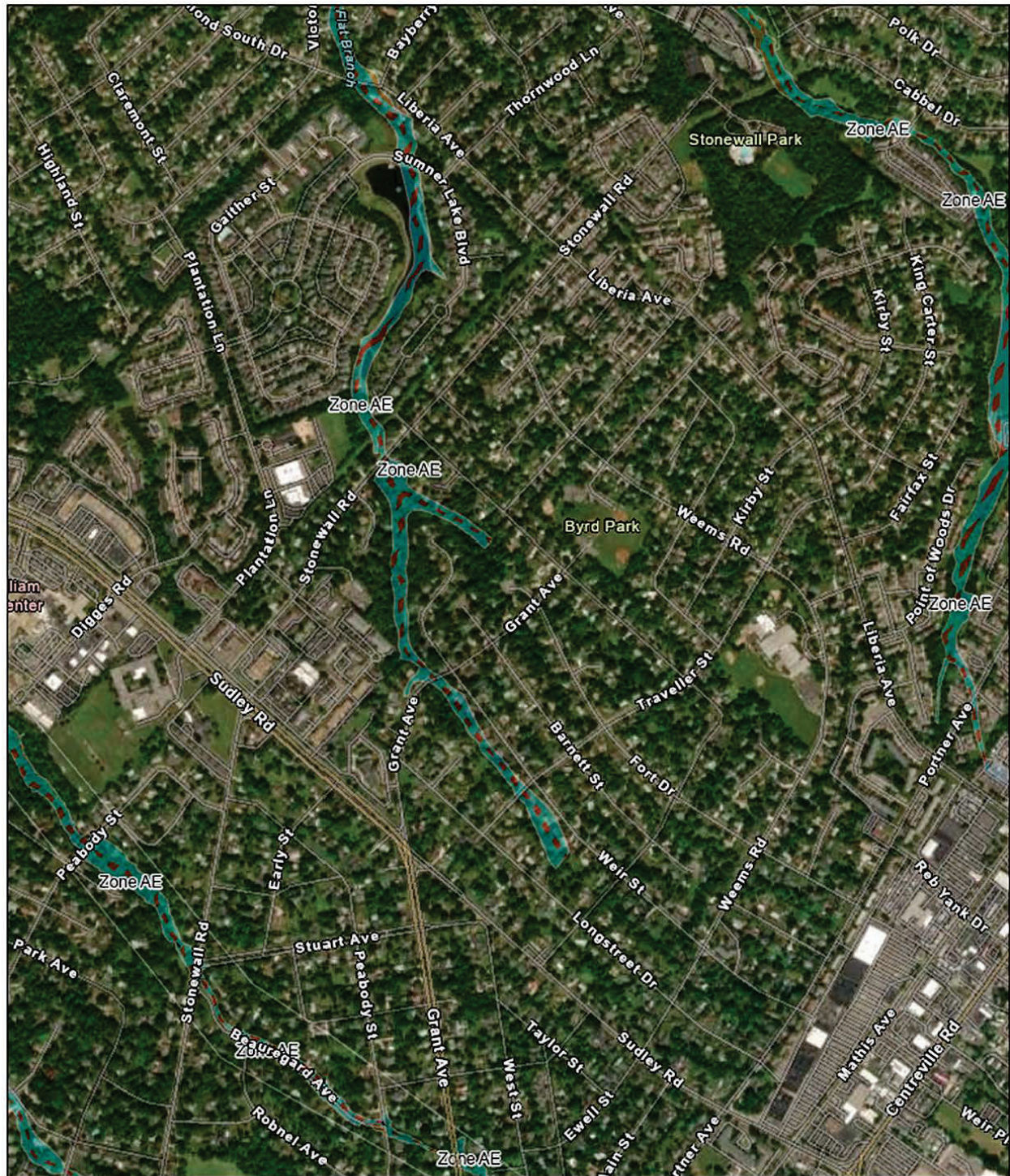
Per the data base, no Repetitive Loss sites or Substantial Repetitive Loss sites in the Flat Branch Tributary A watershed.

<i>Drainage Issues / Complaints</i>		
Location (Address)	Watersheds	Issue (mostly drainage/flooding & infrastructure)
Oliver Ct.	FB12	infrastructure - undersized stormwater pipe creating drainage problems - private matter
Jackson Ave.	FB12	infrastructure - starting to deteriorate
Fort Dr	FB12	severe bank erosion 100ft. downstream
Longstreet Ct.	FB12	significant erosion of channel
Weir St.	FB12	significant erosion of right bank looking downstream
Weir St.	FB12	channel has significant bank erosion
POW floodplain area	FB12	flooding - several houses to the east of Grant Ave. that were constructed in effective floodway
Portner Ave.	FB12	edges of outfall broken; joint displacement
Longstreet Ct.	FB12	major joint displacement
Linden Ct.	FB12	scour hole formed in channel at outfall
Liberia Ave.	FB05	joint separation and cracking around headwall
Sumner Lake Blvd.	FB06	major joint separation
Sumner Lake Blvd.	FB06	major joint displacement in the pipe; needs riprap stabilization
Weems Elementary School	FB12	sinkholes in schoolyard
Fort Dr.	FB12	infrastructure - possible future project



<i>Drainage Issues / Complaints</i>		
Location (Address)	Watersheds	Issue (mostly drainage/flooding & infrastructure)
Weir St.	FB12	end sections have minor chipping; joint separation in the pipeline
Weir St.	FB12	minor joint separation
Forestwood Ln.	FB12	minor joint separation
Weir St.	FB12	minor joint separation
Weir St.	FB12	minor joint separation
Weir St.	FB12	replace riprap with gabion
Weir St.	FB12	bank erosion
Forestwood Ln.	FB12	moderate bank erosion
Sumner Lake Blvd.	FB06	erosion on left side of channel
Sumner Lake Blvd.	FB06	erosion downstream on receiving channel - needs riprap stabalization

Flat Branch Tributary A, City of Manassas Virginia Flood Risk Information System



11/7/2024, 12:02:18 PM

General Structures

----- Flood Structure

Flood Hazard Area

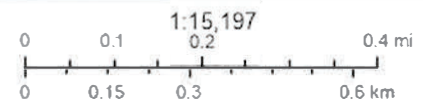
0.2% Annual Chance Flood Hazard

1% Annual Chance Flood Hazard

Area of Minimal Flood Hazard

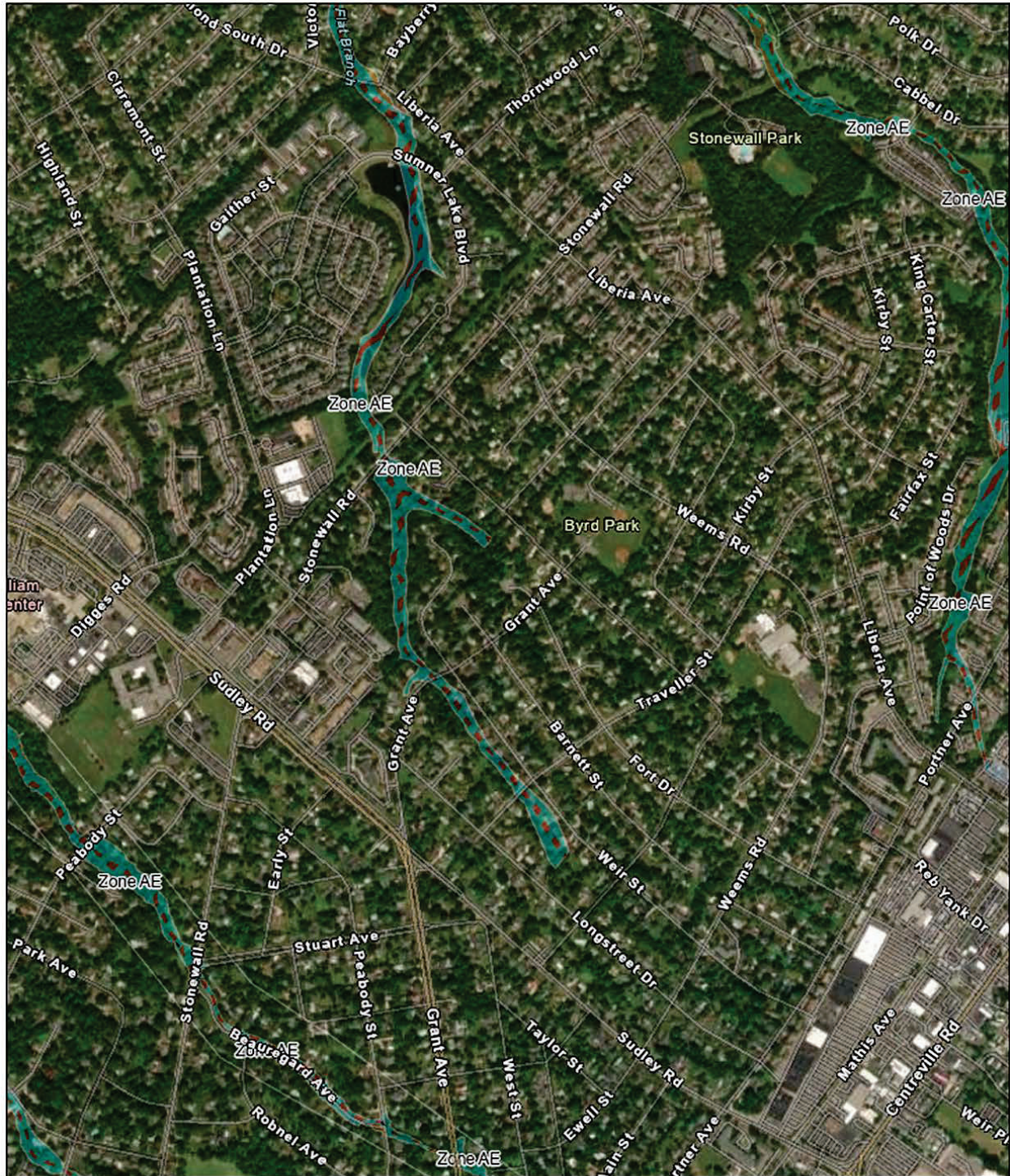
 Regulatory Floodway

2 Contour_SWVA_25ft



Esri Community Maps Contributors, County of Prince William, Fairfax County, VA, VGIN, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/ NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar

Flat Branch Tributary A, City of Manassas Virginia Flood Risk Information System



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General Structures

----- Flood Structure

Flood Hazard Area

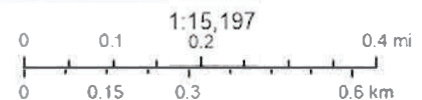
0.2% Annual Chance Flood Hazard

1% Annual Chance Flood Hazard

Area of Minimal Flood Hazard

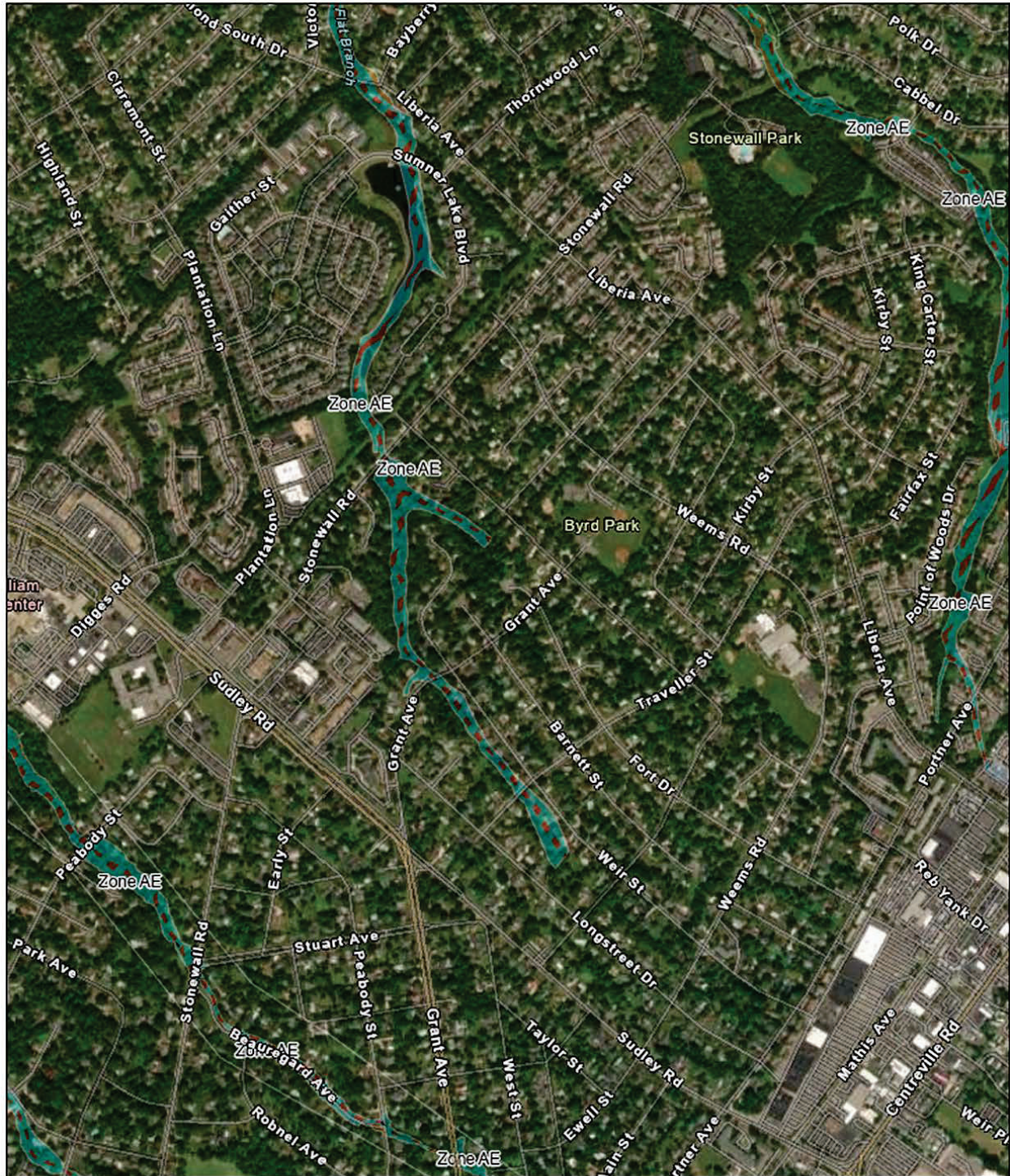
Regulatory Floodway

Contour_SWVA_25ft



Esri Community Maps Contributors, County of Prince William, Fairfax County, VA, VGIN, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/ NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar

Flat Branch Tributary A, City of Manassas Virginia Flood Risk Information System



11/7/2024, 12:02:18 PM

General Structures

----- Flood Structure

Flood Hazard Area

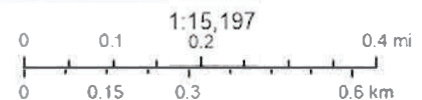
0.2% Annual Chance Flood Hazard

1% Annual Chance Flood Hazard

Area of Minimal Flood Hazard

Regulatory Floodway

Contour_SWVA_25ft



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CITY OF MANASSAS
MANASSAS, VA 20110

ENGINEERING DEPARTMENT
STORMWATER DIVISION

9027 Center Street
Manassas, VA 20110

CITY ENGINEERING
DIRECTOR
Lance K. Kilby, P.E.
703-257-8251
lkilby@manassasva.gov

CITY STORMWATER
ADMINISTRATOR
Ami Billman, P.E., C.F.M.
703-257-8316
abillman@manassasva.gov

January 16, 2025

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

Re: Virginia CFPF Grant Application- Authorization to Request Funding
CID 510122 – City of Manassas, VA

CFPF Grant Committee:

This letter serves to provide certification that I, as the Interim City Manager for the City of Manassas, have provided authorization for submission of a grant application to fund the City of Manassas Flood Hazard Assessment & Mitigation Study for the Flat Branch Tributary A Watershed in accordance with the CFPF Grant Manual.

Furthermore, I certify that the City has sufficient funding to cover the required matching funds with the understanding that awards granted under the CFPF will be disbursed in accordance with the CFPF Grant Manual by the Virginia Resources Authority. The City will utilize Stormwater Fund dollars to fund the project.

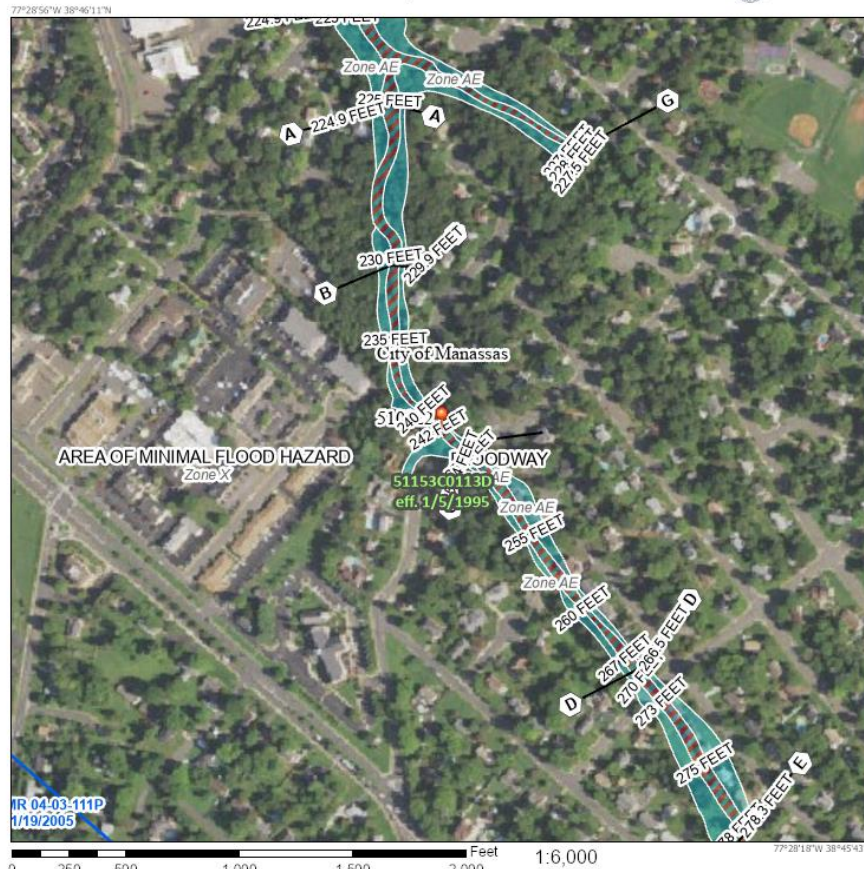
Please direct any additional questions to Mr. Lance Kilby, P. E. at lkilby@manassasva.gov.

Sincerely,

Douglas W. Keen
Interim City Manager
City of Manassas

Flat Branch Tributary A, City of Manassas

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, V, AE With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard. Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. Zone X Future conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee. See Notes. Zone X Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard Zone X Effective LOMRs Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	Channel, culvert, or Storm Sewer Levee, Dike, or Floodwall
CROSS SECTIONS	20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary
OTHER FEATURES	Coastal Transect Baseline Profile Baseline Hydrographic Feature
MAP PANELS	Digital Data Available No Digital Data Available Unmapped The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/16/2024 at 1:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Basemap Imagery Source: USGS National Map 2023

[illegible]

Virginia Community Flood Preparedness Fund Grant Application

Preparation of a Flood Hazard Assessment and Mitigation Study for the Flat Branch Tributary-A Watershed in the City of Manassas



Historical Flood Background

The world is experiencing a pronounced warming since the industrial era and in the last few decades climate adversity has been exacerbated due to greenhouse impacts. The temperature rise associated with climate change, a significant contributor to sea level rise, and the change in precipitation patterns are believed to be the key responsible factors for the severe flood hazards observed recently (Gopika, S., M et al, 2024, M.J. Booij et al., 2005). Virginia is also found to be within a substantial flood risk zone based on recent events, risk assessment tools and planning processes (source: [The Status of Flood Resilience in the Commonwealth – December 2023 \(virginia.gov\)](#)). Many parts of Virginia are facing severe high intensity, short duration rainfall events causing intense flood experiences. Repetitive flood occurrences are also believed to be due in part to changes in the rainfall patterns. As an example of an extreme flood event, on July 8, 2019, a severe thunderstorm resulted in 5 inches of rain within less than an hour period in Fairfax and Arlington counties in Virginia, which is estimated to have a 1000-year recurrence interval or a 0.1% chance of occurring in any given year. This event caused extreme, widespread flooding resulting in significant losses to property and infrastructure, totaling approximately \$15 million.

The City of Manassas has also been facing repetitive flood hazards in many areas, identified as critical areas for flood risk. Figure 1 shows areas with significant statewide flood risk (50-80 percentile) within the City of Manassas as projected by U.S. Environmental Protection Agency (EPA) ([EJ Screen \(epa.gov\)](#)). The flood risk projected by EPA is determined with the First Street Foundation Flood Model, which is a nation and statewide probabilistic flood model showing the risk of flooding at any location at 3-meter resolution.

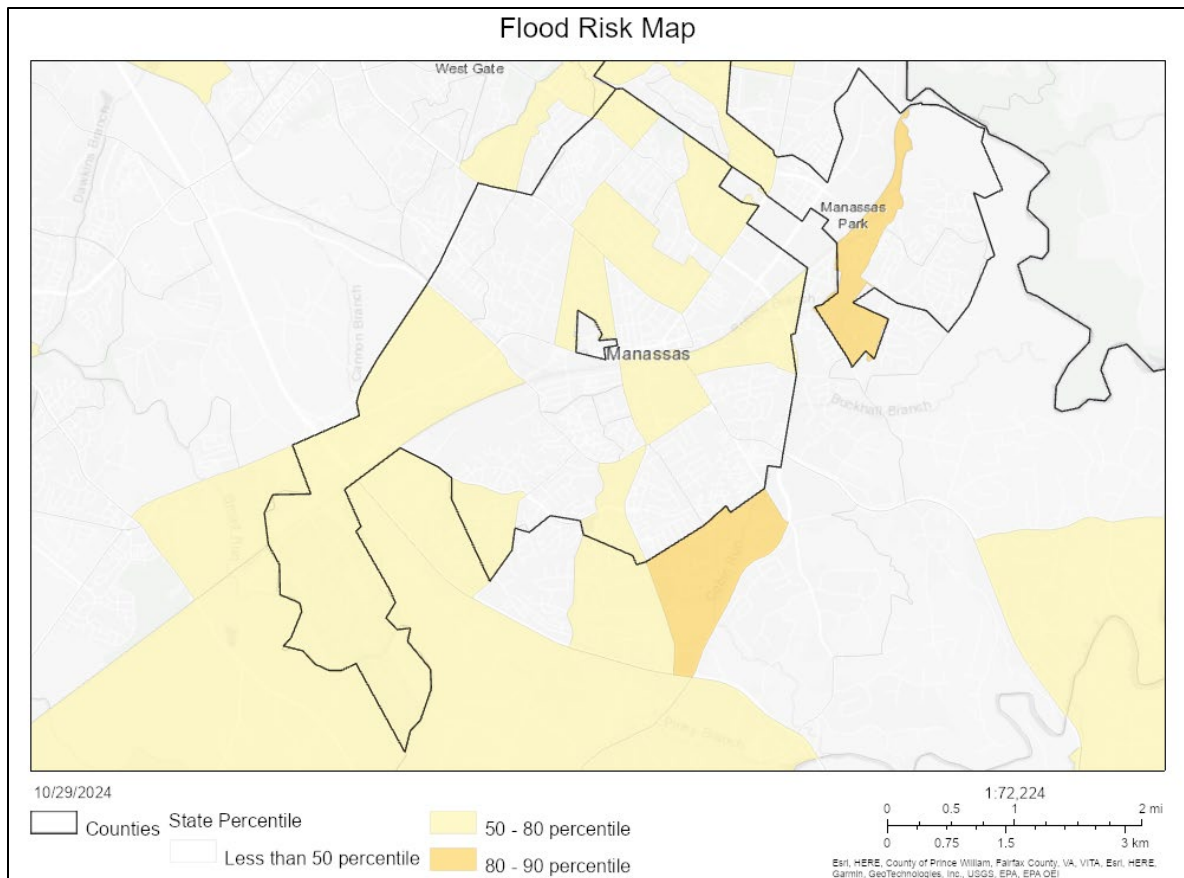


Figure-1: Flood risk area within the City of Manassas by EPA.

For example, the City experienced a significant, torrential rainfall event on August 12, 2020. A nearby amateur weather station recorded the precipitation data, which is shown in Figure 2. This shows the rainfall beginning at around 3 am and ending at 6 am. The precipitation rate exceeded 4 inches in just an hour, and the accumulated total rainfall exceeded 5 inches over a 3-hour period. This storm event also approached a 1000-yr recurrence interval.

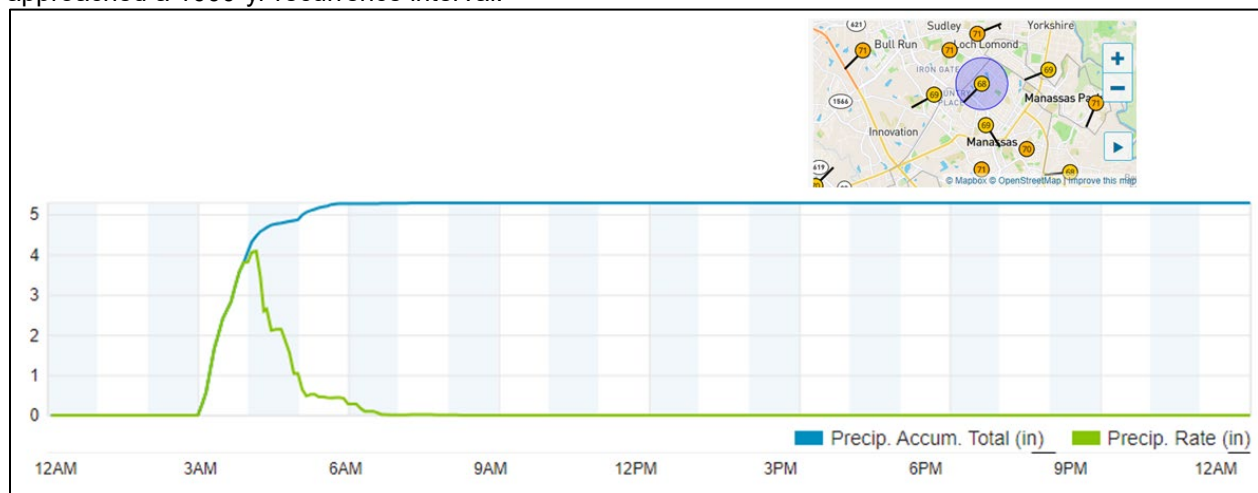


Figure-2: Precipitation data for the August 12, 2020, storm event recorded at a nearby amateur weather station in the Sumner Lake subdivision.

This torrential rain caused flooding in many areas near the City of Manassas. In nearby Manassas Park the storm resulted in severe damage to Moseby Court. Figure 3 shows an online report with photos of Moseby Court on August 12, 2020, after the rain incident.

Due to the torrential rains that passed through the city this morning, Moseby Court has been compromised and collapsed.

A Public Works representative is currently on the scene assessing the situation.

Updates will be released when information becomes available.

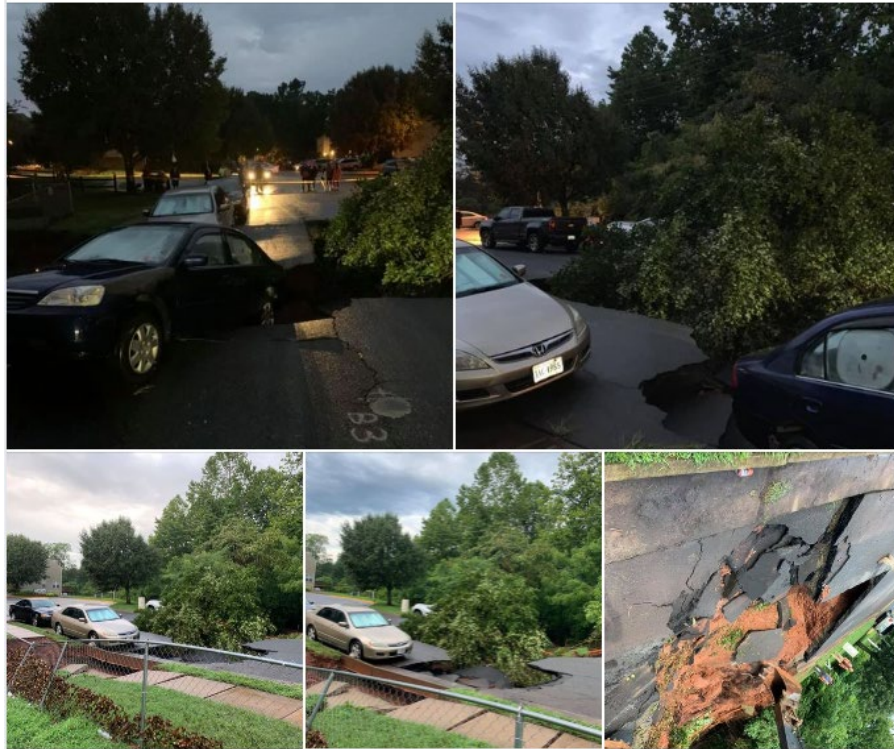


Figure-3: Moseby Court incident on August 2020 storm event.

In addition to the occasional torrential rain induced flood event, there are numerous smaller, nuisance flood events that have been reported and documented by City of Manassas staff over past couple years. Some example photos and notes concerning those events are provided below in Figure 4:



(a) Hutchison Lane (2022)



(b) 10413 Dumfries Rd. (2023)



(c) Between West St. and Grant Ave. (2024)



(d) Quarry Rd. (2024)

Figure-4: Some flood incidents within the City of Manassas reported between 2022-2024. (a) Hutchison Lane (2022), an area which is very flat and has poorly drained roadside ditches, (b) Dumfries Rd. (2023) in front of the John Deere Store that is also poorly drained and holds water, (c) Alleyway between West St. and Grant Ave. (2024), this is a private area which routinely floods during rain events, (d) Quarry Rd. (2024), flooding during a typical rainfall event.

Figure 5 shows the flood risk map for part of the City of Manassas, mainly the Flat Branch Tributary A Watershed area as identified by Federal Emergency Management Agency (FEMA). It shows the 100-year floodplain (1% annual chance of flood hazard) area as well as the 500-year floodplain and floodway.

However, the FEMA Flood Maps focus primarily on fluvial or riverine flooding sources, whereas there are also significant pluvial or urban flood issues within the watershed resulting from rapid urbanization and changing storm patterns.

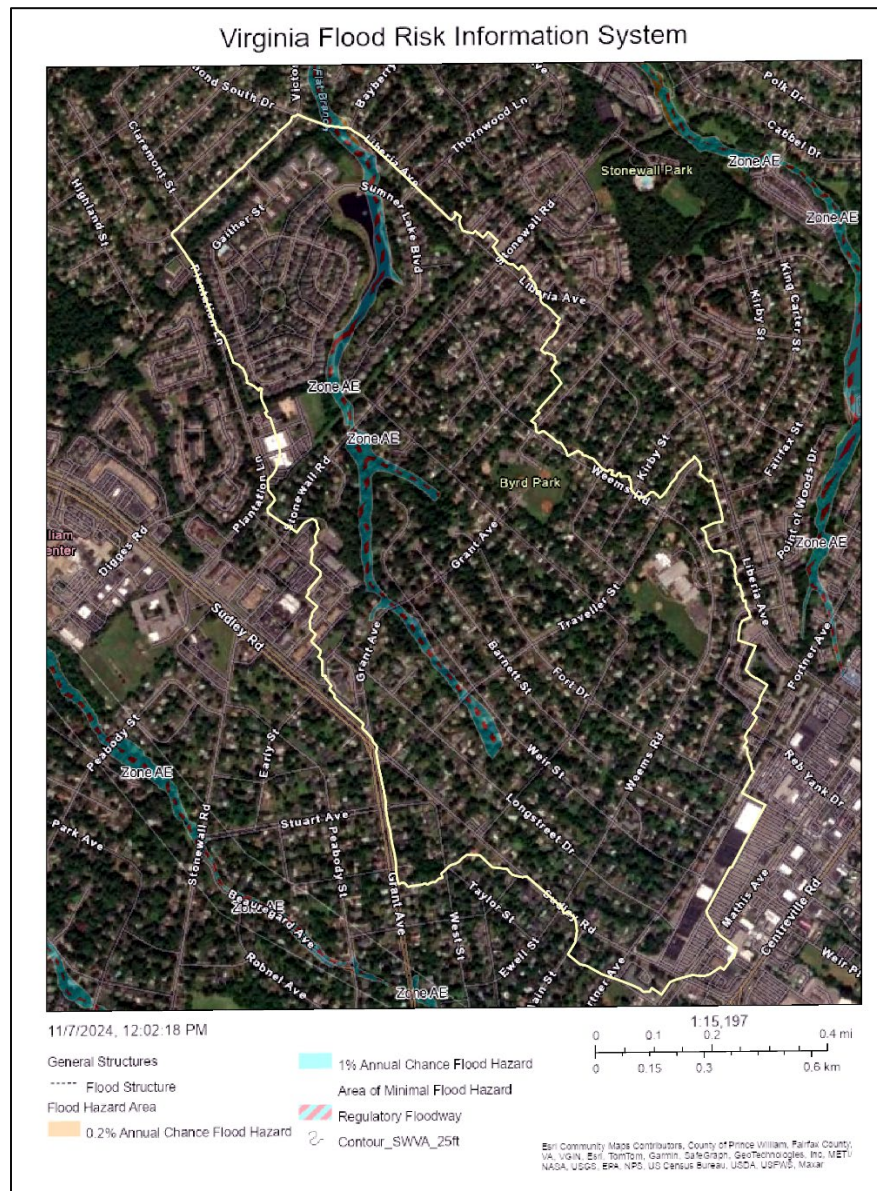


Figure-5: FEMA Flood Hazard Map of the Flat Branch Tributary A in the City of Manassas. The watershed boundary is marked on the map. (Source: <https://fema.maps.arcgis.com/>)

Figure 6 points to the specific areas in the City of Manassas reported for flood events and road closures during 2018-2020. These flood events are both pluvial (urban) and fluvial (riverine).

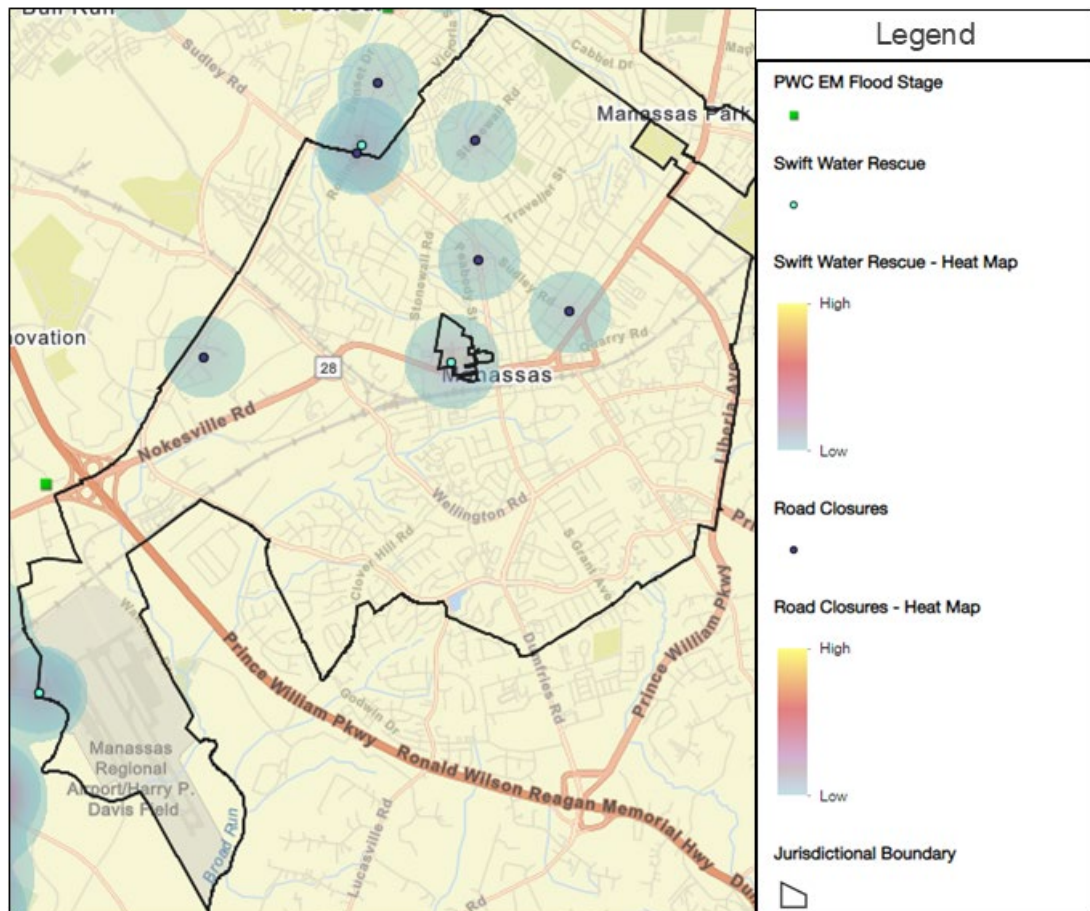


Figure-6: Map shows areas in City of Manassas, VA experiencing flooding due to extreme rainfall along with reported water rescues between 2018-2020. (Source: [Flood Control and Safety \(pwcva.gov\)](https://www.pwcva.gov))

In this study both the urban and riverine flood hazards will be identified. The floodplain mapping is currently being revised based on updated hydrologic and hydraulic analysis. With that, the storm water network will be investigated to identify any major issues contributing to flooding. After analyzing the reported and prospective flood hazards, conceptual flood mitigation plans will be developed for those locations judged to be subject to the greatest flood risks. This will be helpful for the City and residents of this watershed to identify sustainable solutions to mitigate repetitive flood incidents and to take actions that could reduce susceptibility to future flood risks. It is hoped the results of this study will identify both sustainable and resilient measures that when implemented will reduce the impact of regular flood events, as well as losses from excessive future floods resulting from extreme storm events (as happened in Fairfax and Arlington in 2019 or in Manassas in August 2020).

Chapter 66 FLOODS¹

ARTICLE I. IN GENERAL

Secs. 66-1—66-30. Reserved.

ARTICLE II. FLOODPLAIN MANAGEMENT

DIVISION 1. GENERALLY

Sec. 66-31. Purpose.

The purpose of the provisions of this article is to prevent the loss of property and life, the creation of health and safety hazards, the disruption of commerce and governmental services, the extraordinary and unnecessary expenditure of public funds for flood protection and relief, and the impairment of the tax base by:

- (1) Regulating uses, activities and development which, acting alone or in combination with other existing or future uses, activities and development, will cause unacceptable increases in flood heights, velocities and frequencies.
- (2) Restricting or prohibiting certain uses, activities and development from locating within areas subject to flooding.
- (3) Requiring all those uses, activities and developments that do occur in floodprone areas to be protected and/or floodproofed against flooding and flood damage.
- (4) Alerting individuals buying lands and structures which are unsuited for intended purposes because of flood hazards.

(Code 1978, § 10.1-1)

State law reference(s)—Purposes of comprehensive flood control program, Code of Virginia, §§ 10.1-658, 10.1-659.

Sec. 66-32. Applicability.

The provisions of this article shall apply to all lands within the jurisdiction of the city and identified as being floodprone as stipulated in this article.

¹Cross reference(s)—Buildings and building regulations, ch. 26; environment, ch. 58; health and sanitation, ch. 70; planning, ch. 90; solid waste, ch. 98.1; streets, sidewalks and other public places, ch. 102; utilities, ch. 118; vegetation, ch. 122; zoning, ch. 130; floodplain regulations, § 130-51.

State law reference(s)—Flood Damage Reduction Act, Code of Virginia, § 10.1-600 et seq.

(Code 1978, § 10.1-2)

State law reference(s)—General grant of power, applicable territory, Code of Virginia, § 15.2-1102.

Sec. 66-33. Compliance, liability of city.

- (a) After the effective date of the ordinance from which this article is derived, no land shall be developed and no structure shall be located, relocated, constructed, reconstructed, enlarged or structurally altered except in full compliance with the terms and provisions of this article and any other applicable ordinances and regulations.
- (b) The degree of flood protection sought by the provisions of this article is considered reasonable for regulatory purposes and is based on acceptable engineering methods of study. Larger floods may occur on rare occasions. Flood heights may be increased by manmade or natural causes, such as ice jams and bridge opening restricted by debris. This does not imply that areas outside the floodplain area, or that land uses permitted within such area will be free from flooding or flood damages.
- (c) This article shall not create liability on the part of the city or any officer or employee thereof for any flood damages that result from reliance on this article or any administrative decision lawfully made under this article.

(Code 1978, § 10.1-3)

State law reference(s)—Virginia Tort Claims Act inapplicable to cities, Code of Virginia, § 8.01-195.3.

Sec. 66-34. Abrogation and greater restrictions.

This article supersedes any ordinance currently in effect in floodprone areas. However, any underlying ordinance shall remain in full force and effect to the extent that those provisions are more restrictive.

(Code 1978, § 10.1-4)

Sec. 66-35. Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

100-year flood means the base flood.

Base flood means the flood having a one percent chance of being equaled or exceeded in any given year. This is the regulatory standard also referred to as the "100-year flood."

Base flood elevation (BFE) The Federal Emergency Management Agency designated one percent annual chance water surface elevation and the elevation determined per section 66-61(d). The water surface elevation of the base flood in relation to the datum specified on the City's Flood Insurance Rate Map.

Basement means any area of the building having its floor sub-grade (below ground level) on all sides.

Development means any manmade change to improved or unimproved real estate, including, but not limited to buildings or other structures; paving, filling, grading, excavation, mining, dredging or drilling operations, or storage of equipment or materials.

Flood means a general and temporary inundation of normally dry land areas.

Flood insurance rate map (FIRM) means an official map of a community, on which the Federal Emergency Management Agency has delineated both the special hazard areas and the risk premium zones applicable to the community. A FIRM that has been made available digitally is called a Digital Flood Insurance Rate Map (DFIRM).

Flood insurance study (FIS) means a report by FEMA that examines, evaluates and determines flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluation and determination of mudflow and/or flood-related erosion hazards.

Floodplain means:

- (1) A relatively flat or low land area adjoining a river, stream or watercourse which is subject to partial or complete inundation.
- (2) An area subject to the unusual and rapid accumulation or runoff of surface waters from any source.

Floodprone area means any land area susceptible to being inundated by water from any source. The term includes, but is not limited to, all floodplain districts.

Flood proofing means any combination of structural and non-structural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

Floodway means the channel of a river, creek, or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

Freeboard means a factor of safety usually expressed in feet above a flood level for purposes of floodplain management.

Highest adjacent grade means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

Historic structure means any structure that is:

- (1) Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;
- (2) Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;
- (3) Individually listed on a state inventory of historic places in states with historic preservation programs which have been approved by the Secretary of the Interior; or
- (4) Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:
 - a. By an approved state program as determined by the Secretary of the Interior or
 - b. Directly by the Secretary of the Interior in states without approved programs.

Lowest floor means the lowest floor of the lowest enclosed area (including the basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor; provided, that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of Federal Code 44 CFR § 60.3.

Manufactured home means a structure, transportable in one or more sections, which is built on a permanent chassis, and designed to be used with or without a permanent foundation, when connected to the required utilities. For floodplain management purposes the term "manufactured home" also includes park trailers, travel

trailers, and other similar vehicles placed on a site for greater than 180 consecutive days, but does not include a recreational vehicle.

Manufactured home park/subdivision means a parcel or contiguous parcels of land divided into two or more manufactured home lots for rent or sale.

New construction means, for the purposes of determining insurance rates, structures for which the "start of construction" commenced on or after January 3, 1979, and includes any subsequent improvements to such structures. For floodplain management purposes, *new construction* means structures for which the *start of construction* commenced on or after the effective date of a floodplain management regulation adopted by the city and includes any subsequent improvements to such structures.

Recreational vehicle means a vehicle which is:

- (1) Built on a single chassis;
- (2) Four hundred square feet or less when measured at the largest horizontal projections;
- (3) Designed to be self-propelled or permanently towable by a light duty truck; and
- (4) Designed primarily not for use as a permanent dwelling, but as temporary living quarters for recreational camping, travel or seasonal use.

Special flood hazard area means the land area subject to flood hazards and shown on a Flood Insurance Rate Map or other flood hazard map as Zone A, AE, A1—30, A99, AR, AO, AH, V, VO, VE or V1—30.

Start of construction, for other than new construction and substantial improvement, under the Coastal Barriers Resource Act (P.L.—97-348), means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, substantial improvement or other improvement was within 180 days of the permit date. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of the construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

Structure means, for floodplain management purposes, a walled and roofed building, including a gas or liquid storage tank, that is principally above ground, as well as a manufactured home.

Substantial damage means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

Substantial improvement means any reconstruction, rehabilitation, addition or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the start of construction of the improvement. This term includes structures which have incurred substantial damage regardless of the actual repair work performed. The term does not, however, include either:

- (1) Any project for improvement of a structure to correct existing violations of state or local health, sanitary or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions; or
- (2) Any alteration of an historic structure, provided that the alteration will not preclude the structure's continued designation as an historic structure.

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- (3) Historic structures undergoing repair or rehabilitation that would constitute a substantial improvement as defined above, must comply with all ordinance requirements that do not preclude the structure's continued designation as a historic structure. Documentation that a specific ordinance requirement will cause removal of the structure from the National Register of Historic Places or the State Inventory of Historic places must be obtained from the Secretary of the Interior or the State Historic Preservation Officer. Any exemption from ordinance requirements will be the minimum necessary to preserve the historic character and design of the structure.

Violation means the failure of a structure or other development to be fully compliant with the community's floodplain management regulations. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in section 66-81 or section 66-82 is presumed to be in violation until such time as that documentation is provided.

(Code 1978, § 10.1-77; Ord. No. O-2014-20, § 1, 6-16-2014)

Cross reference(s)—Definitions generally, § 1-2.

State law reference(s)—Definitions pertaining to the Flood Damage Reduction Act, Code of Virginia, § 10.1-600.

Sec. 66-36. Existing structures in floodplain districts.

A structure or use of a structure or premises which lawfully existed before the effective date of the ordinance from which this article is derived [June 16, 2014], but which is not in conformity with this article, may be continued subject to the following conditions:

- (1) Existing structures in the floodway district shall not be expanded or enlarged, unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed expansion would not result in any increase in the 100-year flood elevation.
- (2) Any modification, alteration, repair, reconstruction or improvement of any kind to a structure and/or use located in any floodplain district, to an extent or amount of less than 50 percent of its market value, shall be elevated and/or floodproofed in conformance with the Virginia Uniform Statewide Building Code.
- (3) The modification, alteration, repair, reconstruction or improvement of any kind to a structure and/or use regardless of its location in a floodplain district to an extent or amount of 50 percent or more of its market value shall be undertaken only in full compliance with the provisions of the Virginia Uniform Statewide Building Code.
- (4) Uses or adjuncts thereof which are, or become, nuisances shall not be permitted to continue.

(Code 1978, § 10.1-66; Ord. No. O-2014-20, § 1, 6-16-2014)

State law reference(s)—Uniform Statewide Building Code, § 36-97 et seq.

Sec. 66-37. Violation of article; nuisance.

- (a) Any person who violates any of the terms or conditions of this article shall be deemed guilty of a Class 1 misdemeanor. In addition to these penalties all other actions are reserved including an action in equity for the proper enforcement of this article.
- (b) The imposition of a fine or penalty for any violation of, or noncompliance with, this article shall not excuse the violation or noncompliance or permit it to continue; and all such persons shall be required to correct or remedy such violations or noncompliances within a reasonable time. Any structure constructed,

reconstructed, enlarged, altered or relocated in noncompliance with this article may be declared by the city council to be a public nuisance and abatable as such.

(Code 1978, § 10.1-55)

State law reference(s)—Abatement or removal of nuisances, Code of Virginia, §§ 15.2-900, 15.2-1115; injunctive relief against continuing violation of ordinance, Code of Virginia, § 15.2-1432.

Sec. 66-38. Severability.

If any section, subsection, paragraph, sentence, clause, or phrase of this ordinance shall be declared invalid for any reason whatever, such decision shall not affect the remaining portions of this ordinance. The remaining portions shall remain in full force and effect; and for this purpose, the provisions of this ordinance are hereby declared to be severable.

(Ord. No. O-2014-20, § 1, 6-16-2014)

Sec. 66-39. Designation of the floodplain administrator [44 CFR 59.22(b)].

The city manager or the city manager's designee is hereby appointed to administer and implement these regulations and is referred to herein as the floodplain administrator. The floodplain administrator may:

- (a) Do the work themselves.
- (b) Delegate duties and responsibilities set forth in these regulations to qualified technical personnel, plan examiners, inspectors, and other employees.
- (c) Enter into a written agreement or written contract with another community or private sector entity to administer specific provisions of these regulations. Administration of any part of these regulations by another entity shall not relieve the community of its responsibilities pursuant to the participation requirements of the National Flood Insurance Program as set forth in the Code of Federal Regulations at 44 CFR Section 59.22.

(Ord. No. O-2014-20, § 1, 6-16-2014)

Sec. 66-40. Duties and responsibilities of the floodplain administrator [44 CFR 60.3].

The duties and responsibilities of the floodplain administrator shall include but are not limited to:

- (a) Review applications for permits to determine whether proposed activities will be located in the Special Flood Hazard Area (SFHA).
- (b) Interpret floodplain boundaries and provide available base flood elevation and flood hazard information.
- (c) Review applications to determine whether proposed activities will be reasonably safe from flooding and require new construction and substantial improvements to meet the requirements of these regulations.
- (d) Review applications to determine whether all necessary permits have been obtained from the federal, state or local agencies from which prior or concurrent approval is required; in particular, permits from state agencies for any construction, reconstruction, repair, or alteration of a dam, reservoir, or waterway obstruction (including bridges, culverts, structures), any alteration of a watercourse, or any

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- change of the course, current, or cross section of a stream or body of water, including any change to the 100-year frequency floodplain of free-flowing non-tidal waters of the state.
- (e) Verify that applicants proposing an alteration of a watercourse have notified adjacent communities, the Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management), and other appropriate agencies (VADEQ, USACE) and have submitted copies of such notifications to FEMA.
 - (f) Advise applicants for new construction or substantial improvement of structures that are located within an area of the Coastal Barrier Resources System established by the Coastal Barrier Resources Act that Federal flood insurance is not available on such structures; areas subject to this limitation are shown on Flood Insurance Rate Maps as Coastal Barrier Resource System Areas (CBRS) or Otherwise Protected Areas (OPA).
 - (g) Approve applications and issue permits to develop in flood hazard areas if the provisions of these regulations have been met, or disapprove applications if the provisions of these regulations have not been met.
 - (h) Inspect or cause to be inspected, buildings, structures, and other development for which permits have been issued to determine compliance with these regulations or to determine if non-compliance has occurred or violations have been committed.
 - (i) Review elevation certificates and require incomplete or deficient certificates to be corrected.
 - (j) Submit to FEMA, or require applicants to submit to FEMA, data and information necessary to maintain FIRMs, including hydrologic and hydraulic engineering analyses prepared by or for the city, within six months after such data and information becomes available if the analyses indicate changes in base flood elevations.
 - (k) Maintain and permanently keep records that are necessary for the administration of these regulations, including:
 - (1) Flood Insurance Studies, Flood Insurance Rate Maps (including historic studies and maps and current effective studies and maps) and Letters of Map Change; and
 - (2) Documentation supporting issuance and denial of permits, elevation certificates, documentation of the elevation (in relation to the datum on the FIRM) to which structures have been floodproofed, other required design certifications, variances, and records of enforcement actions taken to correct violations of these regulations.
 - (l) Enforce the provisions of these regulations, investigate violations, issue notices of violations or stop work orders, and require permit holders to take corrective action.
 - (m) Advise the board of zoning appeals regarding the intent of these regulations and, for each application for a variance, prepare a staff report and recommendation.
 - (n) Administer the requirements related to proposed work on existing buildings:
 - (1) Make determinations as to whether buildings and structures that are located in flood hazard areas and that are damaged by any cause have been substantially damaged.
 - (2) Make reasonable efforts to notify owners of substantially damaged structures of the need to obtain a permit to repair, rehabilitate, or reconstruct, and prohibit the non-compliant repair of substantially damaged buildings except for temporary emergency protective measures necessary to secure a property or stabilize a building or structure to prevent additional damage.
 - (o) Undertake, as determined appropriate by the floodplain administrator due to the circumstances, other actions which may include but are not limited to: issuing press releases, public service announcements,

and other public information materials related to permit requests and repair of damaged structures; coordinating with other federal, state, and local agencies to assist with substantial damage determinations; providing owners of damaged structures information related to the proper repair of damaged structures in special flood hazard areas; and assisting property owners with documentation necessary to file claims for Increased Cost of Compliance coverage under NFIP flood insurance policies.

- (p) Notify the Federal Emergency Management Agency when the corporate boundaries of the city have been modified and:
 - (1) Provide a map that clearly delineates the new corporate boundaries or the new area for which the authority to regulate pursuant to these regulations has either been assumed or relinquished through annexation; and
 - (2) If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the governing body for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and FEMA.
- (q) Upon the request of FEMA, complete and submit a report concerning participation in the NFIP which may request information regarding the number of buildings in the SFHA, number of permits issued for development in the SFHA, and number of variances issued for development in the SFHA.
- (r) It is the duty of the community floodplain administrator to take into account flood, mudslide and flood-related erosion hazards, to the extent that they are known, in all official actions relating to land management and use throughout the entire jurisdictional area of the community, whether or not those hazards have been specifically delineated geographically (e.g. via mapping or surveying).

(Ord. No. O-2014-20, § 1, 6-16-2014)

Sec. 66-41. Submitting technical data [44 CFR 65.3].

A community's base flood elevations may increase or decrease resulting from physical changes affecting flooding conditions. As soon as practicable, but not later than six months after the date such information becomes available, the city shall notify the Federal Emergency Management Agency of the changes by submitting technical or scientific data. Such a submission is necessary so that upon confirmation of those physical changes affecting flooding conditions, risk premium rates and floodplain management requirements will be based upon current data.

(Ord. No. O-2014-20, § 1, 6-16-2014)

Secs. 66-42—66-60. Reserved.

DIVISION 2. ESTABLISHMENT OF FLOODPLAIN DISTRICTS

Sec. 66-61. Description of districts.

- (a) *Basis of districts.* The various floodplain districts shall include areas subject to inundation by waters of the 100-year flood. The basis for the delineation of these districts shall be the flood insurance study for the city, prepared by the U.S. Department of Housing and Urban Development, Federal Emergency Management Agency, dated March 1978 and the flood insurance rate map (FIRM), effective date January 5, 1995, as

amended. The districts are referred to in this section collectively as the floodplain districts, a term which encompasses the floodway district, the flood-fringe district, and the approximated floodplain district.

- (b) *Floodway district.* The floodway district is delineated, for purposes of this article, using the criterion that certain areas within the floodplain must be capable of carrying the waters of a 100-year flood without increasing the water surface elevation of that flood more than one foot at any point. The areas included in this district are specifically defined in table 1 of the flood insurance study referenced in subsection (a) of this section and shown on the accompanying flood boundary or floodway map of the FIRM.
- (c) *Flood-fringe district.* The flood-fringe district is that area of the 100-year floodplain not included in the floodway district. The basis for the outermost boundary of the district is the 100-year flood elevations contained in the flood profiles of the flood insurance study referenced in subsection (a) of this section and as shown on the accompanying flood boundary or floodway map of the FIRM.
- (d) *Approximated floodplain district.* The approximated floodplain district shall be that floodplain area for which no detailed flood profiles or elevations are provided, but where a 100-year floodplain boundary has been approximated. Such areas are shown as zone A on the flood insurance rate maps. For these areas, the 100-year flood elevations and floodway information from federal, Commonwealth, and other acceptable sources shall be used, when available. Where the specific 100-year flood elevation cannot be determined for this area using other sources of data, such as the U.S. Army Corps of Engineers Floodplain Information Reports, U.S. Geological Survey Flood-Prone Quadrangles, etc., then the applicant for the proposed use, development and/or activity shall determine this elevation in accordance with hydrologic and hydraulic engineering techniques. Hydrologic and hydraulic analyses shall be undertaken only by professional engineers or others of demonstrated qualifications, who shall certify that the technical methods used correctly reflect currently accepted technical concepts. Studies, analyses, computations, etc., shall be submitted in sufficient detail to allow a thorough review by the city.

(Code 1978, § 10.1-16; Ord. No. O-2014-20, § 1, 6-16-2014)

Sec. 66-62. Official floodplain map.

The floodplain administrator shall obtain, review and reasonably utilize any base flood elevation and floodway data available from a federal, Commonwealth or other source, as criteria for requiring that new construction, substantial improvements or other development in floodprone areas comply with the provisions of this article and applicable sections of the uniform statewide building code. The accompanying flood insurance rate map, with effective date of January 5, 1995, is the floodplain map. All areas within "A" zones of this map are deemed floodprone areas for purposes of this article.

(Code 1978, § 10.1-17; Ord. No. O-2014-20, § 1, 6-16-2014)

State law reference(s)—Uniform Statewide Building Code, Code of Virginia, § 36-97 et seq.

Sec. 66-63. District boundary changes.

The delineation of any of the floodplain districts may be revised by the city council where natural or manmade changes have occurred and/or more detailed studies conducted or undertaken by the U.S. Army Corps of Engineers or other qualified agency or individual documents the necessity for such change. However, prior to any such change, approval must be obtained from the Federal Emergency Management Agency.

(Code 1978, § 10.1-18)

Sec. 66-64. Interpretation of district boundaries.

Initial interpretations of the boundaries of floodplain districts shall be made by the floodplain administrator. Should a dispute arise concerning the boundaries of any of the districts, the city council shall make the necessary determination. The person questioning or contesting the location of the district boundary shall be given a reasonable opportunity to present his case to the city council and to submit his own technical evidence if he so desires.

(Code 1978, § 10.1-19; Ord. No. O-2014-20, § 1, 6-16-2014)

Sec. 66-65. Jurisdictional boundary changes.

The city floodplain ordinance in effect on the date of annexation shall remain in effect and shall be enforced by the city for all annexed areas until the city adopts and enforces an ordinance which meets the requirements for participation in the National Flood Insurance Program. Municipalities with existing floodplain ordinances shall pass a resolution acknowledging and accepting responsibility for enforcing floodplain ordinance standards prior to annexation of any area containing identified flood hazards. If the FIRM for any annexed area includes special flood hazard areas that have flood zones that have regulatory requirements that are not set forth in these regulations, prepare amendments to these regulations to adopt the FIRM and appropriate requirements, and submit the amendments to the governing body for adoption; such adoption shall take place at the same time as or prior to the date of annexation and a copy of the amended regulations shall be provided to Department of Conservation and Recreation (Division of Dam Safety and Floodplain Management) and FEMA.

In accordance with the Code of Federal Regulations, Title 44 Subpart (B) Section 59.22(a)(9)(v) the city must notify the Federal Insurance Administration and optionally the State Coordinating Office in writing whenever the boundaries of the city have been modified by annexation or the city has otherwise assumed or no longer has authority to adopt and enforce floodplain management regulations for a particular area.

In order that all Flood Insurance Rate Maps accurately represent the city's boundaries, a copy of a map of the community suitable for reproduction, clearly delineating the new corporate limits or new area for which the community has assumed or relinquished floodplain management regulatory authority must be included with the notification.

(Ord. No. O-2014-20, § 1, 6-16-2014)

Sec. 66-66. Use and interpretation of FIRMs.

The floodplain administrator shall make interpretations, where needed, as to the exact location of special flood hazard areas, floodplain boundaries, and floodway boundaries. The following shall apply to the use and interpretation of FIRMs and data:

- (A) Where field surveyed topography indicates that adjacent ground elevations:
 - (1) Are below the base flood elevation, even in areas not delineated as a special flood hazard area on a FIRM, the area shall be considered as special flood hazard area and subject to the requirements of these regulations;
 - (2) Are above the base flood elevation, the area shall be regulated as special flood hazard area unless the applicant obtains a Letter of Map Change that removes the area from the SFHA.
- (B) In FEMA-identified special flood hazard areas where base flood elevation and floodway data have not been identified and in areas where FEMA has not identified SFHAs, any other flood hazard data available from a Federal, State, or other source shall be reviewed and reasonably used.

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- (C) Base flood elevations and designated floodway boundaries on FIRMs and in FISs shall take precedence over base flood elevations and floodway boundaries by any other sources if such sources show reduced floodway widths and/or lower base flood elevations.
 - (D) Other sources of data shall be reasonably used if such sources show increased base flood elevations and/or larger floodway areas than are shown on FIRMs and in FISs.
 - (E) If a Preliminary Flood Insurance Rate Map and/or a Preliminary Flood Insurance Study has been provided by FEMA:
 - (1) Upon the issuance of a Letter of Final Determination by FEMA, the preliminary flood hazard data shall be used and shall replace the flood hazard data previously provided from FEMA for the purposes of administering these regulations.
 - (2) Prior to the issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data shall be deemed the best available data pursuant to Section 1.5(C) and used where no base flood elevations and/or floodway areas are provided on the effective FIRM.
 - (3) Prior to issuance of a Letter of Final Determination by FEMA, the use of preliminary flood hazard data is permitted where the preliminary base flood elevations or floodway areas exceed the base flood elevations and/or designated floodway widths in existing flood hazard data provided by FEMA. Such preliminary data may be subject to change and/or appeal to FEMA.

(Ord. No. O-2014-20, § 1, 6-16-2014)

Secs. 66-67—66-80. Reserved.

DIVISION 3. DISTRICT PROVISIONS

Sec. 66-81. Permits required; conditions; approval by Commonwealth agency; additional requirements.

- (a) *Permit.* All uses, activities and development occurring within any floodplain district, including placement of manufactured homes, shall be undertaken only upon the issuance of a permit. Such development shall be undertaken only in strict compliance with the provisions of this article and with all other applicable codes and ordinances such as chapter 106 and the uniform statewide building code. Prior to the issuance of any such permit, the floodplain administrator shall require all applications to include compliance with all applicable Commonwealth and federal laws and shall review all sites to assure they are reasonably safe from flooding. Under no circumstances shall any use, activity and/or development adversely affect the capacity of the channels or floodways of any watercourse, drainage ditch or any other drainage facility or system. For development in the floodplain district that causes a change in the base flood elevations, or includes alteration or relocation of a stream, the applicant, including local and state agencies, must notify FEMA by applying for a Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR).
- (b) *Alteration or relocation of watercourse.* Prior to any proposed alteration or relocation of any channels or of any watercourse, stream, etc., within this jurisdiction a permit shall be obtained from the U.S. Corps of Engineers, Commonwealth Department of Environmental Quality, and the Commonwealth Marine Resources Commission, as appropriate. A joint permit application is available from any one of these organizations. Notification of the proposal shall be given to all adjacent jurisdictions, the division of soil and water conservation (department of conservation and recreation) and the Federal Emergency Management Agency. In no case shall the flood-carrying capacity within the altered or relocated portion of any watercourse be reduced.

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- (c) *Drainage facilities.* Storm drainage facilities shall be designed to convey the flow of stormwater runoff in a safe and efficient manner. The system shall ensure proper drainage along streets, and provide positive drainage away from buildings. The system shall also be designed to prevent the discharge of excess runoff onto adjacent properties.
- (d) *Site plans and permit applications.* All applications for development in the floodplain districts and all building permits issued for structures in the floodplain districts shall incorporate the following information:
- (1) For structures that have been elevated, the elevation of the lowest floor, including basement.
 - (2) For structures that have been floodproofed (nonresidential only), the elevation to which the structure has been floodproofed.
 - (3) The elevation of the 100-year flood.
 - (4) Topographic information showing existing and proposed ground elevations.
- (e) *Manufactured homes.*
- (1) All manufactured homes to be placed or substantially improved within a floodplain district shall be placed on a permanent foundation and elevated and anchored in accordance with the uniform statewide building code (USBC). For purposes of the USBC, the floodplain districts are flood hazard zones.
 - (2) Manufactured homes that are placed or substantially improved within the flood-fringe district must be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement, if the manufactured home is:
 - a. Outside of a manufactured home park or subdivision;
 - b. In a new manufactured home park or subdivision;
 - c. In an expansion to an existing manufactured home park or subdivision; or
 - d. In an existing manufactured home park or subdivision in which a manufactured home has incurred substantial damage as the result of a flood.
 - (3) Manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within a floodplain district that are not subject to the provisions of subsection (e)(2) of this section must be elevated so that either:
 - a. The lowest floor of the manufactured home is at or above the base flood elevation; or
 - b. The manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade and are securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.
- (f) *Review of building permit applications.* The floodplain administrator shall review all building permit applications to determine whether the proposed building site will be reasonably safe from flooding. If a proposed building site is in a floodprone area, all new construction and substantial improvements shall be:
- (1) Designed or modified and adequately anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy;
 - (2) Constructed with materials resistant to flood damage;
 - (3) Constructed by methods and practices that minimize flood damages; and

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- (4) Constructed with electrical, heating, ventilation, plumbing and air conditioning equipment and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- (g) *Review of subdivision proposals.* The floodplain administrator shall review subdivision proposals and other proposed new development, including manufactured home parks or subdivisions, to determine whether such proposals will be reasonably safe from flooding. If a subdivision proposal or other proposed new development is in a floodplain district, any such proposals shall be reviewed to ensure that:
- (1) All such proposals are consistent with the need to minimize flood damage within the floodprone area;
 - (2) All public utilities and facilities, such as sewer, gas, electrical and water systems are located and constructed to minimize or eliminate flood damage; and
 - (3) Adequate drainage is provided to reduce exposure to flood hazards.
- (h) *Residential structures.* All new construction and substantial improvements of residential structures within the flood-fringe district shall have the lowest floor elevated to or above the base flood level.
- (i) *Nonresidential structures.*
- (1) All new construction and substantial improvements of nonresidential structures within the flood-fringe district shall:
 - a. Have the lowest floor, including basement, elevated to or above the base flood level; or
 - b. Together with attendant utility and sanitary facilities, be designed so that below the base flood level the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
 - (2) Where a nonresidential structure is intended to be made watertight below the base flood level:
 - a. A registered professional engineer or architect shall develop and/or review structural design, specifications and plans for the construction and shall certify that the design and methods of construction are in accordance with accepted standards of practice for meeting the applicable provisions of subsection (i)(1)b. of this section; and
 - b. A record of such certificates which includes the specific elevation in relation to mean sea level to which such structures are floodproofed shall be maintained with the floodplain administrator.
- (j) *Enclosed areas below lowest floor.* For all new construction and substantial improvements, fully enclosed areas below the lowest floor that are usable solely for parking of vehicles, building access or storage in an area other than a basement and which are subject to flooding shall have permanent openings designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwaters. Designs for meeting this requirement must either be certified by a registered professional engineer or architect or meet or exceed the following minimum criteria: A minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding shall be provided. The bottom of all openings shall be no higher than one foot above grade. Openings may be equipped with screens, louvers, valves or other coverings or devices, provided that they permit the automatic entry and exit of floodwaters.

(Code 1978, § 10.1-30; Ord. No. O-2014-20, § 1, 6-16-2014)

State law reference(s)—Stormwater management, Code of Virginia, § 10.1-603.2 et seq.; marine resources commission, Code of Virginia, § 28.2-100 et seq.; waters of the Commonwealth, Code of Virginia, tit. 62.1.

Sec. 66-82. Floodway district.

- (a) In the floodway district no encroachments, including fill, new construction, substantial improvements or other development shall be permitted, unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed encroachment would not result in any increase in the 100-year flood elevation.
- (b) The city may approve development in the floodway district which increases the water surface elevation of the base flood, provided that the city first applies for a conditional FIRM revision, fulfills the requirements for such a revision as established under the provisions of federal regulations, and receives the approval of the Federal Emergency Management Agency. If such an application is undertaken at the request of a property owner, the owner shall be responsible for all costs to the city involved in the application, including the cost of notice to all adjoining property owners, advertisement and a public hearing.

(Code 1978, § 10.1-31)

Sec. 66-83. Flood-fringe and approximated floodplain districts.

- (a) In the flood-fringe and approximated floodplain districts the development and/or use of land shall be permitted in accordance with the regulations of this article, provided that all such uses, activities and/or development shall be undertaken in strict compliance with the floodproofing and related provisions contained in the uniform statewide building code and all other applicable codes and ordinances.
- (b) Within the approximated floodplain district, all new subdivision proposals and other purposed developments, including proposals for manufactured home parks and subdivisions, greater than 50 lots or five acres, whichever is the lesser, include within such proposals base flood elevation data. The applicant shall also delineate a floodway area based on the requirement that all existing and future development not increase the 100-year flood elevation more than one foot at any one point. The engineering principle of equal reduction of conveyance shall be used to make the determination of increased flood heights.
- (c) Within the flood-fringe and approximated floodplain districts, for all new or expanded structures, property owners shall provide adequate drainage paths around structures on slopes, to guide floodwaters around and away from the proposed structures.

(Code 1978, § 10.1-32)

State law reference(s)—Uniform Statewide Building Code, Code of Virginia, § 36-97 et seq.

Sec. 66-84. Design criteria for utilities and facilities.

- (a) *Sanitary sewer facilities.* All new or replacement sanitary sewer facilities, including all on-site waste disposal systems, pumping stations and collector systems, shall be designed to minimize or eliminate infiltration of floodwaters into the systems and discharges from the systems into the floodwaters. In addition, they shall be located and constructed to minimize or eliminate flood damage and impairment.
- (b) *Water facilities.* All new or replacement water facilities shall be designed to minimize or eliminate infiltration of floodwaters into the system and be located and constructed to minimize or eliminate flood damages.
- (c) *Drainage facilities.* All storm drainage facilities shall be designed to convey the flow of surface waters without damage to persons or property. The system shall ensure drainage away from buildings and on-site waste disposal sites. The city council may require a primary underground system to accommodate frequent floods and a secondary surface system to accommodate larger, less frequent floods. Drainage plans shall be consistent with facilities discharge of excess runoff onto adjacent properties.

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- (d) *Utilities.* All utilities such as gas lines, electrical and telephone systems being placed on floodprone areas shall be located, elevated (where possible) and constructed to minimize the chance of impairment during a flooding occurrence.
 - (e) *Streets and sidewalks.* Streets and sidewalks shall be designed to minimize their potential for increasing and aggravating the levels of flood flow. Drainage openings shall be required to sufficiently discharge flood flows without unduly increasing flood heights.

(Code 1978, § 10.1-33)

State law reference(s)—Septic tanks and sewage disposal when sewers not available, Code of Virginia, § 15.2-2157.

Sec. 66-85. Recreational vehicles.

- (a) Recreational vehicles placed on sites within a floodplain district shall:
 - (1) Be on the site for fewer than 180 days out of the preceding 365 days;
 - (2) Be fully licensed and ready for highway use; or
 - (3) Meet the anchoring and elevation requirements for manufactured homes in section 66-81(e)(2).
- (b) A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick-disconnect type utilities and security devices and has no permanently attached additions.

(Code 1978, § 10.1-34)

Secs. 66-86—66-110. Reserved.

DIVISION 4. SPECIAL EXCEPTIONS

Sec. 66-111. Appeal procedure.

- (a) Whenever any person is aggrieved by a decision of the floodplain administrator with respect to the provisions of this article, it is the right of that person to appeal to the city council for a special exception. Such appeal must be filed, in writing, within 30 days after the determination by the floodplain administrator. Upon receipt of such an appeal, the city council shall set a time and place for the purpose of hearing the appeal, which shall be not less than ten nor more than 30 days from the date of the receipt of the appeal. Notice of the time and place of the hearing of the appeal shall be given to all parties at which time they may appear and be heard. The determination by the city council shall be final in all cases.
- (b) In passing upon applications for special exceptions, the city council shall satisfy the following factors:
 - (1) The danger to life and property due to increased flood heights or velocities caused by encroachments. No special exception shall be granted for any proposed use, development or activity within the floodway district that will cause any increase in flood levels during the 100-year flood.
 - (2) The danger that materials may be swept onto other lands or downstream to the injury of others.
 - (3) The proposed water supply and sanitation systems and the ability of these systems to prevent disease, contamination and unsanitary conditions.
 - (4) The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owners.

-
- (5) The importance of the services provided by the proposed facility to the community.
 - (6) The availability of alternative locations not subject to flooding for the proposed use.
 - (7) The compatibility of the proposed use with existing development and development anticipated in the foreseeable future.
 - (8) The relationship of the proposed use to the comprehensive plan and floodplain management program for the area.
 - (9) The safety of access to the property in time of flood of ordinary and emergency vehicles.
 - (10) The expected heights, velocity, duration, rate of rise and sediment transport of the floodwaters expected at the site.
 - (11) The repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as an historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.
 - (12) Such other factors which are relevant to the purpose of this article.
- (c) The city council may refer any application and accompanying documentation pertaining to any request for a special exception to any engineer or other qualified person or agency for technical assistance in evaluating the proposed project in relation to flood heights and velocities, and the adequacy of the plans for protection and other related matters.
 - (d) Special exceptions shall only be issued after the city council has determined that the granting of such will not result in unacceptable or prohibited increases in flood heights, additional threats to public safety or extraordinary public expense; create nuisances; cause fraud or victimization of the public; or conflict with local laws or ordinances.
 - (e) Special exceptions shall only be issued after the city council has determined that the special exception will be the minimum relief to any hardship.
 - (f) The city council shall notify the applicant for a special exception in writing that the issuance of a special exception to construct a structure below the 100-year flood elevation increases risks to life and property and will result in increased premium rates for flood insurance.
 - (g) A record of the notification as stated in subsection (f) of this section as well as all special exception actions, including justification for their issuance, shall be maintained; and any special exceptions which are issued shall be noted in the annual report submitted to the Federal Emergency Management Agency.

(Code 1978, § 10.1-44; Ord. No. O-2014-20, § 1, 6-16-2014)

State law reference(s)—Comprehensive plan, Code of Virginia, § 15.2-2223.



Hazard Mitigation Plan

The current Hazard Mitigation Plan for the City of Manassas:

2022 Northern Virginia Hazard Mitigation Plan

Debris Management Plan

Damage Assessment Plan

Emergency Operations Plan

Note, the Emergency Operations Plan is currently being updated.



Northern Virginia Hazard Mitigation Plan

Annex 5: City of Manassas

November 2022



City of Manassas Overview

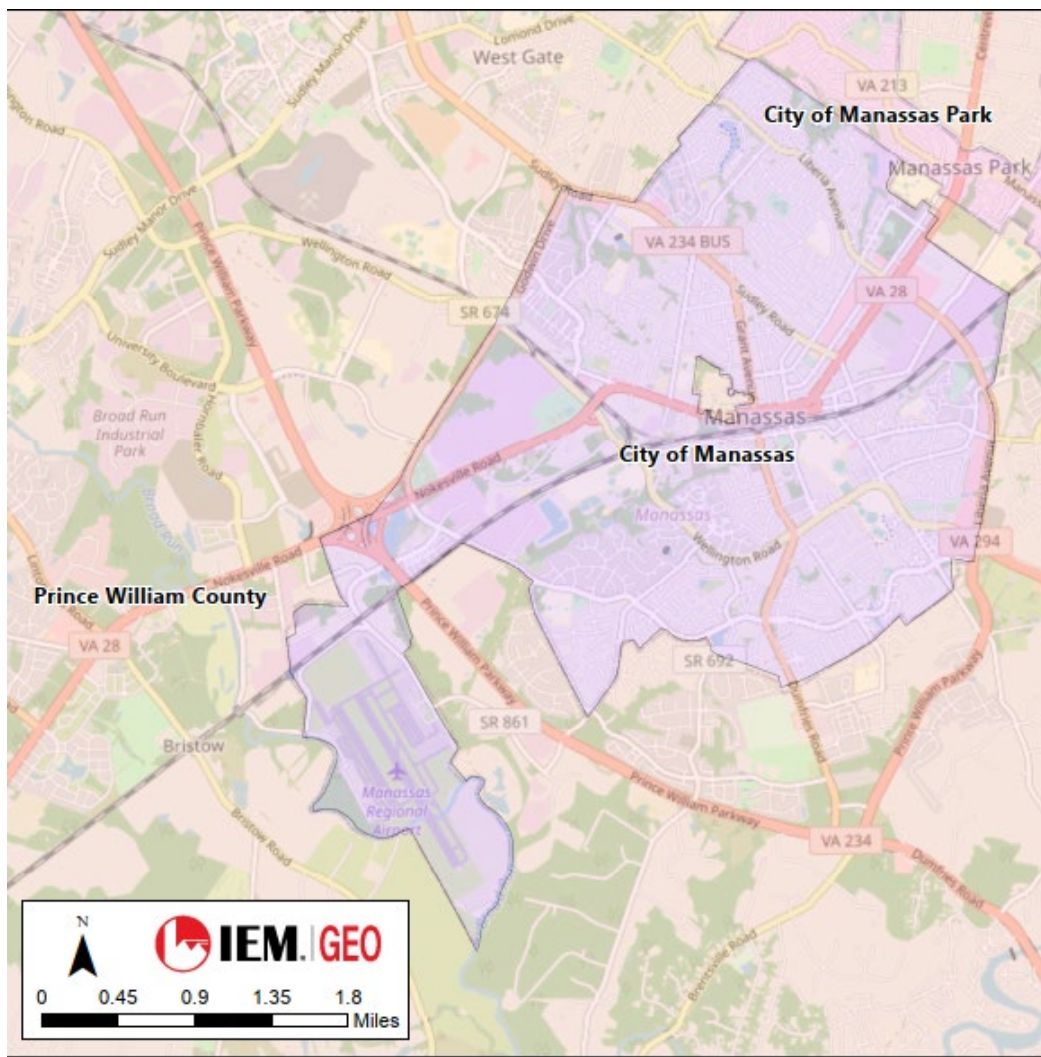








Table 1: Specific Jurisdictional Data

 ESTABLISHED	 LAND AREA	 2020 POPULATION	 GOVERNMENT ADDRESS	 HOUSEHOLDS	 MITIGATION FOCUS
1873	10 sq. mi.	42,772	9027 Center St. Manassas, VA 20110	14,387	Winter Weather, Flood, High Wind, Severe Weather

City of Manassas Risk Environment

The following is an overview of the basis for the details in this annex. The details in the annex and summarized here, lead up to a well-researched mitigation strategy for the community.

Hazard Event History

National Centers for Environmental Information (NCEI), 1996–May 2021

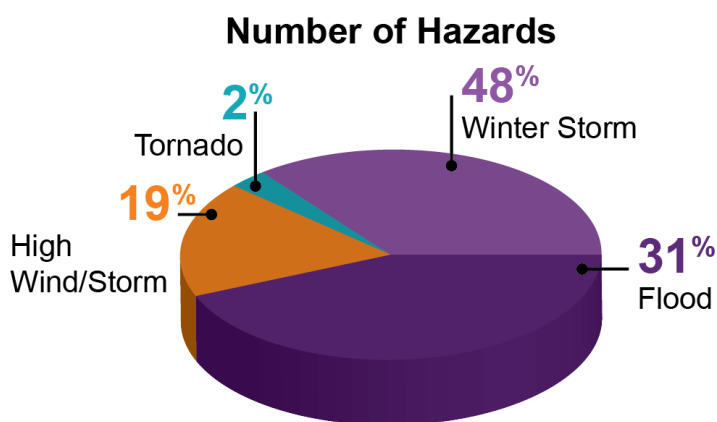


Figure 1: Percentage of Hazards

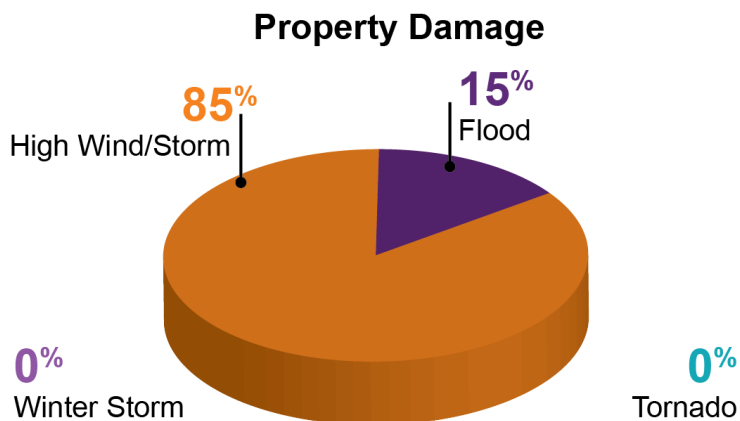


Figure 2: Percentage of Property Damage Costs from Natural Hazard Events

Natural Hazard Risk Ranking

Table 2: Ranking of Natural Hazards by Risk

Hazard	Hazard Ranking
Winter Weather	High
Flood/Flash Flood	High
High Wind/Severe Storm	High
Tornado	High
Drought	Medium
Earthquake	Medium
Extreme Temperatures	Medium
Dam Failure	Medium
Karst/Sinkhole/Land Subsidence	Low
Wildfire	Low
Landslide	Low

Community Lifelines and Respective Critical Assets

Table 3: Number of Critical Assets for Community Lifelines/Sectors

Lifeline/Sector	Number of Assets
Safety and Security	4
Food, Water, Shelter	0
Health and Medical	1
Energy	2
Communications	3
Transportation	48
Hazardous Materials	0
Education	17
Cultural/Historical	2
High Hazard Dams	2

A lifeline enables the continuous operation of government and business functions which are critical for human health, safety, or economic security. Lifelines are the most fundamental services for a community that, when stabilized, enable all other aspects of society to function. These lifelines are assets that may be a facility, infrastructure, operation, or entity.

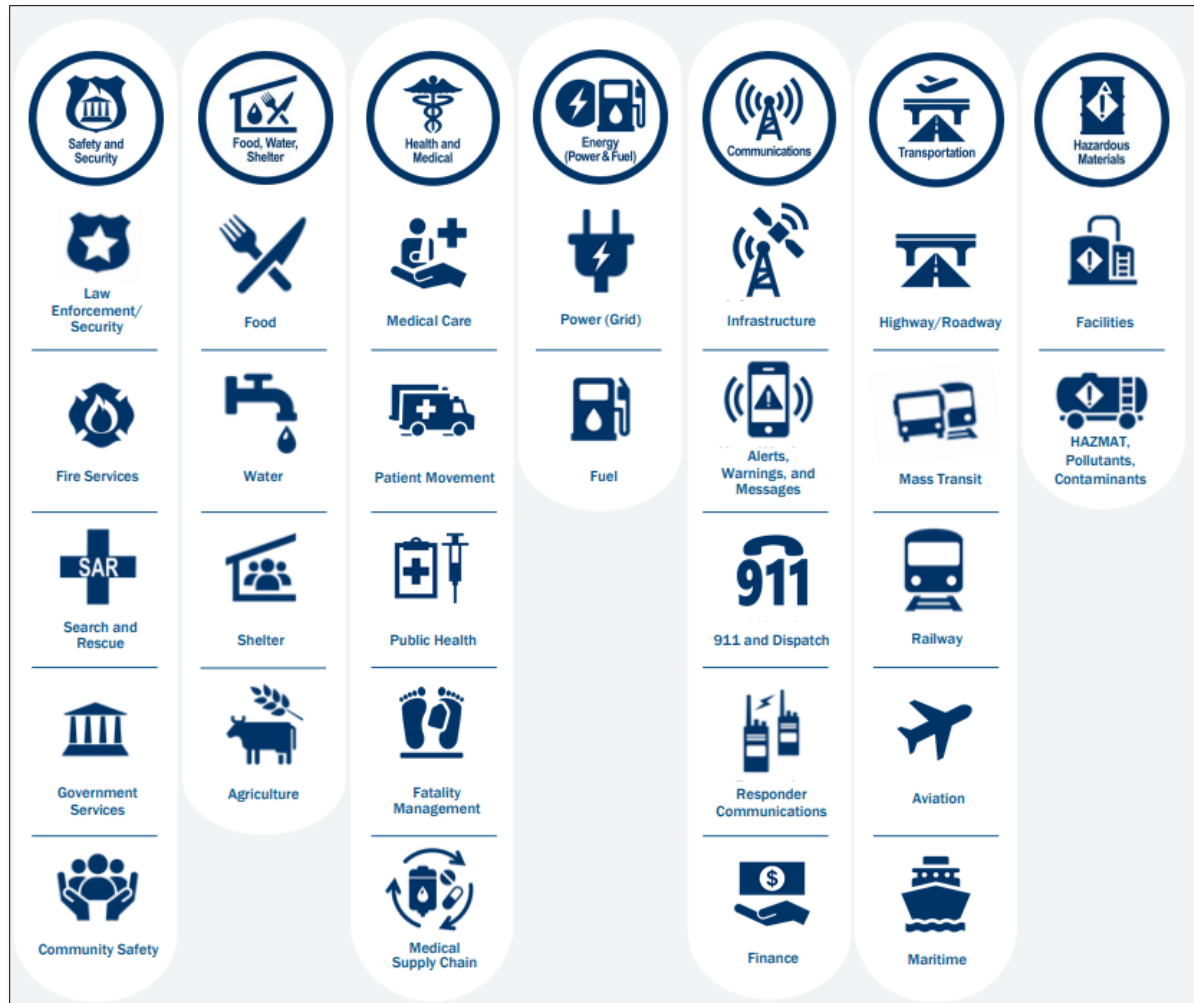


Figure 3: Community Lifeline Components

Community Lifelines Outlined

- **Safety and Security:** Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety
- **Food, Water, Shelter:** Food, Water, Shelter, Agriculture
- **Health and Medical:** Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management
- **Energy:** Power Grid, Fuel
- **Communications:** Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch
- **Transportation:** Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime
- **Hazardous Materials:** Facilities, HAZMAT, Pollutants, Contaminants

Mitigation Capabilities Summary

Table 4: Capability Assessment Summary Ranking for the City of Manassas

Capability	Ranking
Planning and Regulatory	High
Administrative and Technical	High
Safe Growth	Moderate
Financial	Moderate
Education and Outreach	Moderate

Hazard Mitigation Plan Points of Contact

Table 5: Points of Contact Information

Point of Contact	Contact Information
Primary Point of Contact	Amelia Gagnon, Emergency Management Specialist 703-257-8062 agagnon@manassasva.gov 9608 Grant Avenue Manassas VA 20110
Secondary Point of Contact	Edward Mills, Fire and Rescue Chief, Emergency Management Coordinator 703-257-8465 emills@manassasva.gov 9608 Grant Avenue Manassas, VA 20110

City of Manassas

This annex presents the following jurisdiction-specific information provided by the City of Manassas for the 2022 update to the *Northern Virginia Hazard Mitigation Plan (NOVA HMP)*.

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1. Jurisdiction Profile

Established	1873
Total Land Area	10 square miles
Geographic Region	Piedmont/Coastal Plain
Persons Per Household	3.13
Persons Per Square Mile	4,174
Median Age	35.2 (as of 2019)
Elevation	Near sea level (~0 feet): 500 feet

1.1. Location

Manassas is an independent city in the Commonwealth of Virginia. The City is located a little over 30 miles west of Washington, D.C. and has several important historic sites from the period of 1825–1914.

1.2. History

In July 1861, the First Battle of Manassas—also known as the First Battle of Bull Run—was fought nearby and is considered the first major land battle of the American Civil War. At that time, Manassas Junction was little more than a railroad crossing, but a strategic one, with rails leading to Richmond, Virginia, Washington, D.C., and the Shenandoah Valley. Following the war, the crossroads grew into the town of Manassas, which was incorporated in 1873. In 1894, Manassas was designated the county seat of Prince William County. In 1975, Manassas was incorporated as an independent city, and as per Virginia law, was separated from Prince William County.

1.3. Demographics, Economy, and Governance

The Northern Virginia regional profile is presented in [Section 1, Base Plan](#) as context for the entire plan. The 2020 U.S. census population estimate for the City of Manassas is 42,772, an approximate 13.1% increase since the 2010 Census. The City is densely populated with 4,179 residents per square mile.

Table 6: Population and Growth Rate

Year	Population	Annual Percent Change
1970	9,164	-
1980	15,438	68.5%
1990	27,957	81.1%
2000	35,135	25.7%
2010	37,821	7.6%
2020	42,772	13.1%

Table 7: Race and Ethnicity Demographics^{1 2}

Race and Ethnicity	Population	Percent of Population
American Indian and Alaska Native	536	1%
Black/African American	5,124	10%
Asian/ Pacific Islander	2,765	6%
Hispanic or Latino	18,345	37%
White	16,717	34%
Two or More Races	5,655	12%

Table 8: Economic Data

Economy	Data
Median Household Income (in 2020 dollars) 2016–2020	\$86,227
Unemployment Rate (September 2021)	2.6%
Per Capita Income (in 2020 dollars) 2016–2020	\$34,198
Median House or Condo Market Value (2019)	\$338,100
Percentage Below Poverty (2019)	7%
Number of Businesses (2019)	4,123
Most Common Business (2020)	Office

1.4. Built Environment and Community Lifelines

The information related to Community Lifelines and critical assets in the City of Manassas presented in this section has been collected from multiple sources, Hazus (Version 4.2), and city government websites. Data extracted from the Hazus Level 1 assessment indicates that the City of Manassas has an estimated total of 74 Community Lifelines and critical assets. Due to the time lag in collecting and verifying data, and the method of documenting location and jurisdiction used in Hazus, this may not reflect the current inventory maintained by the City of Manassas.

Table 98 provides a summary of the number of critical assets by type. The City of Manassas maintains a detailed list of Community Lifeline facilities, sites, and critical assets.

Table 9: Number of Assets per Community Lifeline/Sector

Lifeline/Sector	Number of Assets
Safety and Security	4

¹ [Manassas, Virginia Population 2021 \(Demographics, Maps, Graphs\) \(Census2020\)](#)

² Census Race and Ethnicity numbers differ from the City's population – this is due to respondents of the census checking multiple boxes for the Race and Ethnicity questions.

Lifeline/Sector	Number of Assets
Food, Water, Shelter	0
Health and Medical	1
Energy	2
Communications	3
Transportation	48
Hazardous Materials	0
Education	17
Cultural/Historical	2
High Hazard Dams	2

1.4.1. Safety and Security

As of April 2021, the City of Manassas has two fire stations, one police station, an emergency operations center (EOC), and an alternate EOC.

1.4.2. Food, Water, Shelter

Food commodities are available throughout the city from public retail providers, wholesalers, and contracted services for specific institutions and facilities. Additional contracts may be entered into for post-disaster needs.

The Manassas public water system provides safe drinking water for the City of Manassas, Manassas Park, and western Prince William County residents. The primary source of water is Lake Manassas, an 880-acre reservoir located in Gainesville, Virginia (approximately 12 miles west of the City of Manassas). The lake is fed by two main sources, Broad Run and North Branch, as well as several other small tributaries. Water is drawn from the high side of the Manassas Lake Dam through three inlets at the south end of the lake and contains three (3) water intake locations for the Water Treatment Plant. The dam, a 710-foot-long construction, has a concrete spillway with an elevation of 290'. The intakes are at elevations of 280', 268', and 254' and have individual screens at the end of each intake pipe that feed a single pipe to the Water Treatment Plant, which is located on the low side of the dam. The T. Nelson Elliott Dam was originally constructed in the early 1970s to create a potable water supply reservoir. The plant is located in Prince William County, Virginia. The property is approximately 17 acres in size. It slopes towards Broad Run to the east and is bordered by Lake Manassas to the north. The surrounding area is wooded with farmland. The Water Treatment Plant consists of several buildings and structures, including a compressor building, a chemical storage building, filter buildings, a water pumping station, a waste thickener, a clear well, a backwash surge tank, clarifiers, and a storm water detention pond. The plant pumps water to the City through a single 24-inch diameter pipeline using two of four available pumps at the plant. Two pumps are available to operate on demand. The process is controlled by a Supervisory Control and Data Acquisition (SCADA) system, which is maintained by the City of Manassas Utility Department. The SCADA system controls six electric substations, three generation facilities, water treatment and distribution, and sewer.

The City distribution system includes 173 miles of watermain ranging in size from 3"–36", two elevated storage tanks and one (1) ground tank. There is 1 pump station and 12,000 service connections, 8 interconnections, and meter vaults that are included in the system for operations and emergencies as needed. Table 10 lists the location, type, and capacity of the storage tanks.

Table 10: Storage Tank Type, Location, and Capacity

Tank	Type	Location	Size
Quarry Road	Elevated	8151 Quarry Road	1,000,000 gallons
Prince William Street	Elevated	9160 Prince William Street at West	300,000 gallons
Dean Drive	Ground	9723 Dean Drive	2–2,500,000 gallons

1.4.3. Health and Medical

Hazus data identified one health and medical facility offering patient care, urgent care, emergency rooms, and other healthcare services in the City of Manassas.

1.4.4. Energy

There is one energy provider that services the City of Manassas.

1.4.5. Communications

Most communications, information systems, and infrastructure in the United States are privately owned; however, the city maintains authority and control over public safety communications for fire, police, and other responding agencies. The City has their own police 911 center, while fire/rescue falls under the County. In addition, the Hazus database notes three broadcast facilities—two television and one radio station—in the City.

1.4.6. Transportation

The Hazus database notes a total of 48 transportation structures, facilities, or segments, including the following:

- Highway Bridges – 19
- Railway Bridges – 2
- Railway Facilities and Segments – 24
- Light Rail Facilities and Segments – 3

1.4.7. Hazardous Materials

Currently there are no hazardous material facilities or storage sites listed in the Hazus database for the City of Manassas.

1.4.8. Education

The City of Manassas public school district has five elementary schools, two intermediate, one middle, and one high school. The Hazus database identifies eight additional educational facilities, including private schools.

1.4.9. Recreational, Cultural and Historic Sites, and Assets

The City of Manassas operates 23 developed parks and historic assets of special architectural, historic, archaeological, or cultural value to residents and visitors. Seven are designated by the National Register of Historic Places including the downtown historic district and six individual sites including Annaburg, Liberia, the Manassas Industrial School for Colored Youth, Cannon Branch Fort, Mayfield Fort, and the Manassas Water Tower.

1.5. Growth and Development Trends

Manassas' growth is closely tied to its proximity to Washington, D.C. and the railroad that connects that area to southwest Virginia. The railroad and other transportation assets, such as the Manassas Regional Airport, major roads, and parkways, provide links to regional opportunities and encourage economic development.

The population demographic has been changing in the city, much like other jurisdictions in the region, but is maintaining a steady growth pattern. The population has increased in the 65+ age demographic, as well as the ethnic mix, impacting transportation, housing, and employment needs.

Much of the available land in the city consists of small, separate parcels which create obstacles for master-planned development. Consequently, new growth is expected to be concentrated in urban, compact infill, and redevelopment along transportation corridors and within the downtown area, with small neighborhoods around the growth areas³. This development pattern has the potential to consume current open spaces that provide overland relief for flooding and increase the size of areas that are impervious to drainage, which will lead to more flash flooding. The development process provides the opportunity to integrate hazard mitigation planning to provide appropriate transitions to address future development.

³ Manassas 2040: City of Manassas Comprehensive Plan. Retrieved at: https://www.manassasva.gov/community_development/planning_and_zoning/comprehensive_plan_update.php

2. Jurisdiction Planning Process

For the 2022 NOVA HMP update, the City of Manassas followed the planning process described in [Section 2, Base Plan](#). In addition to providing representation to the Northern Virginia Hazard Mitigation Planning Team, the City supported the local planning process requirements by coordinating with representatives from other departments and agencies within its jurisdiction.

Table 11: Local Planning Group Participants

Name	Position/Title	Department/Agency
Tony Dawood	Director of Utilities	Department of Utilities
Amelia Gagnon	Emergency Management Specialist, Fire/Rescue Department- Office of Emergency Management	Fire and Rescue Department
William Garrett	Fire Chief	Fire and Rescue Department
Scott Horan	Director of Public Works	Department of Public Works
Jim Hartnett	Fire Marshall/Deputy Emergency Management Coordinator	Fire and Rescue Department
Patty Prince	Communications Manager	Department of Communications
Liz Via-Gossman	Assistant City Manager/Community Development (Retired)	Department of Community Development
Bryan Foster	Deputy City Manager	City Administration
Matt Arcieri	Director of Planning and Community Development	Department of Community Development
Esteban Jordan	Risk Management Specialist,	Manassas City Public Schools
Tim Fitzwater	Buildings and Grounds Manager	Department of Public Works
Kisha Wilson-Sogunro	Parks, Cultures, and Recreation Manager	Department of Community Development
Jolene Berry	Airport Operations Specialist	Manassas Regional Airport
Jeffrey Stephens	Risk and Safety Analyst	Human Resources
Eric Lowe	Development Services Manager	Department of Community Development
Sean Whitfield	IT Manager	Information Technology
Chris Shields	Lieutenant	Police Department
Margaret Montgomery	GIS Coordinator	GIS
James Hanley	Senior Risk and Safety Analyst	Human Resources
Lance Kilby	City Engineer	Engineering

The jurisdiction identified its chief hazard mitigation planning responsibility as providing oversight in the planning process and representation in the Emergency Managers Group. The City also identified the following tasks as part of its mitigation planning responsibilities:

- Management support for the planning effort

- Planning Group resource/subject matter expert
- Hazard risk and vulnerability assessment
- Provide technical data and hazard information
- Capabilities assessment
- Mitigation strategy development
- Sponsor mitigation actions
- Review Plan drafts and provide input
- Public outreach activities
- Implementation of the Plan
- Maintaining the Plan

The City of Manassas planning participants coordinated primarily via virtual meetings during the planning process, and independently as needed to carry out planning activities completed through a series of worksheets that provided background information on the history of hazard events, hazard risks, and vulnerabilities, capabilities, and past mitigation efforts. Additional planning process documentation of the Planning Group's meetings is included in the [Base Plan, Appendix A](#).

2.1. Public Participation

Several opportunities for public involvement were provided during the planning process, including a public survey and access to the draft plan for review and input.

In addition to the survey, the public was offered the opportunity to review and provide input to the Draft 2022 Plan update. Notification of the Draft Plan release was made through the same county web link. Documentation of the public survey and draft plan review is included in [Attachment 2](#) of this annex.

3. Jurisdiction-Specific Hazard Event History

The City of Manassas's comprehensive hazard history is described in [Section 5, Base Plan](#). The National Oceanic and Atmospheric Administration (NOAA) National Center for Environmental Information (NCEI) Storm Events Database includes 471 recorded natural meteorological events that took place in the city between January 1, 1996, and May 2021. Total property and crop damage exceeded \$18 million and there was one death and nine injuries associated with the events. The city has been included in three Federal Disaster Declarations and emergencies between 2017 and May 2021.

Table 12: Federal Disaster and Emergency Declarations (2017–2021), City of Manassas

Declaration	Date	Hazard	Assistance Type
DR 4512	Apr. 2020	Virginia COVID-19 Pandemic	PA-B
EM 3448	Mar. 2020	Virginia COVID-19	PA-B
EM 3403	Sep. 2018	Virginia Hurricane Florence	PA-B

Table 13: Significant Hazard Events Identified by the City of Manassas, 2017–2021

Date	Hazard	Event and Description
05/26/2021	Thunderstorm Wind	Widespread wind damage was reported in and around Manassas. A tree blew down on Fairview Avenue next to the Manassas Police Station. Multiple large tree limbs were snapped off near the intersection of Sudley Road and VA-28 Centreville Road. Nearby, a tree fell onto a mobile home, destroying it. Numerous trees were blown down in the 9000 block of VA-28 Centreville Road.

4. Hazard Risk Ranking

After developing hazard profiles, the City of Manassas Planning Group conducted a two-step quantitative risk assessment for each hazard that considered population vulnerability, geographic extent/location, probability of future occurrences, and potential impacts and consequences. The numerical scores for each category were totaled to obtain an Overall Risk Score, which can be summarized by one of these risk and vulnerability classifications:

- **Low:** Two or more criteria fall in lower classifications or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.
- **Medium:** The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating. The potential damage is more isolated and less costly than a widespread disaster.
- **High:** The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with severe strength over a significant to extensive portion of the planning area.

The two-step hazard risk ranking methodology is detailed in [Section 4, Base Plan](#). The Hazard Risk Ranking scores by individual categories for the city are provided in [Attachment 2](#) of this annex. The Overall Risk Score for each hazard served as the basis for determining whether a vulnerability assessment should be conducted. Natural hazard profiles are presented within the hazard sub-sections in [Section 5, Base Plan](#), and local detail is provided in the Jurisdiction Annexes. Non-natural hazard profiles are presented in [Volume II](#) of this Plan.

Table 14: Hazard Risk Ranking Summary: Natural Hazards

Hazard	Total Probability Score	Total Consequence Score	Overall Risk Score	Hazard Ranking
Winter Weather	3.7	3.5	7.2	High
Flood/Flash Flood	1.7	4.2	5.9	High
High Wind/Severe Storm	2.7	3.2	5.8	High
Tornado	1.3	4.3	5.7	High
Drought	2.3	3.2	5.5	Medium
Earthquake	2.3	3.2	5.6	Medium
Extreme Temperatures	3.0	2.5	5.5	Medium
Dam Failure	1.0	4.1	5.1	Medium
Karst/Sinkhole/Land Subsidence	1.0	2.5	3.5	Low
Wildfire	0	0	0	Low
Landslide	0	0	0	Low

Table 15: Hazard Risk Ranking Summary: Non-Natural Hazards

Hazard	Total Probability Score	Total Consequence Score	Overall Risk Score	Hazard Ranking
Infectious Disease/Public Health	3.0	5.8	8.8	High
Terrorism	1.0	6.4	7.4	High
Cyberattack	2.0	4.7	6.7	High
Civil Unrest	1.3	5.2	6.5	High
Hazardous Materials	1.3	3.9	5.3	Medium
Communication Disruption	1.3	3.7	5.0	Medium
Active Violence	1.0	3.6	4.6	Low

Based on the hazard risk scores, the City of Manassas evaluated the level of risk for 16 hazards: 9 natural and 7 non-natural. Two of the natural hazards—landslide and wildfire—do not affect the area and are not applicable to the hazard risk ranking. Nine natural hazards were identified as high or medium risk hazards to which the jurisdiction is vulnerable:

- **High:** Winter weather, flood/flash flood, high wind/severe storm, and tornado
- **Medium:** Earthquake, drought, extreme temperatures, and dam failure

Five non-natural hazards were ranked as high or medium risk:

- **High:** Infectious disease/public health, terrorism, and cyberattack
- **Medium:** Civil unrest and hazardous materials

All other hazards are ranked as “low” or “not applicable,” signifying a minimal or unlikely risk to the City of Manassas.

4.1. Additional Hazard Risk Considerations

4.1.1. Dam Failure

There are two dams located within the city limits of Manassas, and one dam that is close to the border in Prince William County. These dams have the potential to fail and compromise the safety of those living in the City.

Table 16: State-Regulated High Hazard Dams in the City of Manassas, as of May 2021⁴

Dam Name	Dam Owner/Operator
Winters Branch Dam	City of Manassas
Manassas Dam #1	Unknown
Innovation at Prince William Pond 3	Prince William County Department of Public Works Environmental Services Division

⁴ [National Inventory of Dams \(army.mil\)](https://www.army.mil)

4.1.2. Flood/Flash Flood

Table 17: Flood/Flash Flood Events in the City of Manassas, 1996–May 31, 2021⁵

Flood/Flash Flood Events	Direct Deaths	Direct Injuries	Property Damage	Crop Damage	Total Property and Crop Damage
17	0	0	\$20,000	0	\$20,000

4.1.3. High Wind/Severe Storm

Table 18: High Wind/Severe Storm Events in the City of Manassas, 1996–May 21, 2021 presents the number of severe storm events documented in the NCEI Storm Events Database, including high wind and impacts to people, property, and crops.

Table 18: High Wind/Severe Storm Events in the City of Manassas, 1996–May 21, 2021⁶

High Wind and Severe Storm Events	Direct Deaths	Direct Injuries	Property Damage	Crop Damage	Total Property and Crop Damage
7	0	0	\$110,000	\$0	\$110,000

4.1.4. Winter Weather

Table 19: Severe Winter Weather Events in the City of Manassas, 1996–May 31, 2021 presents the number of severe winter storm events documented in the NCEI Storm Events Database, including blizzard, heavy snow, winter storm, and winter weather.

Table 19: Severe Winter Weather Events in the City of Manassas, 1996–May 31, 2021⁷

Severe Winter Storm Events	Direct Deaths	Direct Injuries	Property Damage	Crop Damage	Total Property and Crop Damage
14	0	0	\$0	0	\$0

Other hazard information for the City of Manassas is presented in the [Base Plan](#).

⁵ <https://www.ncei.noaa.gov/access>

⁶ <https://www.ncei.noaa.gov/access>

⁷ <https://www.ncei.noaa.gov/access>

5. Vulnerability Assessment

The methodology for calculating loss estimates presented in this annex is the same as that described in [Section 4, Base Plan](#). Quantitative loss estimates are provided when available. Qualitative measurement considers hazard data and characteristics, including the potential impact and consequences based on past occurrences. Accompanying the data is a discussion of community assets potentially at risk during a hazard event.

The assets at risk were identified during the planning process as potential assets vulnerable to one or more hazards.

5.1. National Flood Insurance Program

The City of Manassas is a participant in the National Flood Insurance Program (NFIP).

Table 20: NFIP Policy Status, City of Manassas

Policies in Force	Premiums Paid	Total Coverage
82	\$61,668	\$23,284,900

Table 21: National Flood Insurance Program Status, City of Manassas

Initial Flood Hazard Boundary Map (FHB) Identified	Initial Flood Insurance Rate Map (FIRM) Identified	Current Effective FIRM Date	Regular-Emergency Date	Digital Flood Insurance Rate Map (DFIRM)/(Q3)
5/31/1974	1/3/1979	1/5/1995	1/3/1979	DFIRM

NFIP Topic	Source of Information	Comments
Insurance Summary		
How many NFIP policies are in the community? What is the total premium and coverage?	State NFIP Coordinator or FEMA NFIP Specialist	82
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	FEMA NFIP or Insurance Specialist	
How many structures are exposed to flood risk within the community?	Community Floodplain Administrator (FPA)	

NFIP Topic	Source of Information	Comments
Describe any areas of flood risk with limited NFIP policy coverage.	Community FPA and FEMA Insurance Specialist	
Staff Resources		
Is the Community FPA or NFIP Coordinator certified?	Community FPA	One CFM on Staff
Is floodplain management an auxiliary function?	Community FPA	Yes
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability).	Community FPA	Engineering reviews of new development, floodplain studies, and LOMAs. Staff does not have capacity for education, outreach, or inspection.
What are the barriers to running an effective NFIP program in the community, if any?	Community FPA	
Compliance History		
Is the community in good standing with NFIP?	State NFIP Coordinator, FEMA NFIP Specialist, community records	
Are there any outstanding compliance issues (i.e., current violations)?		Yes (9851 Park Street)
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?		June 18, 2013

5.2. Population

The Centers for Disease Control and Prevention's (CDC) Social Vulnerability Index (SVI) is a tool that can be used to identify specific vulnerable populations. The CDC SVI depicts the vulnerability of communities at census tract level, by county, into fifteen census-derived factors grouped into four themes: socioeconomic status, household composition/disability, race/ethnicity/language, and housing type/transportation. 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.

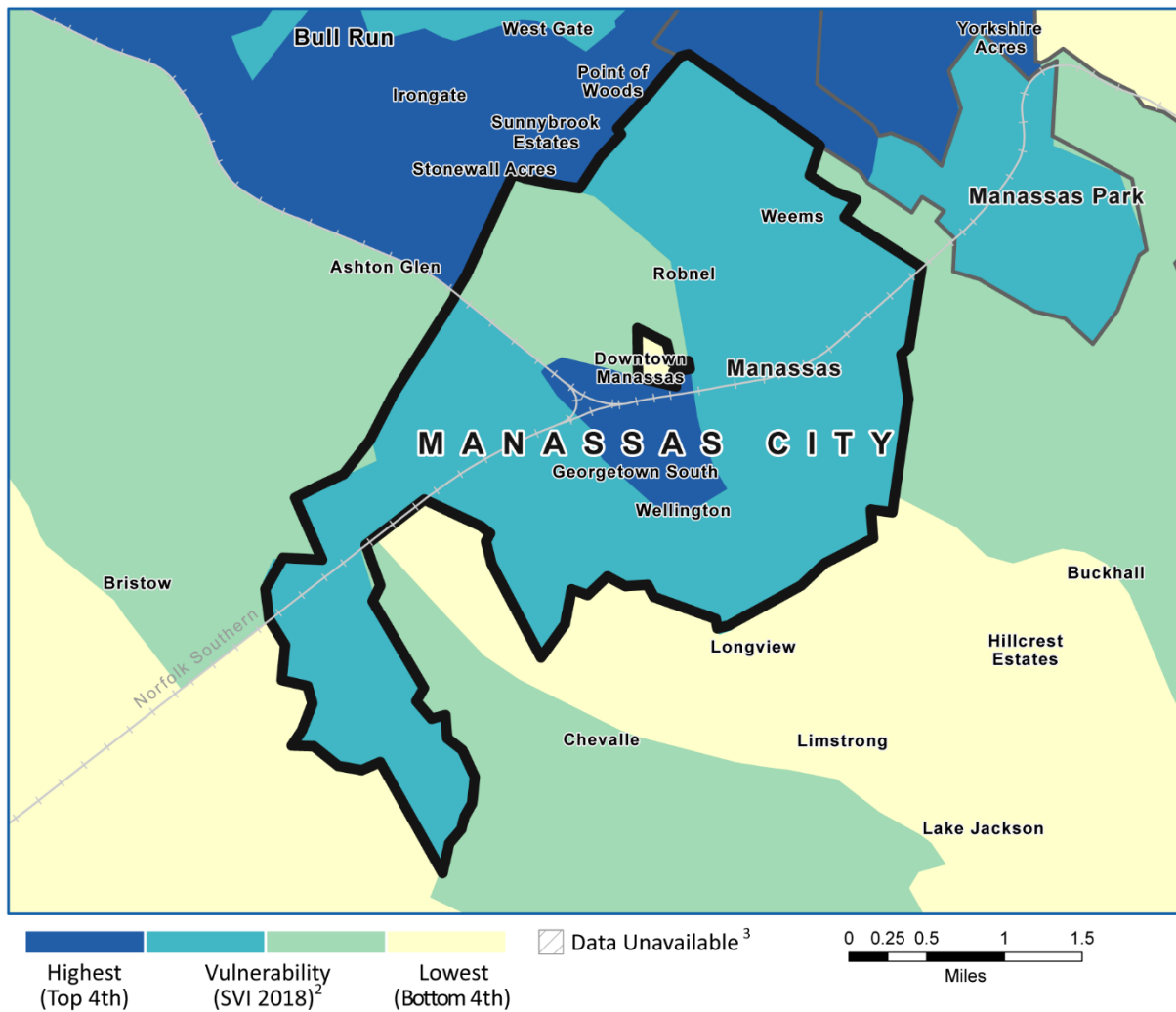
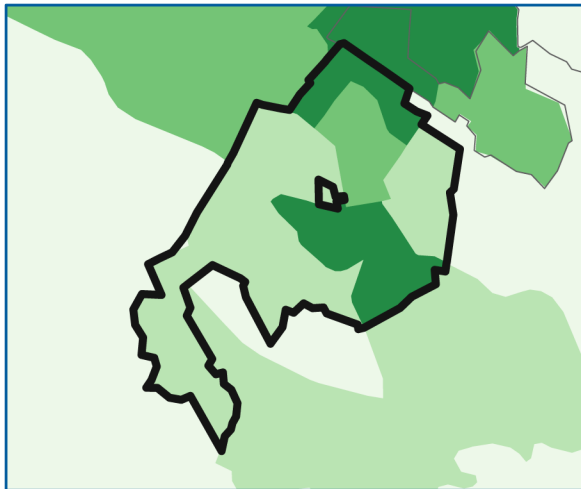
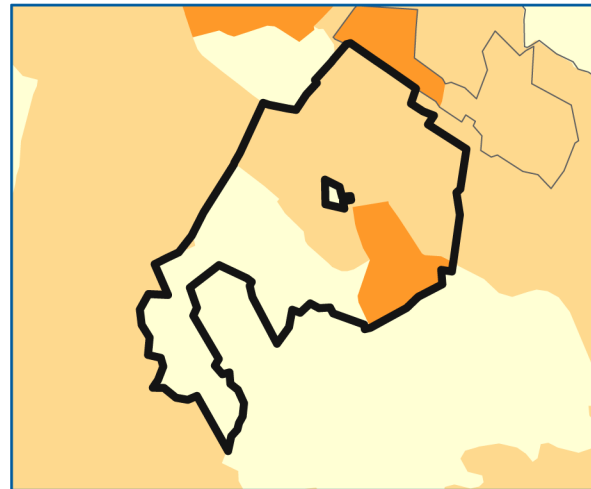


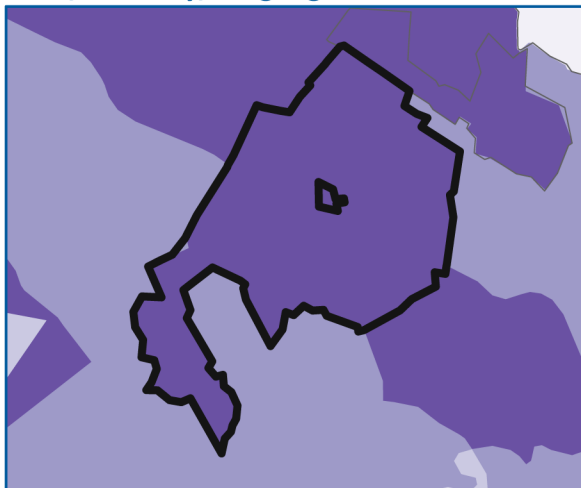
Figure 4: Overall Social Vulnerability (2018), City of Manassas

Socioeconomic Status⁵

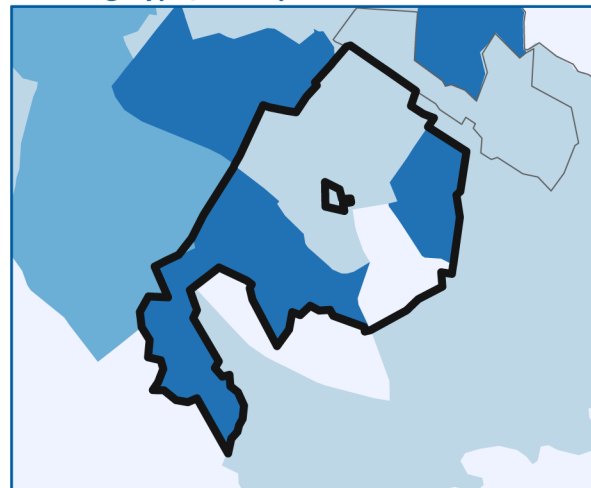
Highest (Top 4th) Vulnerability (SVI 2018)² Lowest (Bottom 4th)

Household Composition/Disability⁶

Highest (Top 4th) Vulnerability (SVI 2018)² Lowest (Bottom 4th)

Race/Ethnicity/Language⁷

Highest (Top 4th) Vulnerability (SVI 2018)² Lowest (Bottom 4th)

Housing Type/Transportation⁸

Highest (Top 4th) Vulnerability (SVI 2018)² Lowest (Bottom 4th)

Figure 5: Social Vulnerability, by Theme, City of Manassas⁸

The themed maps illustrate the City's higher level of vulnerability within the race/ethnicity/language theme, demonstrating the importance of communicating essential hazard mitigation, preparedness, response, and recovery information to the public in alternate formats and multiple languages.

⁸ [Virginia2018_Manassas_city.pdf \(cdc.gov\)](#)

5.3. Built Environment

Based on data currently available through Hazus, the tables presented in this section provide a total number of exposed facilities and properties in relation to earthquake, flood, and hurricane wind.

Table 22: Building Stock Exposure by General Occupancy

Type	Amount
Residential	\$3,672,496,000
Commercial	\$885,410,000
Industrial	\$229,191,000
Agricultural	\$11,562,000
Religion	\$59,555,000
Government	\$32,685,000
Education	\$56,356,000
TOTAL	\$4,947,255,000

5.4. Community Lifelines and Assets

The City of Manassas reviewed its community lifelines and assets to identify critical facilities, systems, and infrastructure that have the most significant risks and exposure. Vulnerabilities include structures, systems, resources, and other assets defined by the community as susceptible to damage and loss from hazard events. The vulnerability of critical infrastructure is presented within the lifeline sector categories identified by FEMA.

Table 23: Critical Facilities Exposed to FEMA Floodplains, City of Manassas

Facility Type	Total Facilities	In 100-Year Floodplain	In 500-Year Floodplain
Railway Segments	24	2	0
Highway Bridges	19	3	2
Highway Segments	11	6	1
Light Rail Segments	2	1	0

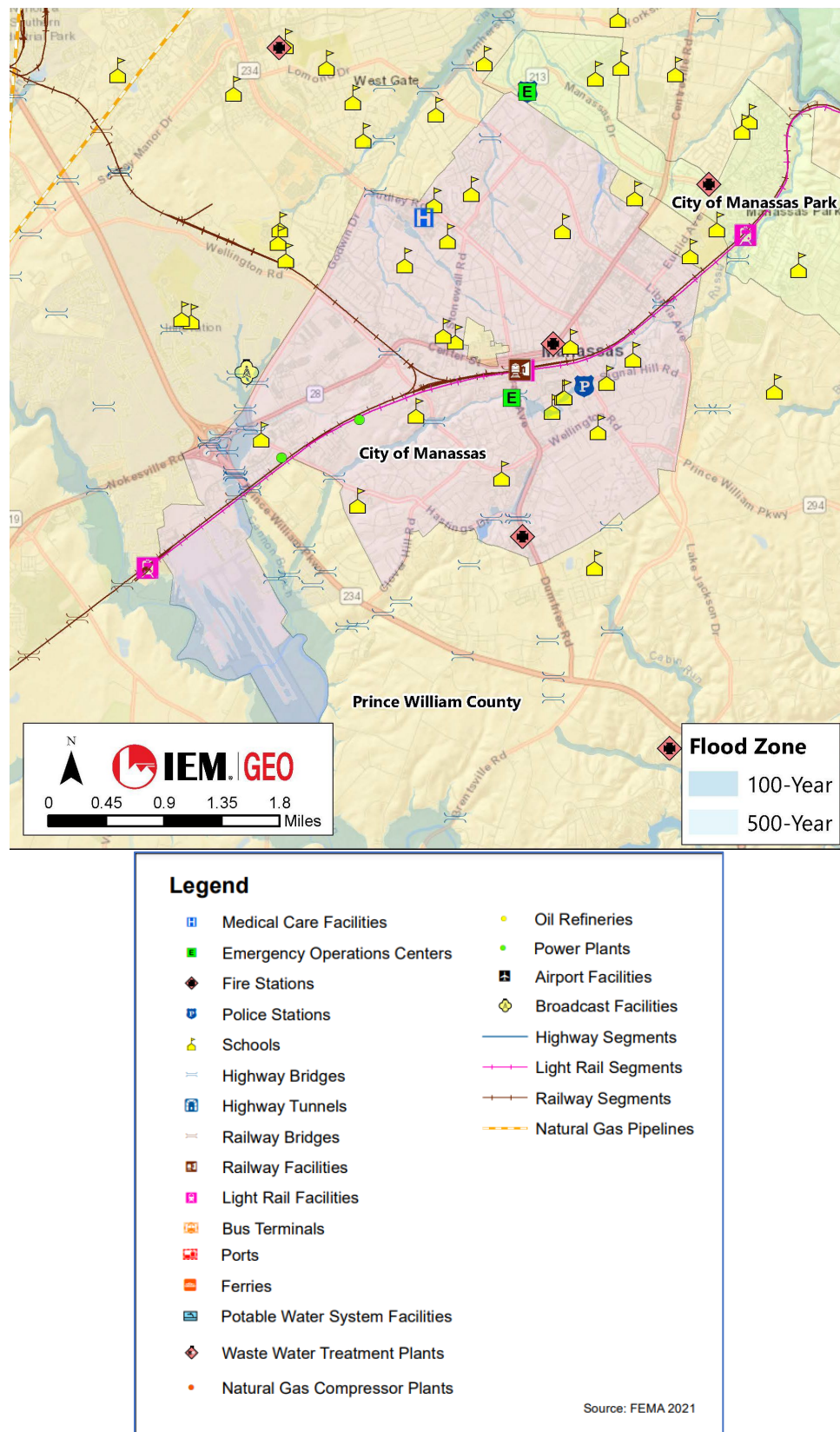


Figure 6: Critical Facilities in Flood Zones

5.5. Environment

Information related to environmental vulnerability is presented in the hazard-specific sections of the **Base Plan**.

5.6. Economy

Information related to economic vulnerability is presented in the hazard-specific sections of the **Base Plan**. Specific direct economic losses (in thousands of dollars) related to a 2,500-year 6.5 magnitude earthquake event are identified by Hazus for specific assets.

**Table 24: Direct Economic Losses
Related to Earthquake, Flood, and Hurricane Wind**

Hazard	Buildings (capital stock and income)	Transportation	Utilities
Earthquake	76,980	353	4,332
Flood	11,877	0	0
Hurricane Wind	3,266	0	0

5.7. Cultural and Historical Assets

Information related to vulnerability of cultural and historical assets is presented in the hazard-specific sections of the **Base Plan**.

Historic structures and sites are frequently more vulnerable to flood hazards due to the typical development of a city or town along waterways. Because removing historic structures from their original site affects their historical value, there are challenges to protecting these fragile sites.

Table 25: Cultural and Historic Properties Exposed to FEMA Floodplains, City of Manassas

Total Facilities	In 100-Year Floodplain	In 500-Year Floodplain
7	0	0

6. Capability Assessment

The City of Manassas reviewed its legislative and departmental capabilities to identify resources, strengths, and gaps for implementing hazard mitigation efforts. Using a Capabilities Assessment Worksheet, the community documented existing institutions, plans, policies, ordinances, programs, and resources that could be brought to bear on implementing the mitigation strategy. The capabilities in relation to hazard mitigation were assessed in the following categories:

- Planning and regulatory
 - Implementation of ordinances, policies, site plan reviews, local laws, state statutes, plans, and programs that relate to guiding and managing growth and development
- Administrative and technical
 - County, city, and town staff and their skills and tools that can be used for mitigation planning and to implement specific mitigation actions
- Safe growth
 - Use of community planning through comprehensive plans as hazard mitigation to increase community resilience
- Financial
 - Resources that a jurisdiction has access to or is eligible to use to fund mitigation actions
- Education and outreach
 - Programs and methods that could be used to implement mitigation activities and communicate hazard-related information

In addition to the Capabilities Assessment Worksheet, the city completed a Jurisdiction Needs Identification Questionnaire that summarized changes in and enhancements of capabilities since the last plan. This information is integrated into the summaries in this section.

6.1. Capability Assessment Summary Ranking and Gap Analysis

The jurisdiction ranked the levels of capability in relation to each assessment category as a means of identifying where elements could be strengthened or enhanced. Capabilities were ranked on a qualitative basis as demonstrated by the jurisdiction's authorities, programs, plans, and/or resources:

- **Limited:** The jurisdiction is generally unable to implement most mitigation actions.
- **Low:** The jurisdiction has some capabilities and can implement a few mitigation actions.
- **Moderate:** The jurisdiction has some capabilities, but improvement is needed to implement some mitigation actions.
- **High:** The jurisdiction has significant capabilities, as demonstrated by its authorities, programs, plans, and/or resources, and it can implement most mitigation actions.

Table 26: Capability Assessment Ranking Summary

Capability	Ranking
Planning and Regulatory	High
Administrative and Technical	High
Safe Growth	Moderate
Financial	Moderate
Education and Outreach	Moderate

6.1.1. Planning and Regulatory Capabilities Summary

The City utilizes the all-hazards approach when developing any jurisdictional plans, including emergency operations and continuity of operations, as well as the hazard mitigation plan.

The following plans have been newly developed or updated since the 2017 HMP:

- Comprehensive Plan
- Capital Improvements Plan
- Local Emergency Operations Plan

Capability Analysis: High

Significant planning and regulatory tools are in place within the City of Manassas and shed light on successes in integrating hazard mitigation planning with existing planning mechanisms. This demonstrates that the jurisdiction recognizes the benefit of incorporating hazard mitigation in local planning and regulatory processes such as the Comprehensive Plan, Capital Improvement Plan, and land development and floodplain regulations, as well as how to use these to develop and implement mitigation actions.

6.1.2. Administrative and Technical Capabilities Summary

- Planning and Zoning staff include planners, engineers, and a floodplain manager with an understanding of natural and non-natural hazards who are integrated into mitigation planning.
- The City maintains an Information Technology department with GIS personnel.
- City emergency management, county health department, and other staff are familiar with the community's hazards.
- City administration has a grant writer who coordinates with the hazard mitigation program.

The City identified the following departments and agencies as key stakeholders in its hazard mitigation planning process and implementation of the plan:

- Emergency Management and Security
- Fire Department
- Health Department
- Police Department

- Communications
- Public Works
- Department of Utilities
- Department of Community Development
- City Administration
- Manassas City Public Schools
- Risk Management
- Manassas Regional Airport
- Information Technology and GIS
- Engineering Department

Capability Analysis: High

The City of Manassas has a robust staffing capability that provides for a high level of coordination for the purpose of mitigation planning and action implementation. While enhancements in its administrative and technical capabilities were achieved through the increase in department and agency positions that have resulted from the COVID-19 pandemic, the need for continued funding for positions and ongoing education and training present an area for improvement.

Additional staff time is needed to fulfill the demands of the floodplain manager role. At present, only the floodplain engineering staff review for new/redevelopment of items is completed.

6.1.3. Safe Growth Capabilities Summary

- Land-use policies discourage development or redevelopment in natural hazard areas.
- Transportation plan limits access to hazard areas.
- Environmental systems that protect development from hazards are identified and mapped.

6.1.3.1. Capability Analysis Moderate

The City of Manassas has well-established safe growth regulatory and enforcement capabilities to limit or prevent inappropriate development in identified hazard areas and protect the natural environment.

6.1.4. Financial Capabilities Summary

- The City's capital improvements plan provides funding for projects outside of the jurisdiction's annual operational budget.
- The City has the authority to incur debt through general obligation bonds and/or special tax bonds, as well as fees for utility services and impact fees for new development.
- The City acquires state funding when applicable through SLAF and CWSRF.

Capability Analysis: Moderate

Onsite work restrictions imposed during the COVID-19 pandemic, started in March 2020 and continued throughout 2021, presented challenges to staff availability and coordination. To address these shortfalls, the city may access technical assistance available to potential applicants provided by many grant programs or expand its capabilities to develop and manage mitigation actions through contracted services.

From an engineering and stormwater perspective, risk reduction should be a primary driver in future project planning. Once the updated HMP is complete, it will be used similarly to the way that the City Strategic Plan and City Comprehensive Plan are in program planning.

6.1.5. Education and Outreach Capabilities Summary

The City of Manassas works alongside the following to educate the citizens that reside within the city limits.

- American Red Cross
- Volunteer Prince William
- Community Emergency Response Team
- Community outreach events
- Preparedness communities

Capability Analysis: Moderate

Jurisdictions have multiple opportunities to promote hazard mitigation and increase involvement of stakeholders and the public. There is a critical need to inform the additional stakeholders and the public about the benefits of hazard mitigation planning and implementation.

6.2. Capability Summary – Activities that Reduce Natural Hazard Risk or Impacts

As a component of the capability assessment, the City of Manassas identified activities related to each natural hazard that support risk reduction.

Table 27: Capability Summary-Activities that Reduce Natural Hazard Risk or Impacts

Hazard	Activity
Dam Failure (including Levees)	<ul style="list-style-type: none"> • Public education and operational plans address preparedness and response to reduce risk.
Drought	<ul style="list-style-type: none"> • Public education and operational plans address preparedness and response to reduce risk. • The Drought Contingency Plan outlines a strategy for monitoring and responding to drought or potential drought. • Land use and environmental policies acknowledge the importance of protecting the natural environment.
Earthquake	<ul style="list-style-type: none"> • State and international building codes provide for seismic design regulations.

Hazard	Activity
	<ul style="list-style-type: none"> Public education and operational plans address preparedness and response to reduce risk.
Extreme Temperature	<ul style="list-style-type: none"> Public education and operational plans address preparedness and response to reduce risk.
Flood/Flash Flood	<ul style="list-style-type: none"> Floodplain administration and regulations ensure that inappropriate activities and future development in the floodplain are prohibited. Stormwater management programs and projects address flood prevention and risk reduction.
High Wind/Severe Storm	<ul style="list-style-type: none"> State and international building codes provide for wind load design regulations.
Karst/Sinkhole/Land Subsidence	<ul style="list-style-type: none"> Land use and environmental policies acknowledge the importance of protecting the natural environment.
Tornado	<ul style="list-style-type: none"> Public education and operational plans address preparedness and response to reduce risk.
Winter Weather	<ul style="list-style-type: none"> Public education and operational plans address preparedness and response to reduce risk.
Non-Natural Hazards	<ul style="list-style-type: none"> Public education and operational plans address preparedness and response to reduce risk. Beginning with the 2022 NOVA HMP, hazard mitigation planning is being integrated into existing planning and risk reduction activities for technological and human-caused hazards.
Climate Change	<ul style="list-style-type: none"> Ongoing resilience planning will allow for identification and mitigation of climate change-related issues in future planning cycles.

7. Resilience to Hazards

7.1. National Risk Index

The National Risk Index (NRI) provides an overview of hazard risk, vulnerability, and resilience. The designation of “low risk” is driven by lower loss due to natural hazards, lower social vulnerability, and higher community resilience.

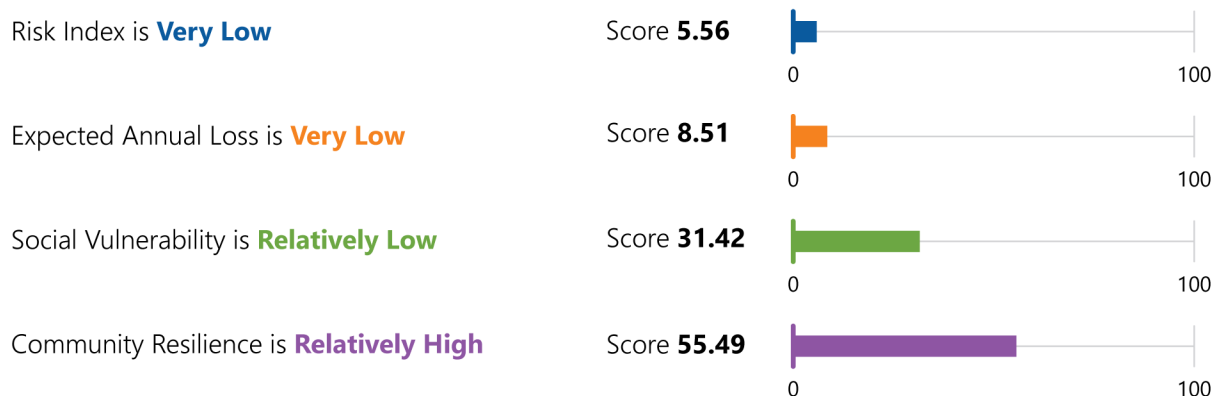


Figure 7: Summary of National Risk Index Findings, City of Manassas

The National Risk Index (NRI) is a dataset and online tool developed by the Federal Emergency Management Agency (FEMA) and other partners to help illustrate communities in the United States at risk for 18 natural hazards.

$$\text{National Risk Index} = \text{Expected Annual Loss} \times \text{Social Vulnerability} \div \text{Community Resilience}$$

Hazard risk is calculated based on data for a single hazard type and reflects the relative risk for that hazard type and should be considered only as a baseline relative risk measurement for the purpose of a general comparison with the local hazard risk ranking in the [Hazard Risk Ranking](#) section of this annex. In addition, some hazards are defined differently than the hazards in this plan, so a direct hazard-to-hazard comparison of risk is unable to be determined.

Based on the NRI findings, the highest five hazards by risk rating for the city are Strong Wind, Lightning, Tornado, Cold Wave, and Hail; however, even these hazards were ranked as “relatively low.” Drought, Landslide, and Wildfire received no rating. The city has determined it is not at risk for landslide or wildfire, and will not profile them as hazards in this update.

Hazard Types	Risk Index Rating	Risk Index Score		
Avalanche	Not Applicable	--		
Coastal Flooding	Not Applicable	--		
Cold Wave	Relatively Low	8.94	0 	100
Drought	No Rating	0.00	0 	100
Earthquake	Very Low	1.99	0 	100
Hail	Relatively Low	8.89	0 	100
Heat Wave	Relatively Low	8.18	0 	100
Hurricane	Relatively Low	5.04	0 	100
Ice Storm	Very Low	4.94	0 	100
Landslide	No Rating	0.00	0 	100
Lightning	Relatively Low	11.23	0 	100
Riverine Flooding	Very Low	3.14	0 	100
Strong Wind	Relatively Low	12.88	0 	100
Tornado	Relatively Low	10.85	0 	100
Tsunami	Not Applicable	--		
Volcanic Activity	Not Applicable	--		
Wildfire	No Rating	0.00	0 	100
Winter Weather	Very Low	8.36	0 	100

Figure 8: Hazard Type Risk Index, National Risk Index⁹

The NRI calculation does not follow the same criteria and formulas used in the hazard risk ranking methodology for this plan, but it is instead provided as a comparative measurement tool.

Table 28: City of Manassas Risk Score

Index	Score
Risk	5.56
Expected Annual Loss	8.51
Social Vulnerability	31.42

⁹ [Community Report - Manassas City, Virginia | National Risk Index \(fema.gov\)](https://www.fema.gov/national-risk-index)

Index	Score
Community Resilience	55.49

Table 29: Comparison of City of Manassas Scores with Virginia and National Average¹⁰

Index	City of Manassas	Virginia Average	National Average
Risk	5.56	6.50	10.60
Expected Annual Loss	8.51	9.22	13.33
Social Vulnerability	31.42	35.32	38.35
Community Resilience	55.49	54.92	54.59

7.2. Community Resilience Estimate

The Community Resilience Estimate (CRE)¹¹ is a data product produced by the United States Census Bureau that can be utilized to estimate potential community resilience to disasters by combining data from several sources to analyze individual- and household-level risk factors.

The index produces aggregate-level (census tract, county, and state) small area estimates that provide a tool for understanding how at-risk specific neighborhoods might be to disasters due to characteristics that may make specific segments of the population more vulnerable to the impacts and consequences of disasters. The 10 risk factors include the following:

1. Income-to-poverty ratio
2. Single or zero caregiver household
3. Unit-level crowding
4. Communication barrier
5. Aged 65 years or older
6. Lack of full-time or year-round employment (Household)
7. Disability
8. No health insurance coverage
9. No vehicle access (Household)
10. No broadband internet access (Household)

The estimate is categorized into three groups: zero risks, one to two risks, and three plus risks. The combination of data and analysis described in this section provides a comprehensive representation of the city's risk, vulnerability, and resilience to all hazards.

¹¹ <https://experience.arcgis.com/experience/b0341fa9b237456c9a9f1758c15cde8d/>

¹¹ <https://experience.arcgis.com/experience/b0341fa9b237456c9a9f1758c15cde8d/>

7.3. New Hazard Risk Challenges or Obstacles to be Monitored in the Next Planning Cycle

The City of Manassas identified specific hazard challenges and obstacles to be monitored in the next planning cycle:

- The risk of cyber-related incidents on critical infrastructure and key resource sites
- Impacts of climate change
- Increases in the number of excessive rainfall events that impact new areas with flooding

8. Mitigation Actions

8.1. Goals and Objectives

The City of Manassas Planning Group adopted the regional goal statement presented in [Section 8, Base Plan](#).

8.2. Status of Previous Actions

The City monitors actions and tracks progress through the periodic review, evaluation, revision, and update of the NOVA HMP. Some projects that contribute to risk reduction have been completed or are currently in progress, but have not been included in this plan for one of the following reasons:

- Project funding has been approved, received, or identified, and additional resources are not needed to complete the project.
- The project scope is inconsistent with the hazard mitigation planning goals defined in this plan.
- The responsible department, agency, or organization maintains an internal tracking system that documents progress and resulting risk reduction.

A comprehensive list of previous mitigation actions, including descriptions of progress made and current status, is presented in [Attachment 4](#) of this annex.

8.3. New Mitigation Actions

In addition to the actions carried forward from previous plans, the City of Manassas Planning Group identified 17 new mitigation actions to include in this plan. [Attachment 3](#) of this annex includes a table that summarizes each new and continued action, and describes the proposed activity, priority level, estimated cost, and lead agency.

Table 30: New Mitigation Actions Summary

2022 Action Item #	Agency/Department Mitigation Action
2022-1	Identification of Repetitive Loss and Severe Repetitive Loss properties.
2022-2	Public outreach and Alert Manassas expansion.
2022-3	Educate public on floodplain changes.
2022-4	Update zoning and development regulations for critical facilities.
2022-5	Improve access on Piper Lane and Observation Road during flooding periods.
2022-6	Install sensors on Piper Lane at the train trestle.
2022-7	Improve Security infrastructure at Manassas Regional Airport.
2022-8	Install a backup generator at the airport.
2022-9	Install communication relays.
2022-10	Install flood fencing at the airport.
2022-11	Install water/snow/ice sensors throughout the airfield.
2022-12	Provide routine inspections of the airport's main runway 16L/34R and parallel taxiway Bravo bridges.

2022 Action Item #	Agency/Department Mitigation Action
2022-13	Improve drainage throughout the airport.
2022-14	Install additional in-ground fire hydrants throughout the airport.
2022-15	Improve water piping of the airport.
2022-16	Inspect Public Works dams and Sumner Lake dam.
2022-17	Complete the Virginia Department of Conservation and Recreation (DCR) dam certification process.

8.4. Action Plan for Implementation and Integration

The Action Plan for Implementation and Integration describes how the City's hazard mitigation risk assessment and goals will be incorporated into its existing plans and procedures.

Table 31: Action Plan for Implementation and Integration, City of Manassas

Existing Plan or Procedure	Description of How Mitigation Will Be Incorporated or Integrated
Integrate goals into local comprehensive plan.	Action (CFI 7.3.5) to enhance the City's disaster preparedness, mitigation, and response by maintaining our emergency operations plans. This action will be a part of the City's Comprehensive Plans going forward.
Review/update land development regulations for consistency with mitigation goals.	Review the City Design and Construction Standards Manual (DCSM) and update regulations to align with mitigation goals as appropriate and permitted by state and local code.
Review/update building/zoning codes for consistency with mitigation goals.	Review local zoning and update as appropriate and permitted by state code. The City building code is adopted at the state level and the City does not have the authority to adopt specific local building regulations.
Maintain regulatory requirements of floodplain insurance program (NFIP).	Monitor regulations and update floodplain ordinance as necessary.
Continue public engagement in mitigation planning.	Pursue additional avenues to engage the public in mitigation planning.
Identify opportunities for mitigation education and outreach.	Incorporate mitigation information into existing public outreach plans.
Review/update stormwater plans and procedures for consistency with mitigation goals.	Propose review as part of annual mitigation plan actions review.
Review/update emergency plans to address evacuation and sheltering.	Continue to ensure evacuation and sheltering are included in future EOPs.
Maintain ongoing enforcement of existing policies.	Highlight the positive effects of mitigation during enforcement.

Existing Plan or Procedure	Description of How Mitigation Will Be Incorporated or Integrated
Monitor funding opportunities.	Emergency Management will notify stakeholders when funding becomes available.
Incorporate goals and objectives into day-to-day government functions.	Educate all stakeholders on mitigation so that it can be a factor in the day-to-day government functions.
Incorporate goals into day-to-day development policies, reviews, and priorities.	Educate all stakeholders on mitigation so that it can be a factor in the day-to-day development of policies, reviews, and priorities.

9. Annex Maintenance Procedures

9.1. Maintenance of the NOVA HMP, Base Plan

The point of contact for the Northern Virginia Mitigation Project Team is the facilitator for the process to monitor, evaluate, and update the **NOVA HMP, Base Plan**. This facilitator is responsible for initiating the annual activities, convening the NOVA Planning Team (made up of the Emergency Managers Group and Planning Group), and providing follow-up reports to designated entities defined in the method and schedule for the plan maintenance process, as outlined in **Section 3, Base Plan**.

Table 32: City of Manassas Plan Maintenance Responsibilities for the Northern Virginia Hazard Mitigation Plan, Base Plan

Activity	Responsibilities
Monitoring the Plan	<ul style="list-style-type: none"> • Represent the jurisdiction during the monitoring process. • Collect, analyze, and report data to the NOVA Planning Team. • Maintain records and documentation of all jurisdictional monitoring activities. • Assist in disseminating reports to stakeholders and the public. • Promote the mitigation planning process with the public and solicit public input.
Evaluating the Plan	<ul style="list-style-type: none"> • Represent the jurisdiction during the evaluation process. • Collect and report data to the NOVA Planning Team. • Maintain records and documentation of all jurisdictional evaluation activities. • Assist in disseminating information and reports to stakeholders and the public.
Updating the Plan	<ul style="list-style-type: none"> • Represent the jurisdiction during the planning cycle, including plan review, revision, and update process. • Collect and report data to the NOVA Planning Team. • Maintain records and documentation of all jurisdictional plan review and revision activities. • Help disseminate reports to stakeholders and the public.

9.2. Maintenance of the Jurisdiction Annex

In addition to maintenance of the **NOVA HMP, Base Plan**, the City of Manassas Emergency Management Specialist will facilitate the method and schedule for maintaining the **Jurisdiction Annex**.

9.2.1. Plan Maintenance Schedule

- Monitor: Annually and/or following major disaster(s)
- Evaluate: Annually and/or following major disaster(s)
- Update: Annual tasks over the five-year planning cycle; planning process in the fifth year

Table 33: City of Manassas Jurisdiction Annex Maintenance Procedure

Activity	Procedure and Schedule	Outcome
Monitoring the Annex	<ol style="list-style-type: none"> 1. Schedule the annual plan review with jurisdiction planning group. 2. Review the status of all mitigation actions using the Mitigation Action Implementation Worksheet (Section 3, Attachment A, NOVA HMP Base Plan). 	<p>Produce an annual report that includes the following:</p> <ul style="list-style-type: none"> • Status update of all mitigation actions • Summary of any changes in hazard risk or vulnerabilities and capabilities • Summary of activities conducted for the Action Plan for Implementation and Integration
Evaluating the Annex	<ol style="list-style-type: none"> 3. Schedule the annual plan evaluation with jurisdiction planning group. 4. Evaluate the current hazard risks, vulnerabilities, and hazard mitigation capabilities using the Planning Considerations Worksheet (Section 3, Attachment C, NOVA HMP Base Plan). 	Submit the annual report to the NOVA HMP Project Team Point of Contact
Updating the Annex	<ol style="list-style-type: none"> 1. Coordinate with Northern Virginia jurisdictions to identify the method and schedule for the five-year update of the NOVA HMP. 2. Participate in the planning process. 3. Provide input related to the plan's components. 4. Following FEMA Approvable Pending Adoption (APA) designation; adopt the updated plan. 	Adoption of the FEMA-approved plan every five years will maintain the jurisdiction's eligibility for federal post-disaster funding.

The City of Manassas will continue to be a planning partner of multiple jurisdictions and regional entities to identify hazard mitigation opportunities that reduce risk of the hazards identified in this plan.

10. Annex Adoption

The City of Manassas Jurisdiction Annex will be adopted simultaneously with the adoption of the *Northern Virginia Hazard Mitigation Plan*.

11. City of Manassas Attachments

- Attachment 1: Adoption Resolution
- Attachment 2: Documentation of Public Participation
- Attachment 3: Mitigation Actions

11.1. Attachment 1: Adoption Resolution

[This page is a placeholder for the Adoption Resolution for this Jurisdiction]

11.2. Attachment 2: Documentation of Public Participation



City of Manassas Fire Rescue Department

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City of Manassas, VA - Government ✓

2h · 🌐

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11.3. Attachment 3: Mitigation Actions

Table 34: Previous Mitigation Actions

Project No.	Agency/Department Mitigation Action	Lead Agency/ Department/ Organization	Hazard Type	Funding Source	Target Completion Date	Interim Measure of Success	Priority	Comments
2017-1	Evaluate Repetitive Loss and Severe Repetitive Loss properties within the City. Support mitigation of priority flood-prone structures through promotion of acquisition/demolition, elevation, flood proofing, minor localized flood control projects, mitigation reconstruction and, where feasible and appropriate, using FEMA HMA programs.	Engineering Department, Public Works, Emergency Management	<ul style="list-style-type: none"> • Dam Failure • Flood • High Wind/ Severe Storm 	FEMA Unified Hazard Mitigation Assistance	Ongoing	Obtain funding	High	Ongoing
2017-2	Train required City staff on NIMS/ICS.	All Agencies	<ul style="list-style-type: none"> • Dam Failure • Drought • Earthquake • Extreme Temperatures • Flood • High Wind/Severe Storm • Karst/Sinkholes • Tornado 	EMPG	Ongoing	Annual staff certifications	Low	This is being completed as new staff are hired

			• Winter Weather					
2017-3	Expand communications and notification participation through public outreach.	Emergency Management, CERT volunteers, Fire and Rescue Department-Safe Around Manassas Program (SAM)	All Hazards	Staff and volunteer resources, UASI grants, and private donations	2020	Complete outreach plan, prioritize outreach efforts, implement outreach to priority stakeholder/citizen groups, develop of marketing materials	Medium	SAM Program is in process with limited resources
2017-4	Educate citizens on use of Manassas Alert and expand communications and notification participation through public outreach.	Emergency Management Citizen Corps or CERT volunteers	All Hazards	Staff and volunteer resources	2020	Prioritize stakeholder groups for Manassas Alert outreach efforts	Medium	Ongoing
2017-5	Cross-train staff across departments to support critical functions.	Office of Emergency Management	All Hazards	City Staff resources	Ongoing	Develop a plan for cross-training staff	Medium	Ongoing as new staff are hired
2017-6	Update flood inundation maps.	Department of Public Works	<ul style="list-style-type: none"> • Dam Failure • Flood 	FEMA Risk MAP, City funds	Ongoing	Develop a plan (including schedule) for updating maps	Low	Completed in 2021; will be updated on a 4–5-year cycle
2017-7	Conduct annual outreach to each FEMA-listed repetitive loss and severe repetitive loss property owner, providing information on mitigation programs (grant assistance, mitigation measures, and flood insurance information) that can assist them in	Engineering Department, Department of Public Works	<ul style="list-style-type: none"> • Flood • High Wind/ Severe Storm 	FEMA Unified Hazard Mitigation Assistance Funding for qualified structures	Ongoing	Develop outreach materials or identify appropriate outreach materials for dissemination	Medium	Ongoing

	reducing their flood risk.							
2017-8	Support mitigation of priority flood-prone structures through promotion of acquisition/demolition, elevation, flood proofing, minor localized flood control projects, mitigation reconstruction and, where feasible and appropriate, using FEMA HMA programs.	Engineering Department, Department of Public Works	<ul style="list-style-type: none"> • Flood • High Wind/ Severe Storm 	FEMA Unified Hazard Mitigation Assistance Funding for qualified structures	Ongoing	Identify all priority flood-prone structures	Medium	Ongoing
2017-9	Promote structural mitigation to assure redundancy of critical facilities including, but not limited to, roof structure improvement to meet or exceed building code standards, upgrade of electrical panels to accept generators, etc.	Engineering Department, Office of Emergency Management, Community Development Department	<ul style="list-style-type: none"> • Dam Failure • Drought • Earthquake • Extreme Temperatures • Flood • High Wind/Severe Storm • Karst/Sinkholes • Tornado • Winter Weather 	FEMA Unified Hazard Mitigation Assistance Funding for qualified structures	Ongoing	Query local government building services staffs on effectiveness of provided information regarding the structural review	Medium	Ongoing
2017-10	Review locality's compliance with the National Flood Insurance Program with an annual review of the Floodplain Ordinance and any newly permitted activities in the 100-year floodplain. Additionally, conduct	Engineering Department, Department of Public Works	<ul style="list-style-type: none"> • Flood • High Wind/ Severe Storm 	City Funds	Ongoing	Establish a schedule of review and review committee (if necessary)	Medium	Ongoing

	annual review of Repetitive Loss and Severe Repetitive Loss property list requested of VDEM to ensure accuracy. Review will include verification of the geographic location of each repetitive loss property and determination of whether that property has been mitigated for, and by what means. Provide corrections if needed by filing form FEMA AW-501.							
2017-11	Conduct preparedness presentations in the community to ensure public awareness of steps the public can take to care for themselves during an emergency.	Emergency Management CERT, Fire and Rescue Department	<ul style="list-style-type: none"> All Hazards 	LEMPG, and UASI Citizen Corps (CERT) Grant	Ongoing	Complete outreach plan; development of outreach materials	Low	Ongoing
2017-12	Increase generator capacity at schools that function as shelters.	Manassas City Public Schools	<ul style="list-style-type: none"> All Hazards 	FEMA Unified Hazard Mitigation Assistance Funding	2024	Identify funding source	Medium	
2017-13	Increase snow removal capacity at shelter sites.	Manassas City Public Schools	<ul style="list-style-type: none"> Winter Weather 	City Funds	2018	Identify tools and process to increase capacity	Low	
2017-14	Maintain GIS planimetric data.	IT, GIS	<ul style="list-style-type: none"> Flood High Wind/ Severe Storm 	City Funds	2019	Create update schedule	Low	

			<ul style="list-style-type: none"> • Karst/Sinkholes • Tornado • Winter Weather 					
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Table 35: New Mitigation Actions

Project No.	Agency/Department Mitigation Action	Lead Agency/ Department/ Organization	Hazard Type	Funding Source	Target Completion Date	Interim Measure of Success	Priority
2022-1	Identify Repetitive Loss and Severe Repetitive Loss properties within the City. Support mitigation of priority flood-prone structures through promotion of acquisition/demolition, elevation, flood proofing, minor localized flood control projects, mitigation reconstruction and, where feasible and appropriate, using FEMA HMA programs.	Engineering Department	<ul style="list-style-type: none"> • Flood 	FEMA Unified Hazard Mitigation Assistance	2024	Secure funding	High
2022-2	Expand communications and notification participation through public outreach and expand program for Alert Manassas.	Emergency Management	<ul style="list-style-type: none"> • Dam Failure • Drought • Earthquake • Extreme Temperatures • Flood • High Wind/Severe Storm 	City funds	2023	Increase in opt-ins to the Alert Manassas system	Medium

			<ul style="list-style-type: none"> • Karst/Sink holes • Tornado • Winter Weather 				
2022-3	Educate public on flood plain changes.	Engineering Department, Communications	<ul style="list-style-type: none"> • Dam Failure • Flood 	City funds	2024	Create outreach materials	Low
2022-4	Update zoning and development regulations for critical facilities including gas stations and grocery stores to require generators or other resilient power supply systems are provided such that ice, food, gasoline, and other similar products may be acquired by consumers during time of extended power outages.	Community Development	<ul style="list-style-type: none"> • Dam Failure • Drought • Earthquake • Extreme Temperatures • Flood • High Wind/Severe Storm • Karst/Sink holes • Tornado • Winter Weather 	City funds	2024	Seek support from stakeholders	Medium
2022-5	Improve access on Piper Lane and Observation Road during flooding periods.	Manassas Regional Airport, Public Works	<ul style="list-style-type: none"> • Flood • High Wind/Severe Storm 	FEMA Unified Hazard Mitigation Assistance	2024	Identify ways to improve access	High
2022-6	Install sensors on Piper Lane at the train trestle to notify the emergency management teams of current conditions.	Manassas Regional Airport	<ul style="list-style-type: none"> • Dam Failure • Flood • High Wind/Severe Storm 	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium

2022-7	Improve Security infrastructure at Manassas Regional Airport through lighting protection, additional servers to store data, additional cameras to scan airport during weather systems.	Manassas Regional Airport	<ul style="list-style-type: none"> • Dam Failure • Drought • Earthquake • Extreme Temperatures • Flood • High Wind/Severe Storm • Karst/Sink holes • Tornado • Winter Weather 	FEMA Unified Hazard Mitigation Assistance	2024	Identify appropriate security measures	Medium
2022-8	Install a backup generator to aid in the operations of the airport during inclement weather or airport emergencies.	Manassas Regional Airport	<ul style="list-style-type: none"> • Dam Failure • Drought • Earthquake • Extreme Temperatures • Flood • High Wind/Severe Storm • Karst/Sink holes • Tornado • Winter Weather 	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium
2022-9	Install communication relays that would help during emergencies and hazardous weather.	Manassas Regional Airport	<ul style="list-style-type: none"> • Dam Failure 	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium

			<ul style="list-style-type: none"> • Drought • Earthquake • Extreme Temperatures • Flood • High Wind/Severe Storm • Karst/Sink holes • Tornado • Winter Weather 				
2022-10	Install flood fencing on the airport for flooding events to ensure the fencing does not get knocked down during flooding and security is maintained on the airport.	Manassas Regional Airport	<ul style="list-style-type: none"> • Dam Failure • Flood 	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium
2022-11	Install water/snow/ice sensors throughout the airfield to notify airport staff and others of conditions at the airport.	Manassas Regional Airport	<ul style="list-style-type: none"> • Dam Failure • Flood • High Wind/Severe Storm • Tornado • Winter Weather 	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium
2022-12	Provide routine inspections of the airport's main runway 16L/34R and parallel taxiway Bravo bridges.	Manassas Regional Airport	Earthquake	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium
2022-13	Improve drainage throughout the airport.	Manassas Regional Airport	Flood	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium

2022-14	Install additional in-ground fire hydrants throughout the airport as there are limited resources for fire fighters.	Manassas Regional Airport	<ul style="list-style-type: none"> • High Wind/ Severe Storm • Tornado • Winter Weather 	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium
2022-15	Improve water piping of the airport to create a continuous loop and improve the airport's water pressure.	Manassas Regional Airport	<ul style="list-style-type: none"> • Drought • Extreme Weather 	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium
2022-16	Inspect Public Works and Sumner Lake dams to see if they meet the threshold for the Virginia Department of Conservation and Recreation (DCR) dam safety regulations.	Engineering Department	Dam Failure	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium
2022-17	Complete the Virginia Department of Conservation and Recreation (DCR) dam certification process for Public Works and Sumner Lake dams if necessary.	Engineering Department	Dam Failure	FEMA Unified Hazard Mitigation Assistance	2024	Identify funding	Medium



City of Manassas Debris Management Plan January 2023



Flow Diagram for a Burning Operation

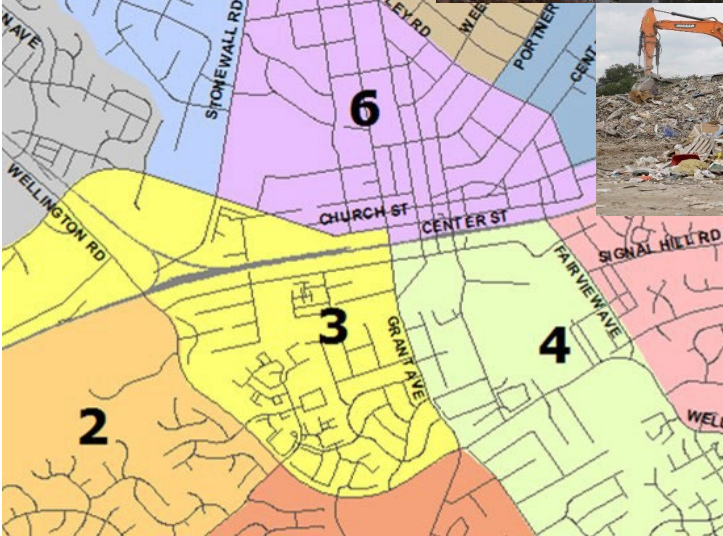
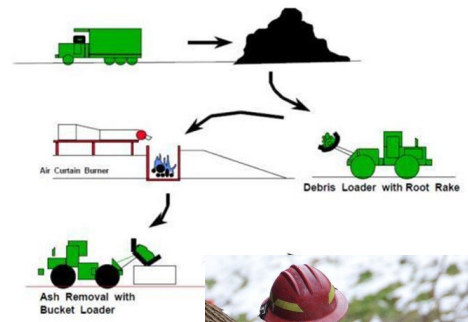


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Appendix B:	Debris Monitoring and Removal Pre-Approved Contractors Signed Contracts Equipment List
Appendix C:	Debris Zone Control Map
Appendix D:	Critical Facilities
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Appendix F:	Temporary Staging and Reduction Areas VA TDSR Operating Guidelines
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Forward

The Debris Management Plan supports the City of Manassas Emergency Operations Plan (EOP), which fulfills the Commonwealth of Virginia's requirement for each political jurisdiction to prepare and keep current plans to respond to disasters or large-scale emergencies.

This document is a result of the collaborative efforts among the City of Manassas departments and partner organizations that have assigned emergency roles and responsibilities. The final plan incorporates comments and suggestions received from a variety of stakeholders that provide debris monitoring, management and removal during times of disaster.

The Debris Management Plan (DMP) provides a comprehensive framework for the monitoring, management and removal of debris in the event of major emergencies and disasters within the City.

The DNP may be implemented before, during or following an event where the volume of debris generated exceeds ten thousand cubic yards (10,000CY) and it becomes necessary to mobilize the resources identified herein in order support the actions required by the EOP to save lives and protect property and infrastructure.

The successful implementation of the is contingent upon a collaborative approach with a wide range of partner agencies and organizations, regional jurisdictions, state, and federal government agencies that provide crucial support during emergency operations.

The DMP recognizes the significant coordination that is necessary and defines the functional roles and responsibilities of City departments and establishes the coordination mechanisms for a cohesive response while allowing flexibility in the response organization to respond as necessary to shifting developments and situations.

All City departments and partner organizations with identified roles and responsibilities are expected to understand this plan and to be prepared to execute the actions necessary to implement emergency debris removal operations.

The DMP is not intended as a stand-alone document. The Public Works Department and partner organizations should work in coordination and support of the EOP for the City of Manassas. All users of this document are encouraged to recommend changes.

Submitted by:

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Manassas, Virginia 20110
703-257-8252

Please direct all questions and comments
regarding this document to:

Colleen Burroughs

FEMA Compliance

In accordance with the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) Debris Management Plan Review Job Aid; the Debris Management Plan for the City of Manassas addresses the following required information, procedures and guidance for managing disaster debris in an expeditious, efficient and environmentally sound manner.

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Temporary Debris Management Sites and disposal locations	22-34 Appendix F
Debris removal on private property	32 Appendix I
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Authority

This plan is developed, promulgated, and maintained under the following Federal, State and Local statutes and regulations:

- Commonwealth of Virginia Emergency Operations Plan and Sub-plans, 2012
- Public Law 93-288 as amended by Public Law 100-107, the Robert T. Stafford Disaster Relief and Emergency Assistance Act, and in this plan "the Stafford Act."
- Public Law 81-920, Federal Civil Defense Act of 1950, as amended.
- CFR, Title 44, Part 200 et seq.
- City of Manassas Emergency Operations Plan, dated February 2013

Overview

Background

The institutions of the City of Manassas, along with the natural and built environment, present opportunities for a number of potential natural and technological disasters or emergencies. The Emergency Management Coordinator is responsible for planning and emergency preparedness, response and recovery, and mitigation activities. The City coordinates with all National Capital Region localities and the Virginia Department of Emergency Management (VDEM) in response to disasters, emergencies, severe weather conditions, and other catastrophic events.

The City subscribes to the guidance contained in the City's Emergency Operations Plan (EOP). The EOP establishes responsibilities for each City government agency and sets forth lines of authority and organizational relationships that are essential for the protection of the public. The EOP also establishes the concepts and policies under which all elements of the City government will operate during disasters and emergencies by providing for the integration of those resources.

This plan is based on guidance provided by the City's EOP. This plan focuses on the types of activities that are likely to be required during a disruption or emergency, without regard to the type or cause of that disruption or emergency.

Purpose

The Debris Management Plan shall in no way supersede the authority or process contained in either section 110 of the Virginia Statewide Fire Prevention Code or Section 105 of the Virginia Maintenance Code pertaining to the Fire Official or the Building Official inspecting a structure and rendering it unsafe for occupancy.

This plan has been developed to provide the framework for City government and other entities to clear and remove debris generated during a public emergency within the City of Manassas city limits that exceeds ten thousand cubic yards in volume (10,000CY). This plan unifies the efforts of public and private organizations for a comprehensive and effective approach to: Provide organizational structure, guidance, and standardized guidelines for the clearance, removal, and disposal of debris caused by a major debris-generating event.

- Establish the most efficient and cost effective methods to resolve disaster debris removal and disposal issues.
- Implement and coordinate private sector debris removal and disposal contracts to maximize cleanup efficiencies.
- Expedite debris removal and disposal efforts that provide visible signs of recovery designed to mitigate the threat to the health, safety, and welfare of City residents.
- Coordinate partnering relationships through communications and pre-planning with County, State, and Federal agencies that have debris management responsibilities.

General Approach

The City of Manassas is vulnerable to numerous natural and technological hazards, including severe weather and hazardous materials spills. Tropical storms, hurricanes, tornadoes, severe lightning, wind storms, hail and floods pose the highest natural threats to the City. Critical government and private facilities are potential targets for terrorist attack. The City can manage many disaster situations with internal resources. However, there are potential debris-generating events that may overwhelm the City's assets and capabilities.

This plan establishes the framework within which the City will respond and coordinate the removal and disposal of debris generated by potential manmade and natural disasters. This plan will also address the potential role that State and Federal agencies and other groups will take during a debris operation.

This plan defines the roles and responsibilities of local emergency managers with respect to debris planning prior to an event and actions following a major debris-generating event.

Planning Basis and Assumptions

Using the USACE models, natural disasters such as hurricanes, tornadoes, and ice storms precipitate a variety of debris scenarios which include, but are not limited to, trees and other vegetative organic matter, construction materials, appliances, personal property, mud, and sediment. Man-made disasters such as terrorist attacks may result in a large number of casualties and heavy damage to buildings and basic infrastructure. Crime scene constraints may hinder normal debris operations, and contaminated debris may require special handling. These factors will necessitate close coordination with local, State and Federal law enforcement, health, and environmental officials.

This plan takes an all-hazards approach to identifying and responding to the following hazards that may pose a threat to the City of Manassas:

- Natural Hazards – severe weather, hurricanes, tornadoes, flooding, hail, or earthquakes;
- Human-caused Events and Hazards – urban fires, special events, civil disorder, or transportation accidents; and
- Terrorist Incidents – bomb threats or attacks, sabotage, hijacking, armed insurrection, or Weapons of Mass Destruction (WMD) incidents.

The quantity and type of debris generated, its location, and the size of the area over which it is dispersed will have a direct impact on the type of removal and disposal methods, utilized the associated costs, and the speed with which the problem can be addressed. Further, the quantity and type of debris generated from any particular disaster will be a function of the location and type of event experienced, as well as its magnitude, duration, and intensity.

For planning purposes and for pre-positioning response assets, this plan assumes that the magnitude of the event exceeds the capacities of the City of Manassas of ten thousand cubic yards in volume (10,000CY) generated by a single event.

The fact that this plan is based on an event that exceeds the City of Manassas' capabilities in no way diminishes the value of the plan for use in response to other types and categories of events. This plan establishes a general framework that can, with minor modifications, be used in any debris-generating event.

This plan addresses the clearing, removal, and disposal of debris generated by the above hazards based on the following assumptions:

- A major natural or man-made disaster that requires the removal of debris from public or private lands and waters could occur at any time;
- The amount of debris resulting from a major natural disaster will exceed The City of Manassas' in-house removal and disposal capabilities;
- The City of Manassas will contract for additional resources to assist in the debris removal, reduction, and disposal processes;
- Federal assistance will be requested to supplement the City of Manassas' debris capabilities in coordination with the City's Debris Manager.

Debris Forecasting and Hazard Analysis (Events and Assumptions)

The purpose of a hazard analysis is to assess those hazards that have the potential to cause a low to moderate or moderate to high debris-generating event. Hazards with the potential of generating a significant amount of debris have been assessed for the purposes of this plan.

Geography and Climate

City of Manassas Statistics

Location:	38° 45' 5" N, 77° 28' 35" W
Elevation:	212'
Total Area:	10 sq. mi.
Land:	10 sq. mi
Water:	0.1 sq. mi.
Climate:	Köppen Climate Classification is "Cfa". (Humid Subtropical Climate)

Table 1: City of Manassas Statistics

The City of Manassas lies within the Piedmont plateau of Virginia and is characterized by relatively low, rolling hills with heights above sea level between 200 feet (50 m) and 800 feet to 1,000 feet (250 m to 300 m). Rocks in the Piedmont are frequently overlaid by a thick layer of decomposed rock called Saprolite, which is the red clay of Georgia. Saprolite is made up of clay minerals rich in silicon, aluminum, and some other elements, plus more or less pigmentary iron oxides and resistant minerals such as quartz.

According to the National Oceanic and Atmospheric Administration (NOAA), the highest probability of severe weather in the form of rain is between the months of September and November. The highest probability of severe weather in the form of snow is between the months of January and March. The area experiences occasional high winds and has experienced winds in excess of 50 mph, which led to a building collapse in February 2015.

General Hazard Analysis

The table below rates each hazard by quantifying the possibility of occurrence, the potential to generate debris, and the probability of having regional impacts.

Potential Disasters	Event Probability	Nature of Debris	Debris Generation Potential	Impact Potential
Flood	High	Construction and demolition Vegetative HHW eWaste White goods	Medium	High
Wind	High	Construction and demolition Vegetative	Low	Medium High
Tornado	High	Construction and demolition Vegetative HHW eWaste White goods	Medium High	High
Winter weather “Blizzards”	High	Construction and demolition Vegetative	Low	Low Medium
Drought	Medium High	Vegetative	Low	Low Medium
Earthquake	Medium	Construction and demolition Vegetative HHW , eWaste, White goods	Medium High	Medium High
Landslide	Medium Low	Construction and demolition Vegetative HHW, eWaste, White goods	Low – Medium	Low Medium
Wildfire	Medium Low	Construction and demolition Vegetative HHW, eWaste, White goods	Low – Medium	Medium High
Karst sink hole	Medium Low	Construction and demolition Vegetative HHW, eWaste, White goods	Low - Medium	Medium

Table 2: General Hazard Analysis

Event Analysis by Type

Using the USACE hurricane model, an analysis of the volume of potential debris generated and removal requirements have been postulated.

Hurricane Forecasting Model	
Population	41,705
Estimated Households	13,902
Storm Category	2
Vegetation Characteristic	Medium
Commercial/Industrial Density	Medium
Storm Precipitation Characteristic	Heavy
Q=H(C)(V)(B)(S)	
Q=Quantity of Debris (CY)	244,335.69
H=Number of Households	13,902
C=Storm Category Factor (CY)	8
V=Vegetation Multiplier	1.3
B=Commercial/Business/Industrial Multiplier	1.3
S=Storm Precipitation Characteristic Multiplier	1.3
Total CY of Debris	244,335.69

Table 3: Hurricane Event Analysis

Ice Storm Forecasting Model	
Population	41,705
Estimated Households	13,902
Ice Accumulation (in inches)	1.50"
Wind Speed (mph)	<15
Vegetation Characteristic	Medium
Commercial/Industrial Density	Heavy
Q=H(C)(W)(V)(B)	
Q=Quantity of Debris (CY)	164,456.72
H=Number of Households	13,902
C=Storm Category Factor (CY)	7
W=Wind Speed Multiplier	1
V=Vegetation Multiplier	1.3
B=Commercial/Business/Industrial Multiplier	1.3
Total CY of Debris	164,456.72

Table 4: Ice Storm Event Analysis

<i>Tornado Forecasting Model</i>	
Population	41,705
Estimated Households	13,902
Number of Sq Mi	8.00
Households per Sq Mi	1,738
Estimated Households Impacted	3,718
EF Scale	3
Width of Tornado	0.174242424
Length of Tornado on the Ground	12.281
EF Scale Debris Factor	120.95
Vegetation Characteristic	Medium
Q=H(D)(F)(V)(B)	
Q=Quantity of Debris (CY)	584,673.95
H=Number of Households Affected	3,718
F=EF Scale Debris Factor	120.95
V=Vegetation Multiplier	1.3
<i>Total CY of Debris</i>	584,673.95

Table 5: Tornado Event Analysis

The availability of equipment is predicated on the actual event. Please see Appendix B and Appendix E for a listing of available equipment.

Federal Assistance

Regardless of the scope of a disaster, the affected communities and states often need the assistance of the Federal government when responding to and recovering from the event. It is not necessary for the community to exhaust its resources before it requests Federal assistance.

The City Manager and the Emergency Management Coordinator will request Federal assistance when the debris-generating event exceeds the City of Manassas in-house debris clearing, removal, and disposal capabilities. The request will be submitted through the Virginia Department of Emergency Management (VDEM). VDEM will forward the request for a mission assignment to the Federal Emergency Management Agency (FEMA).

Additionally, the U.S. Army Corps of Engineers (USACE) may provide a liaison to the City's Emergency Operations Center (EOC) when activated. This liaison will serve as an advisor to the EOC staff providing advice as needed and ensuring that the USACE is prepared to respond when tasked.

In cases where the damage and debris are so extensive that it exceeds local and state capabilities, FEMA may assign the U.S. Army Corps of Engineers (USACE) a mission to provide debris management assistance in support of the National Response Framework.

The USACE provides three types assistance in association with FEMA:

Direct Federal Assistance: The USACE undertakes the debris management mission, as assigned by FEMA. Direct Federal Assistance missions may consist of one or more of the following tasks:

- Right of Way Debris Removal
- Emergency Clearance
- Private Property Debris Removal
- Demolition
- Debris Removal from Drainage Structures
- Waterway Debris
- Technical Assistance: The USACE provides assistance to local governments in developing debris removal contracts and assisting with environmental issues, as well as training and coordination of FEMA and local government debris monitors.
- Federal Operations Support: The USACE provides oversight for FEMA of state and local debris operations.

The USACE will alert a Debris Planning and Response Team (PRT) and the Advance Contracting Initiative (ACI) Contractor under contract for that area and have them ready to respond when a mission assignment is received. Once the USACE receives a mission assignment from FEMA, the management groups for both the PRT and ACI Contractor will be available to meet with the City Debris Manager to conduct contingency planning as required.

The USACE will also provide staffing to the Debris Management Center (DMC) when activated to ensure a coordinated debris operation. USACE will coordinate with the DMC staff on the use of any pre-identified temporary debris storage and reduction sites (TDSR) and disposal sites, and identify/acquire other sites as required to accomplish the mission assignment.

While this request is being processed, local and State government officials should not delay in taking the necessary response and recovery actions. Such actions should not depend on the availability of Federal assistance.

Debris Management Staff Responsibilities

Debris Response and Recovery Organization and Responsibilities

One of the primary functions of this plan is to clearly delineate a basic organization and assign specific responsibilities. During debris operations, many issues will arise that are not specifically mentioned in this plan. However, responsibilities are sufficiently defined so that unexpected issues can be assigned and resolved efficiently.

This section of the plan provides a listing of primary debris-related responsibilities for directors and managers, as well as debris-specific assignments to address tasks and issues that normally arise during debris operations.

Phases of Response Operations

The Emergency Operations Plan for the City of Manassas outlines the phases of response operations for all Emergency Staff Functions (ESFs).

The following three phases will be used by the City of Manassas in conducting response operations:

- **Increased Readiness:** For disasters or events with an advance warning, such as a weather forecast or other warning, actions will be taken prior to the projected impact to save lives and protect property. During this phase, warning systems may be activated, resources mobilized and positioned for immediate use, the EOC activated, and evacuations implemented as appropriate.
- **Immediate Response:** During this phase, the emphasis will be on saving lives, controlling the situation, and minimizing the effects of the disaster. Immediate response activities are accomplished by City departments and organizations supported by local mutual aid resources and segments of the private sector. During this phase, an ICP and the EOC may be activated, emergency instructions issued to the public, and immediate response activities accomplished.
- **Sustained Response:** As the emergency continues, assistance is provided to those affected and efforts are made to reduce secondary damage. Regional and/or Statewide mutual aid and Federal assistance may be provided. Response support facilities may be established.

The EOC may be activated at one of three levels depending upon the nature and scope of the incident or potential incident. The EOC may also be activated for a significant planned event in order to monitor activities and provide for an effective response if necessary. The Director of Emergency Management, or designee, in cooperation with the Emergency Management Coordinator, will designate the level of activation and will ensure appropriate notifications are completed.

- **Monitoring:** Monitoring activation provides for increased monitoring capability beyond normal daily operations and will typically involve staff and representatives from key response departments such as Fire and Rescue and Police. Activities will focus on collecting, analyzing, and disseminating information and conducting appropriate contingency planning.
- **Partial:** Partial activation provides for a select activation of Emergency Support Function primary agencies and key support agencies that may be or will be engaged in the emergency situation.
- **Full:** Full activation will include most if not all primary and support departments and organizations identified within the EOP. At Full activation the EOC may operate 24 hours a day.

All departments and partner organizations are expected to provide a trained representative to the EOC with authority to make decisions and commit resources when requested.

Internal Notification and Warning

- All department point of contacts will be notified of the EOC activation by the Emergency Management Coordinator, or designee, through EVERBRIDGE messaging, emails and/or other available resources. City departments and organizations will notify their EOC representative(s) and other staff as appropriate through their internal notification process.
- The Director of Emergency Management, or designee, will notify the City Council of the activation of the EOC.
- Each ESF will be responsible for additional notifications necessary for emergency operations.
- Upon notification, identified EOC representatives shall report to the EOC at the appointed time and be prepared to carry out their assigned roles and responsibilities. Departments will provide appropriate representation to the EOC based upon the level of activation. Department representatives shall be prepared to staff the EOC until they are relieved by other department personnel or the incident is terminated.

Debris Manager

The Director of Public Works will assume the role of the City Debris Manager (DM). The City Debris Manager's responsibilities include, but are not limited to, the following with respect to any and all debris management issues:

- Provide a DMC Liaison Officer to the City Emergency Operations Center (EOC) to coordinate debris requests and actions as required.
- Provide a Public Works Debris Coordinator to the DMC staff to coordinate all agency debris assignments.
- Coordinate all media reports on debris operations with Public Information Officer (PIO).
- Provide personnel and equipment to assist in clearing major evacuation routes and access to critical facilities.
- Provide personnel and equipment to remove and dispose of debris.

- Provide personnel and equipment to operate and staff the Debris Contractor Oversight Team (DCOT) element of the DMC, including communications equipment, transportation, etc.
- Ensure that the DMC is provided all needed administrative staff and equipment support, including administrative support personnel, computers, desks, chairs, etc.
- Receive regular updates from the Debris Removal Coordinator (DRC) regarding cleanup progress and any problems encountered or expected.
- Identify agency staff members for debris management monitoring duties (Roving, Load Site, and Disposal Site Monitors) and provide list of names to the DCOT supervisor.
- Provide yearly training and refresher training for all personnel assigned to debris management monitoring responsibilities.
- Provide personnel and equipment to the Damage Assessment Team, as requested.
- Communicate timely information to the City Manager, PIO and the City EOC staff regarding the status of the debris clearing, removal, and disposal operations.
- Assure that the City is represented at all meetings with other government and private agencies involved with the debris cleanup operation.
- Coordinate with appropriate County, State, and Federal agencies, including FEMA, USACE, and others as appropriate.
- Implement the following notification system to rapidly notify appropriate staff as to where and when to report for duty. This system must be kept up-to-date to ensure key staff can readily be reached. The notification system should be maintained in such a manner that notification can be made at any time.

Level I

Involves an event likely to be within the capabilities of local government and results in only limited (does not require involvement beyond the duty officer and several assistants) need for State assistance. Typical daily activities continue while the event is monitored. Notification is limited to those agencies that have normal day-to-day emergency responsibilities or regulatory requirements. If the event occurs during non-duty hours, the duty officer may be required to report to the EOC to monitor the situation and respond to requests for assistance.

Level II

Involves any event that has the potential to develop into an emergency or disaster and will likely require the assistance of at least two or three City agencies. A limited staff will be in place in the EOC, staffed with City Emergency Support Function (ESF) personnel and those agencies essential to the response. Twenty-four hour staffing may be required. Daily activities are altered to accommodate the situation. All applicable agencies are alerted.

Level III

Involves an event which has become, or is becoming, an emergency or disaster and requires significant City and State response and possible Federal response and recovery assistance (local government capabilities clearly exceeded).

The direction and control, primary resources, mass care, and environmental and natural resources groups are at least partially staffed on a 24-hour basis in the EOC. Support agencies are alerted and most City ESF personnel are assigned to emergency/disaster functions. The governor will declare a State of Emergency. The City EOP is implemented. The Advanced Element of the FEMA Emergency Response Team (ERT) and State Liaison may be requested.

Level IV

Involves a declared disaster, which requires an extensive City and State response where the State and local governments are clearly overwhelmed. The City EOC, is fully staffed for 24-hour operations by all of the primary City agencies. The State requests implementation of the National Response Plan and the presence of the FEMA Region III State Liaison and the ERT, if not previously requested.

- Overall control of the DMC.
- Convene emergency debris coordinating meetings.
- Appoint a Debris Removal Coordinator (DRC) responsible for daily operational control of the DMC.
- Ensure that the DMC is provided all needed administrative staff support.
- Provide media relations in coordination with the City's Community Relations Office.

The Debris Manager will dispatch a DMC Liaison Officer to the City EOC to coordinate and respond to any debris removal or disposal request. Actions will focus on keeping track of Debris Control Zone assignments and progress of the initial debris clearance during Phase I of debris management operations from emergency evacuation routes and critical facilities. The DMC Liaison Officer will keep the City EOC staff informed of any problems encountered or expected.

Debris Removal Coordinator

The Debris Manager will be supported by a joint debris staff made up of personnel from Public Works Department (PW), and other City department staff personnel. The joint staff will constitute the daily operating element of the DMC.

The Debris Removal Coordinator (DRC) is responsible for daily operational control of the DMC staff. The DRC will receive current information on the severity of the disaster from the DMC Liaison Officer located at the City EOC. All requests for debris removal or disposal from the emergency response staff will go through the DMC Liaison Officer to the DRC. Requests for debris removal from public facilities and roadways will be reviewed and approved by the DRC before being directed to the appropriate DMC Debris Coordinators (PW) to implement the request.

- The DRC will appraise the extent of damage and resulting debris and issue directives to the appropriate Debris Coordinators who in turn will notify their departments to execute the tasking as defined by their department's Standard Operating Guidelines.
- The DRC will ensure that all contractor debris removal and disposal operations are properly monitored utilizing personnel assigned to the Debris Contractor Oversight Team (DCOT).
- The DRC will keep the City DM and DMC staff informed on all ongoing debris management operations through, at a minimum, daily meetings and/or reports.
- The DRC will maintain a daily journal and file on all debris related documents and issues.

Emergency Operations Center Debris Liaison Officer

The EOC Debris Liaison Officer will be located at the City EOC and will be responsible for coordinating with the DMC staff all requests for debris activities initiated by the City EOC staff.

Public Works Department Debris Coordinator

The Public Works Debris Coordinator will:

- Maintain a listing of all available Public Works equipment identified for possible debris clearing and disposal missions.
- Coordinate all Public Works debris assignments approved by the Debris Manager.
- Ensure that required logistical support is available, including cell phones, transportation, etc.
- Obtain all necessary regulatory permits for debris collection, reduction, temporary storage, and final disposal.
- Ensure that the Debris Manager is kept informed of cleanup progress and any problems encountered or expected.

Buildings and Grounds

The Manager of Buildings and Grounds (B&G) responsibilities include, but are not limited to, the following with respect to any and all debris management activities:

- Provide a B&G Debris Coordinator to the DMC staff to coordinate all B&G debris assignments.
- Provide personnel and equipment to assist Public Works in clearing major evacuation routes and access to critical facilities during Phase I of debris management operations.

- Provide personnel and equipment to assist in the removal and disposal of debris (Phase II) as directed by the DRC through the B&G Debris Coordinator.
- Provide specialized equipment and trained operators to assist in the clearing and removal of woody vegetation from along critical rights-of-way.
- Ensure that debris removal from parks and recreational facilities is coordinated through and approved by the Debris Manager through the B&G Debris Coordinator.
- Ensure that the B&G Debris Coordinator is provided all needed logistical support, including cell phones, transportation, etc.
- Ensure that the B&G Debris Coordinator keeps the Debris Manager informed of cleanup progress and any problems encountered or expected.
- Assist in TDSR site investigations.
- Provide digital map files of all identified B&G property greater than 10 acres.
- Coordinate with the Debris Manager for the removal, storage, burning, and disposal of debris at debris collection/management sites at B&G parks.

Buildings and Grounds Debris Coordinator

The B&G Debris Coordinator will:

- Maintain a listing of all available B&G equipment identified for possible debris removal and disposal missions.
- Coordinate all B&G debris assignments approved by the DRC.
- Ensure that required logistical support is available, including cell phones, transportation, etc.
- Ensure that the DRC is kept informed of cleanup progress and any problems encountered or expected.

Debris Management Center Staff

The DMC is organized to provide a central location for the coordination and control of all debris management requirements. The DMC will be located at the City of Manassas Public Works Buildings, 8500 Public Works Drive, Manassas VA 20110.

The DMC organizational diagram shown in Figure 1 identifies the DMC staff positions required to coordinate the actions necessary to remove and dispose of debris using both City and contractor assets.

Specific DMC staff actions will include the following:

- Making recommendations for City force account and contractor work assignments and priorities based on the City's Debris Control Zones. Appendix C contains a map showing the boundaries of the various Debris Control Zones.
- Reporting on debris removal and disposal progress, and preparing status briefings.
- Providing input to the PIO on debris removal and disposal activities.

- Coordinating with the County and State on debris issues affecting adjacent jurisdictions.
- Coordinating City debris removal and disposal operations with solid waste managers and environmental regulators from the County and State.
- Coordinating with the following Federal agencies in the event of a major natural or man-made debris-generating disaster that exceeds the City's capabilities:
 - Federal Emergency Management Agency (FEMA)
 - U.S. Army Corps of Engineers (USACE)
 - Local Office of the Federal Bureau of Investigation (FBI)

Public Information Officer

The City Manager's Office will provide a PIO to work directly with the DMC staff as and when required to disseminate information relevant to debris clean-up. The PIO will develop a proactive information management plan (please refer to the City of Manassas EOP for a full ESF description of duties.) Emphasis will be placed on actions that the public can perform to expedite the cleanup process. Social media, print, television, radio media and other communication tools will be used to encourage public cooperation for such activities as:

- Segregating Household Hazardous Waste (HHW)
- Placing disaster debris at the curbside
- Keeping debris piles away from fire hydrants and valves
- Reporting locations of illegal dump sites or incidents of illegal dumping
- Segregating recyclable materials; and
- Disseminate pickup schedules through the local news media.

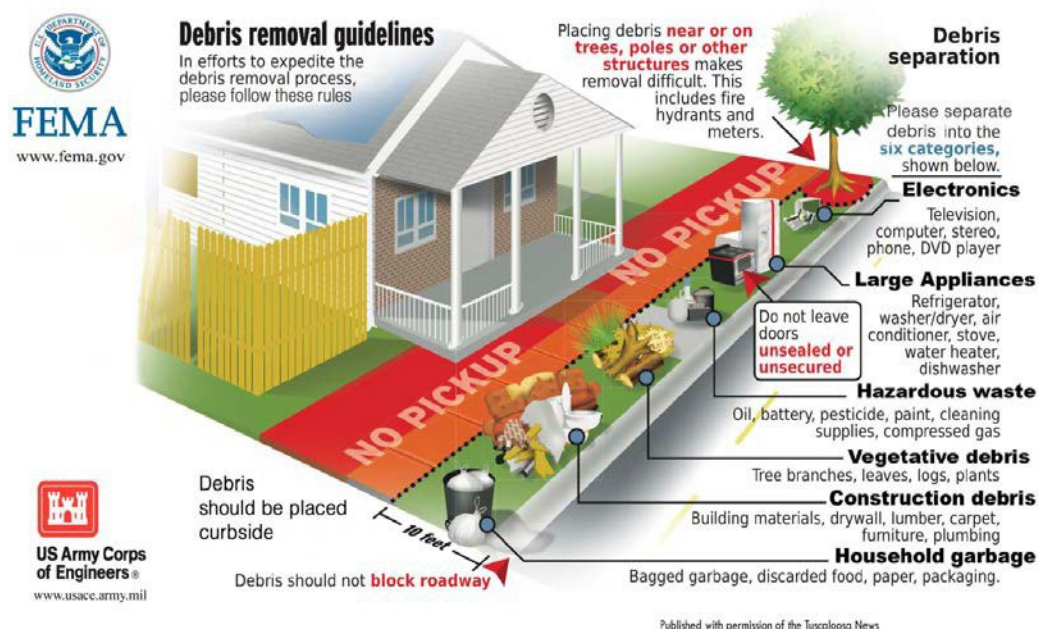


Image 1: Sample Debris Removal Flyer

The Debris Removal Contractor will operate an information hotline with a brief recording outlining segregation of debris at curbside and the reporting of private property damage by contractors. Allowing residents to obtain up-to-the-minute information immediately and on their own schedule, the hotline relieves the City of Manassas from becoming inundated with calls seeking information on debris collection.

Sample Radio Address

The sample radio address is as follows:

The City of Manassas has implemented a schedule for the removal of disaster-generated debris. We have established an efficient and effective system in coordination with our debris contractor, so you, the citizen, will know what to expect and how to have your storm-generated debris removed successfully.

Contractors are working seven (7) days a week, twelve (12) hours a day to collect ONLY storm-generated debris.

Debris collection zones have been divided into twelve (12) sections. All zones are being worked simultaneously with the goal of a coordinated, safe and efficient recovery. Debris contractors are collecting all the storm-generated debris moved to the curb from one subdivision/street/block in a zone before moving to the next.

Three (3) collection passes will be made:

- The first pass will be made on_____for fallen trees and vegetative debris, bulky material, large construction material, white goods and items that pose a health and safety risk.
- A second pass will be made on_____for large and small fallen trees and vegetative debris and large and small construction debris.
- A third and final pass will take place_____. Any and all remaining debris will be collected as designated and inspected by City Officials.
- Any debris placed out for collection after the FINAL PASS will not be collected by the City.

As you prepare to place your debris curbside for collection, please adhere to the following guidelines:

1. Do not place debris on top of utilities, for example: cable, phone, electrical, storm drain boxes or fire hydrants.
2. Please do not place debris in front of or around your mailbox.
3. Please do not place debris in front of or around your driveway, as emergency vehicles may need to enter the area.
4. Please drive with extreme caution in areas with large debris piles.
5. Please do not block or dump any debris into the storm drains or ditches. This will cause a flood hazard.

6. Please aid contractors by sweeping excess and loose debris from the street in front of your house.
7. Report damages that occur to your personal property to the Contractor Hotline, 1-866-932-0333.
8. Report drainage problems to City of Manassas Operations on (703) 257-8353.

We appreciate your patience, cooperation and assistance as we undertake this clean-up effort. For additional information, please call visit: www.manassascity.org/recovery or call the Trashline on (703) 257-8252.

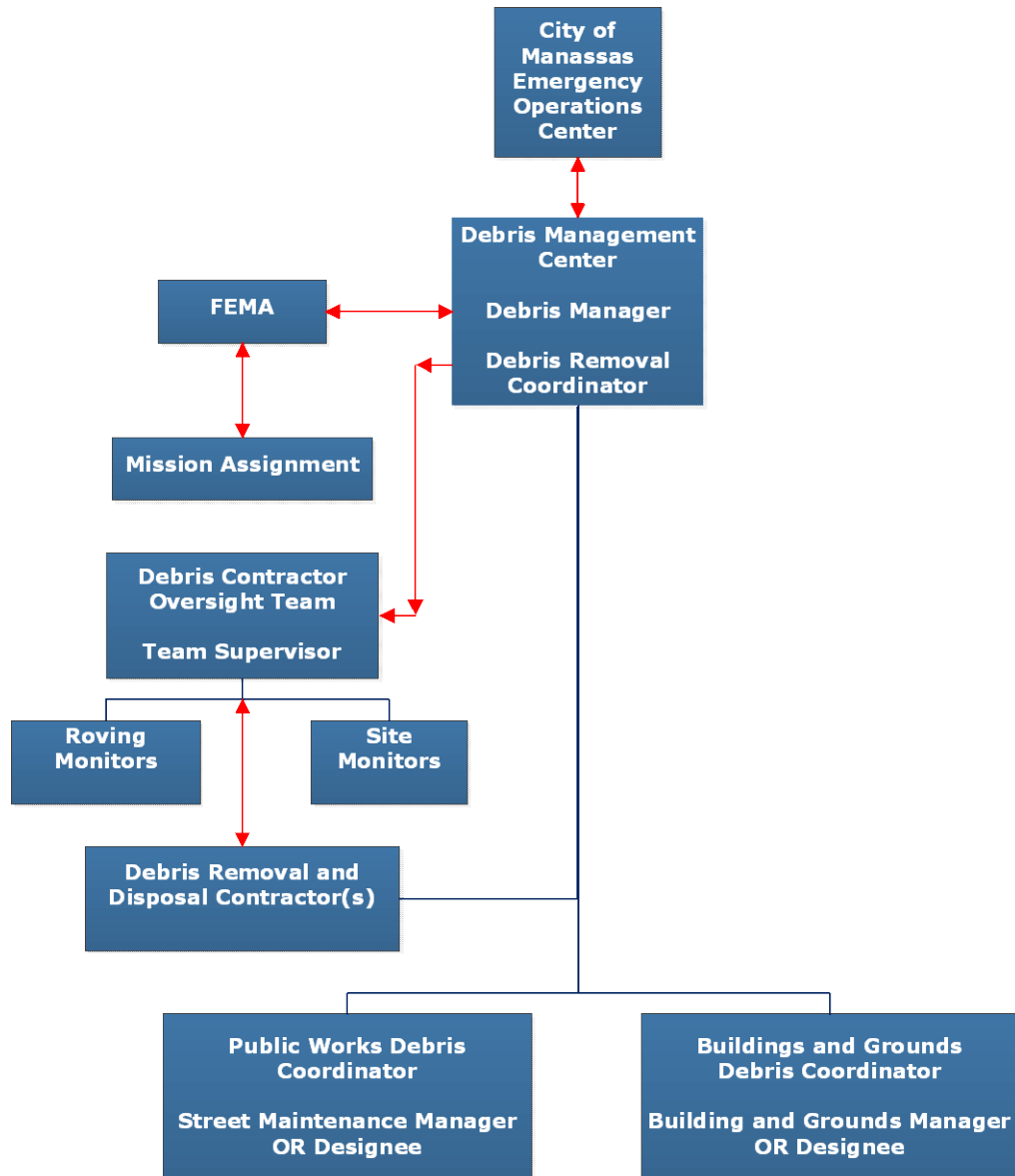


Chart 1: Debris Management Center Organization

Internal Debris Response and Recovery Support Agencies

Specific responsibilities of the various supporting agencies are shown in the sections that follow:

Fire Department

- Respond to fire and other emergencies at TDSR sites.
- Respond to request to investigate and handle hazardous materials incidents.
- Issue bans on open burning based upon assessment of local conditions and ensure dissemination of information to the public.

Police Department

- Assist in monitoring illegal dumping activities.
- Assist in monitoring TDSR sites to ensure compliance with local traffic regulations.
- Coordinate traffic control at all loading sites and at entrances to and from TDSR sites.

Community Development

- The Building Official and technical assistants to the Building Official will provide assessments of structures and the potential demolition of structures through Section 105 of the Virginia Maintenance Code.

Department of Health

- Assist in monitoring TDSR site operations and closeout activities.
- Assist as necessary on all environmental and health issues.
- (Refer to Prince William Health District SOPs)

Energy and Utilities

- Coordinate with the Debris Manager with regards to debris removal along electrical easements and rights-of-way to ensure that all lines are de-energized.
- Provide a debris coordinator to the DMC.

Finance Administration – Purchasing and Accounting

- Coordinate with the Debris Manager to identify, procure, inventory, and distribute critical resources, in coordination with other local and state governments, the federal government, private industry, and volunteer organizations, to effectively respond to and recover from the effects of a disaster.
- Provide timely financial management (payment of bills) as directed by the Director of Finance and Administration or his/her designee.

External Debris Response and Recovery Support Agencies

Specific responsibilities of the various supporting agencies are shown in the sections that follow:

Virginia Department of Emergency Management (VDEM)

- Coordinate with the Debris Manager to ensure needed financial, material and personnel resources are provided and assist with extended field operations.
- Provide planning advice, information and staff training to ensure that crews are prepared in advance of an event.

Virginia Department of Transportation (VDOT)

- Coordinate with the Debris Manager to ensure state roads bridges and tunnels are secured for fast and efficient response during an event and cleared of debris during recovery.

Virginia Department of Environmental Quality (VDEQ)

- Debris Manager to work in coordination with Virginia Department of Environmental Quality (VDEQ), Virginia Emergency Response Council (VERC) and its jurisdictional Local Emergency Planning Committee (LEPC) to identify, contain and dispose of harmful or Extremely Hazardous Substances (EHS).
- Coordinate with the Debris Manager to ensure needed financial, material and personnel resources are provided and assist with extended field operations.

Prince William County (PWC)

- Debris Manager to work in coordination with PrinceWilliam County and the debris removal contract to dispose of debris generated by the City that is beyond the capacity of regularly scheduled debris removal operations.

Debris Management Response and Recovery Operations

The City DM will be the single point of contact to coordinate and control all personnel and equipment responding to a major debris-generating event. This plan provides guidance for the efficient and effective control and coordination of initial debris assessments through debris clearance, removal, and disposal operations.

Damage Assessment Teams

The Building Official, with the assistance of other City departments and external agencies, is responsible for damage assessment of existing structures.

The Building Official will designate a Damage Assessment Coordinator (DAC) who will be responsible for organizing and deploying Damage Assessment Teams (DAT). The DAC is responsible for coordinating impact assessment for all City public structures, equipment, and debris clearance immediately following a large-scale disaster. Impact assessments are performed by DAT and used to prioritize impacted areas and resource needs.

The DAT will conduct initial zone-by-zone windshield surveys to identify the type of debris and to estimate amounts of debris on the roadways and on private and public property. The results of the windshield surveys will be provided to DRC and to the DMC Liaison Officer located at the City EOC.

The DRC will establish initial priority for debris clearance based upon the following ranking as provided by the Emergency Management Coordinator (EMC) through the Incident Command System (ICS):

- Extrication of people.
- Major flood drainage ways.
- Egress for fire, police, and Disaster Operations Center.
- Ingress to hospitals, jail, and special care unit.
- Major traffic routes.
- Supply distribution points and mutual aid assembly areas.
- Government facilities.
- Public Safety communications towers.
- Emergency Shelters.
- Secondary roads to neighborhood collection points.
- Access for utility restoration.
- Neighborhood streets.
- Private property adversely affecting public welfare.

Establishing Priorities for Debris Removal

The DMC Public Works Debris Coordinator will have the primary mission of coordinating the efforts of Public Works personnel to identify debris impacts on critical roads and make initial estimates of debris quantities. Based on this prioritization, the DRC will issue urgent assignments to clear debris from at least one lane on all evacuation routes and identified primary and secondary roads to expedite the movement of emergency service vehicles such as fire, police, and medical responders.

A listing of critical facilities is provided in Appendix D. A priority primary road clearance list is found in Appendix E.

During the debris clearance and removal process, the DMC staff will be responsible for coordinating with the Energy and Utilities Debris Coordinator and other utility companies (such as telephone and cable TV) as appropriate to ensure that power lines do not pose a hazard to emergency work crews.

Phase I – Initial Response

For ease of control and coordination, debris management operations are divided into two phases. Phase I will be implemented immediately after a debris-generating event to open emergency evacuation routes and roadways to critical facilities and affected neighborhoods. The major emphasis during this phase is to simply push debris from the traveled way to the rights-of-way or curb. This activity is commonly referred to as Debris Clearance. Little or no effort is made to remove debris from the rights-of-way.

Public Works will be responsible for implementing all Phase I activities with support as required from Buildings and Grounds and Utilities. Requests for additional assistance will be submitted to the DRC located at the DMC.

Phase I activities include:

- Implementation of the Debris Management Plan.
- Determination of incident-specific debris management responsibilities.
- Establishment of priorities based on evacuation needs and prediction models.
- Identification and procurement of TDSR sites.
- Activation of pre-positioned contracts, if necessary to support Phase I clearance operations.
- Implementation of Public Information Plan.
- Coordination and tracking of resources.
- Formal documentation of costs.

Phase II - Recovery

Phase II will be implemented within two to five days following a major debris-generating event, and will encompass the processes of debris removal and disposal. This delay is normal and allows time for affected citizens to return to their homes and begin the cleanup process. Debris must be brought to the rights-of-way or curb to be eligible for removal at public expense.

The City DM will be responsible for implementing all Phase II activities with support as required from Public Works, Buildings and Grounds and Utilities. All debris removal and disposal operations will be coordinated by the DRC located at the DMC. Phase II may be quite lengthy as disaster recovery continues until pre-disaster conditions are restored.

Phase II activities include:

- Activation of pre-positioned contracts.
- Notification to citizens of debris removal procedures.
- Activation of TDSR sites.
- Removal of debris from rights-of-way and critical public facilities.
- Movement of debris from TDSR sites to permanent landfills.

Phase II Debris Removal and Disposal Overview

The general concept of debris removal operations includes multiple, scheduled passes by each critical site, location, or rights-of-way. This manner of scheduling debris removal allows residents to return to their properties and bring debris to the edge of the rights-of-way as property restoration proceeds.

The City has been divided into 12 Debris Control Zones to control and expedite debris-removal and disposal operations (refer to Appendix C for zone delineation). The estimated quantity of debris that would be generated by a Category 2 Hurricane for the entire city is shown in Table 3.

JURISDICTION	CAT 2 HURRICANE DEBRIS ESTIMATE CUBIC YARDS	TDSR SITE REQUIREMENTS ACRES
City of Manassas	244,335 CY	15 Minimum – 20 Maximum

Table 6: City Debris Estimates

Calculations

- At 9.9 squares miles, the City of Manassas has potential damage covering 6,336 acres.
- The City of Manassas has a approximately 13,674 households. Debris estimate is based on the USACE Hurricane Model.
- The USACE model can also be used to arrive at estimated TDSR site requirements using the following formula:
 - Total volume per acre= 4,840 square yards (sy) x 3.33 yards (y) [Estimated debris pile stack height of 10 feet]. $4,840 \times 3.33 = 16,117$ cy per acre.

Phase II Debris Removal and Disposal Operations

The DRC and DMC staff will coordinate debris removal and disposal operations for all portions of the City. Phase II operations involve the removal and disposal of curbside debris by City force account and/or contractor crews. All City-hired debris removal and disposal contractor operations will be overseen by the Debris Contractor Oversight Team (DCOT).

Under this plan, mixed debris will be collected and hauled from assigned Debris Control Zones to City-designated TDSR sites or to designated landfill locations. Clean woody debris will be hauled to the nearest designated vegetative TDSR site for eventual grinding. A listing of TDSR sites can be found in Appendix F.

The primary tracking mechanism for all debris loaded, hauled, and disposed of under this plan will be the Load Ticket, which is shown in Figure 1. Load tickets will be initiated at pickup sites and closed-out upon drop-off of each load at a TDSR site or permanent landfill, and are to be used to document both City force account and contracted haulers. Load tickets will serve as supporting documentation for contractor payment as well as for requests for FEMA reimbursement, in the event of a Federal disaster declaration.

CITY OF MANASSAS LOAD TICKET	Ticket No. 000001
Section 1	
Prime Contractor:	Date:
Subcontractor (Hauler):	Departure Time:
Driver:	Truck Plate No.:
Measured Bed Capacity (cu. yds.):	
Debris Pickup Site Location: (must be a street address)	
Debris Type: <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <input type="checkbox"/> Vegetation <input type="checkbox"/> Mixed </div> <div style="text-align: center;"> <input type="checkbox"/> Construction & Demolition <input type="checkbox"/> Other: </div> </div>	
Loading Site Monitor:	
Print Name:	
Signature:	
Remarks:	
Section 2	
Debris Disposal Site Location:	
Estimate Debris Quantity: cu. yds.	Arrival Time:
Disposal Site Monitor:	
Print Name:	
Signature:	
Remarks:	
Copies: White – Load Site Monitor Green – Disposal Site Monitor Canary, Pink, Gold – Onsite Contractor's Representative or Driver	

Form 1: Sample Load Ticket

For tracking of all debris moved in response to a given event, the following is the disposition of each ticket part:

- Part 1 (White) Load Site Monitor (Turned in daily to the DMC)
- Part 2 (Green) Disposal Site Monitor (Turned in daily to the DMC)
- Part 3 (canary) Driver or Contractor's on-site representatives (Contractor Copy)
- Part 4 (pink) Driver or Contractor's on-site representatives (Contractor Copy)
- Part 5 (gold) Driver or Contractor's on-site representatives (Driver/Subcontractor Copy)

Debris Contractor Oversight Team

The Debris Contractor Oversight Team (DCOT) is responsible for the coordination, oversight, and monitoring of all debris removal and disposal operations performed by private contractors (see Appendix G, Debris Contract Oversight Team Standard Operating Guidelines, Debris Monitoring Training Presentation and Force Account Management Guidelines.)

The DCOT supervisor and team members will be detailed from Public Works, as well as from other City departments as required. The DCOT team may also be supplemented with contracted inspectors and other personnel as needed.

The DCOT team supervisor will be located at the DMC and will provide overall supervision of the three monitoring elements described below. Specific responsibilities include the following:

- Planning and conducting TDSR site inspections, quality control, and other Contractor oversight functions.
- Receiving and reviewing all debris load tickets that have been verified by a Disposal Site Monitor (see description below).
- Making recommendations to the DRC regarding distribution of City force account and Contractor work assignments and priorities.
- Reporting on progress and preparation of status briefings.
- Providing input to the City PIO on debris cleanup activities and pickup schedules.

The DCOT Supervisor will oversee the activities of three types of field monitors. The functions and responsibilities of the field monitors are described below (see also Appendix G, Debris Removal and Disposal Monitoring Plan).

Roving Monitors

Two-person teams of Roving Monitors will be assigned to specific Debris Control Zones or to a specific Contractor depending upon the distribution of work assignments. The Roving Monitors' mission is to act as the "eyes and ears" for the DRC and DCOT Supervisor to ensure that all contract requirements, including safety, are properly implemented and enforced.

Staff to fulfill the Roving Monitor positions will be provided by Public Works, a contractor, or from local government personnel. Roving Monitors will have the authority to monitor City contractor operations and to report any problems back to the DCOT Supervisor. Roving Monitors may request contract compliance, but do not have the authority to otherwise direct contractor operations or to modify the contract scope of work.

Roving Monitors will monitor debris operations on a full-time basis and make unannounced visits to all loading and disposal sites within their assigned debris management zone(s). In addition, Roving Monitors shall do the following:

- Assist in the measuring of all Contractor trucks and trailer with the contractor's representative. Take photographs of all trucks and trailers.
- Obtain and become familiar with all debris removal and disposal contracts for which they are providing oversight.
- Observe all phases of debris management operation, to include loading sites and TDSR sites.
- Prepare a daily written report of all contractor activities observed to include photographs.
- Periodically monitor each TDSR site to ensure that operations are being followed as specified in the applicable Debris Removal and Disposal Contract with respect to local and Federal regulations and the Debris Removal and Disposal Monitoring Plan (Appendix H).

Roving Monitors will also submit daily written reports to the DCOT supervisor outlining their observations with respect to the following:

- Is the contractor using the site properly with respect to layout and environmental considerations?
- Has the contractor established environmental controls in equipment staging areas, fueling, and equipment repair areas to prevent and mitigate spills of petroleum products and hydraulic fluids?
- Are plastic liners in place under stationary equipment such as generators and mobile lighting plants?
- Has the contractor established appropriate rodent control measures?
- Has the contractor established procedures to mitigate dust, noise, and traffic flow?

Roving Monitors' reports will also include written observations at loading sites, disposal sites, and the locations of any illegal dumping sites. If the monitor sees a problem they are to notify the DMC immediately and take photographs of the site.

Load Site Monitors

Load Site Monitors will be stationed at designated Contractor debris loading sites. The Load Site Monitors' primary function is to verify that debris being picked up is eligible under the terms of the contract.

Load Site Monitor positions will be staffed from Public Works or a contractor, and will be supplemented by other City department personnel depending on the magnitude of the debris-generating event. Load Site Monitors will be assigned to each contractor's debris loading site within designated Debris Control Zones, and will initiate and sign load tickets as verification that the debris being picked up is eligible.

Disposal Site Monitors

Disposal Site Monitors will be located at TDSR sites as identified by the DMC throughout the recovery process. The Disposal Site Monitors' primary function is to ensure that accurate load quantities are being properly recorded on pre-printed load tickets. See Figure 1 above.

At each TDSR site and landfill disposal site, the contractor will be required to construct and maintain a monitoring station tower for use by the Disposal Site Monitor. The contractor will construct the monitoring station towers of pressure treated wood with a floor elevation that affords the Disposal Site Monitor a complete view of the load bed of each piece of equipment being utilized to haul debris. The contractor will also provide each site with chairs, table, and portable sanitary facilities.

The Disposal Site Monitor will estimate the quantity (in cubic yards) of debris in each truck/trailer entering the contractor's selected temporary TDSR site and will record the estimated quantity on pre-numbered debris load tickets. The contractor will only be paid based on the number of cubic yards of material deposited at the disposal site as recorded on debris load tickets. This is to be completed for all types of debris removal contracts and force account vehicles.

Disposal Site Monitors will be staffed by Public Works personnel, or a contractor, depending on the magnitude of the debris-generating event. The Disposal Site Monitors will be stationed at all TDSR sites for the purpose of verifying the quantity of material being hauled by the contractor. The Disposal Site Monitor will be responsible for closing out and signing each load ticket and returning a copy to the DCOT Supervisor at the end of each day.

Refuse and Recycling Contractor

The City of Manassas currently contracts refuse and recycling for residential collection. If at any time a debris-generating event occurs and any refuse and recycling contractor is in use by the city, the contractor will continue to pick-up refuse in accordance with current procedures, routes, and removal schedules. They will not haul disaster debris unless expressly authorized by the DRC.

Household Hazardous Waste and White Goods Drop-Off Locations.

The City of Manassas does not have a facility for the collection of Household Hazardous Waste (HHW). The City DM will coordinate with County officials and local Environmental Protection Agency (USEPA) officials for the collection of eligible industrial or commercial hazardous waste resulting from the disaster. Residents will be required to separate and transport HHW to the pre-identified drop-off point.

The City of Manassas currently contracts the collection of white goods through the contract for refuse and recycling collection. White goods are defined as discarded household appliances including, refrigerators, freezers, air conditioners, heat pumps, ovens, ranges, washing machines, clothes dryers, water heaters, etc. Refrigerants and other machine fluids are regulated and will only be reclaimed by certified technicians and disposed of at a permitted facility. To avoid the

releases of refrigerants or oils, the collection of white goods will be accomplished carefully by manually placing the appliance on trucks or by using lifting equipment that will not damage the elements that contain refrigerants or regulated oils. The City DM will coordinate with the refuse and recycling contractor, County officials and local Environmental Protection Agency (USEPA) officials for the collection of white goods. Residents will be required to segregate these materials from other types of debris.

Utility Property

City of Manassas and other utility crews will remove and dispose of all utility related debris such as, power transformers, utility poles, cable, and other utility company material.

Equipment Assets

A table summarizing the equipment that details the equipment that Public Works and Utilities currently has in inventory that could be used to assist with debris removal is updated and maintained in the City DMC. Please see Appendix B and Appendix E for a listing of available equipment within Public Works and through our Debris Removal contractor.

Contractor Debris Removal and Disposal Operations

The City recognizes that disasters may generate debris of types and quantities that exceed the City's capabilities. Thus, the City will implement a pre-positioned contracting process to have contractors on stand-by to respond within a pre-determined time period to assist in requested aspects of the debris operation.(Appendix B, Approved Contractor List)

The City DM or his or her authorized representative will contact the firm(s) holding pre-positioned debris removal and disposal contract(s) and advise them of impending conditions. The scope of the pre-positioned contract provides for the removal and lawful disposal of all natural disaster-generated debris, excepting household, industrial, or commercial hazardous waste. Debris removal will be limited to City-maintained streets, roads, and other public rights-of-way based on the extent of the disaster. Debris removal will be limited to disaster related material placed at or immediately adjacent to the edge of the rights-of-way by residents within designated Debris Control Zones.

Each contractor, upon receipt of notice to proceed, will mobilize such personnel and equipment as necessary to conduct the debris removal and disposal operations detailed in the contractor's General Operations Plan (required by the Debris Removal and Disposal Contract). All contractor operations will be subject to review by the City DM and DRC.

The contractor will make multiple, scheduled passes of each site, location, or area impacted by the disaster according to assigned Debris Control Zones and as directed by the DRC. Schedules will be provided to the City PIO for publication and notification to the news media.

The load ticket, coupled with inspections by Roving, Load Site, and Disposal Site Monitors, will be the primary mechanism for monitoring contractor performance and tracking quantities for pay purposes.

Federal support will be requested if the incident is beyond the City's capability and its contractors. The USACE will be tasked by FEMA through the mission assignment process to provide the necessary support to the City.

The USACE will respond by providing trained and experienced Debris PRTs that are responsible for managing the debris mission from removal to final disposal. These tasks are accomplished utilizing pre-awarded contracts to private industry Contractors experienced in debris removal operations. The USACE also has Debris Subject Matter Experts available to provide advice and support to the contractor and the DMC staff.

Temporary TDSR Sites and Landfills

The City recognizes the economic benefits of debris volume reduction, and will realize this benefit through the use of local TDSR sites for processing of clean woody debris. A listing of TDSR sites and landfills is located in Appendix F.

Contractors will operate the TDSR sites made available by the City. Each contractor will be responsible for all site setup, site operations, rodent control, closeout, and remediation costs at each of its sites. The contractor is also responsible for the lawful disposal of all by-products of debris reduction that may be generated.

The contractor will restore the TDSR sites as close to the original condition as is practical so that it does not impair future land uses. All sites are to be restored to the satisfaction of the DRC with the intent of maintaining the utility of each site.

Contractors are also expected to haul and manage construction and demolition (C&D) waste. C&D materials will be hauled to TDSR sites for temporary sorting and storage until final disposal arrangements are made.

It is important to note that all material deposited at TDSR sites will eventually be taken to a properly permitted landfill for final disposal. Under certain circumstances, the DRC may direct contractors to bypass C&D TDSR sites and approve the hauling of mixed C&D debris directly to a properly permitted landfill for disposal.

Load Ticket Disposition

The Load Ticket will be a 5-part pre-printed form (see Form 1 p.25).

At initiation of each load, the Load Site Monitor will fill out all items in Section 1 of the Load Ticket and will retain Part 1 (White Copy). The remaining copies will be given to the driver and carried with the load to the disposal site.

Upon arrival at the disposal site, the driver will give all four copies to the Disposal Site Monitor. The Disposal Site Monitor will complete Section 2 of the Load Ticket and retain Part 2 (Green). Parts 3, 4, and 5 will be given either to the Contractor's on-site representative or to the truck driver for subsequent distribution.

All trucks will be measured by the Contractor and DMC staff before the operation begins and periodically rechecked throughout the operation.

The contractor will be paid based on the number of cubic yards of eligible debris hauled per truckload. Payment for hauling debris will only be approved upon presentation of Part 4 (Pink) of the Load Ticket with the contractor's invoice.

Load tickets will also be completed and retained for City force account vehicles as a primary mechanism for tracking debris quantities deposited at TDSR sites.

Temporary TDSR Site Setup and Closeout Procedures

The contractor will be responsible for preparing and closing out a TDSR site in accordance with specification in the Debris Removal and Disposal Contract and guidance contained in Appendix H.

Hazardous Tree Abatement Operations

The hazardous tree abatement operations are governed by the Scope of Work outlined in the contract between the City and the pre-contracted Debris Monitoring and Debris Removal contractors, copies of which are attached in Appendix B. However, for emphasis, the City has reiterated certain critical FEMA eligibility points:

- If the damaged tree, limb or stump poses a threat to life and improved property, under FEMA regulations, that tree, limb or stump may be removed.
- Each hazardous tree, limb or stump slated for removal shall be GPS-tagged and photograph documented.
- Unstable and leaning trees along a public ROW or within a naturalized area, such as public parks, are eligible for removal. The City may choose to attempt to save the tree through straightening and bracing, if the cost of repair is less than the removal and disposal. A tree is deemed hazardous and eligible for removal if:
 - The tree is an immediate threat to public health and safety or improved property
 - It has a diameter at breast height (DBH) of six inches (6") or greater

AND one or more of these criteria:

- Fifty percent (50%) or more of the crown is damaged or destroyed
- A split trunk or broken branches that expose the heart wood
- Fallen or uprooted within a public use area
- Leaning at an angle greater than thirty degrees (30°)

Hazardous limb removal work shall consist of the removal and disposal of disaster-damaged limbs that are:

- Imminent and impending peril to the general public
- Greater than two inches (2") in diameter at the point of breakage
- Broken and still attached to the tree

Hazardous Stump Removal

The removal of hazardous stumps is a unique process requiring specialized equipment. As such, this process requires unique documentation and costing to realize full reimbursement, and meet the following criteria:

- 50% or more of the root-ball exposed
- Greater than 24" in diameter, as measured 24" above the ground
- Located on public property or a public ROW
- Immediate threat to public health and safety

Private Property Debris Disposal

Dangerous structures are the responsibility of the owner to demolish in order to protect the health and safety of adjacent residents. However, experience has shown that unsafe structures will often remain in place due to lack of insurance or absentee landlords. Care must be exercised to ensure that the City properly identifies structures listed for demolition.

Private Property Debris Removal (PPDR) will only be activated following a specific request from the City to the FEMA Federal Coordinating Office (FCO) for PPDR reimbursement and receipt of approval from the FCO on the specific request. The request shall include information pertaining to Public Interest Determination, documentation of legal responsibility, authorization for debris removal from private property, indemnification, duplication of benefits and environmental/historical review compliance.

The City DM will coordinate with the County and State and FEMA Public Assistance Officers regarding:

- Demolition of private structures.
- Removing debris from private property.
- Local law and/or code enforcement requirement.
- Historic and archaeological site restrictions.
- Qualified environmental contractors to remove hazardous materials such as asbestos and lead-based paint.
- Execution of Right-of Entry/Hold Harmless agreements with landowners. A sample Right-of-Entry/Hold Harmless agreement is shown in Appendix F.

Recycling Storm Debris

The intent is to recycle as much of the storm generated debris as feasible.

Vegetative Debris – volume reduced, processed yard trash/vegetative storm debris will be transported to agricultural fields for use as a soil amendment in accordance with DEP policies for use of such materials and/or to cogeneration power plants for use as boiler fuel.

Non-Vegetative, Non Hazardous Debris – These materials commonly referred to as C/D (construction demolition debris) will be directed to DEP permitted C/D recycling facilities, if financially feasible and if volumes do not exceed the 60,000 CY.

Permitting

All environmental and land-use variances permits necessary to establish temporary debris management sites shall be obtained. Debris operations will comply with all Federal, State, and local regulations. Several agencies may be involved in issuing permits.

The following is a list of potential permits that may be required in debris operations:

- Waste processing and recycling operations permit
- Temporary land-use variances or permits
- Traffic or entrance permits
- Air quality permits
- Water quality permits
- Coastal commission land-use permits
- HHW permits
- Fire department permits
- Freon removal from white goods
- Erosion and sediment control

Environmental Requirements

Following a disaster event, compliance with environmental protection laws and regulations is required. Federal and State Environmental Protection Agencies including but not limited to National Environmental Policy Act (NEPA), State Department of Environmental Quality and local Health Departments should be consulted for applicable regulatory requirements.

The City will execute debris operations in such a manner and extent to which is practicable that will minimize any significant affect to the environment. The NEPA requirements are made known to and adhered to by all Contractor(s) personnel. The Contractor(s) is also expected to have full understanding of the following:

- Robert T. Stafford Act (Public Law 93-288)
- Clean Water Act (CWA)
- Clean Air Act (CAA)

- Resource Conservation and Recovery Act (RCRA)
- Endangered Species Act (ESA)
- National Historic Preservation Act (NHPA)
- Fish and Wildlife Conservation Act (FWCA)
- Executive Orders: EO11988, EO11990, EO1289

All debris related activities shall be coordinate with Federal, State, and local agencies, including but not limited to EPA and the Historic Preservation Office to ensure compliance with environmental and historic preservation laws/regulations/policies and determining environmental monitoring and reporting requirements for TDSR's,

The agency shall also maintain records for historical purposes.

See Appendix I: Debris Clearing, Removal, and Disposal Guidelines

Health and Safety

All debris related activities shall be done in compliance with the health and safety requirements found in the City Code, which can be referenced from multiple locations, including the Internet and through VOSHA rules & regulations.

This administrative regulation enables the agency and their contractors to avoid accidents during debris recovery operations and to protect workers from exposure to hazardous materials. The health and safety strategy establishes minimum safety standards for the agency and contractor personnel to follow.

Debris operations involve the use of heavy equipment to move and process various types of debris. Many of these actions can pose safety hazards to emergency response and recovery personnel and the public. In addition to those safety hazards, exposure to certain types of debris, such as building materials that contain asbestos and mixed debris that contains hazardous materials, can pose potential health risks to emergency workers.

The health and safety plan provides emergency workers with information on how to identify hazardous conditions and specific guidelines on the appropriate and proper use of personal protective equipment.

Contracting/Procurement

Any procurement of additional debris services will be conducted in accordance with the City of Manassas procurement Regulations, the VA Procurement Act and Federal Register for 2 CFR Part 200¹.

Weapons of Mass Destruction/Terrorism Event

The handling and disposal of debris generated from a Weapons of Mass Destruction (WMD) or terrorism event will exceed the capabilities of the City and will require immediate Federal assistance.

Normally, a WMD or terrorism event will, by its very nature, require all available assets and involve many more Federal and adjacent State and County departments and agencies. The nature of the waste stream as well as whether or not the debris is contaminated will dictate the necessary cleanup and disposal actions. Debris handling considerations that are unique to this type of event include:

- Much of the affected area will likely be a crime scene. Therefore, debris may be directed to a controlled TDSR site by State and/or Federal law enforcement officials for further analysis.
- The debris may be contaminated by chemical, biological, or radiological contaminants. If so, the debris will have to be stabilized, neutralized, containerized, etc. before disposal. In such an occurrence, the operations may be under the supervision and direction of a Federal agency and one or more specialty Contractors retained by that agency.
- The presence of contamination will influence the need for pretreatment (decontamination), packaging and transportation.
- The type of contaminant will dictate the required capabilities of the personnel working with the debris. Certain contaminants may preclude deployment of resources that are not properly trained or equipped.

The City DM will continue to be the single point of contact for all debris removal and disposal issues within the City. Coordination will be exercised through the Emergency Support Function (ESF) #3 liaison located at the designated FEMA Joint Field Office.

In this type of event, the City will become a supporting element to the U.S. Army Corps of Engineers, and will operate as defined in the USACE WMD Emergency Response Plan (to be published).

¹ Federal Register , Title 2: Grants and Agreements, Subtitle A:Office of Management and Budget Guidance for Grants and Agreements: Chapter II: Office of Management and Budget Guidance, Part 200: Uniform Administrative Requirements, Cost Principles and Audit Requirements for Federal Awards
http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title02/2cfr200_main_02.tpl

Administration and Logistics

All City departments and agencies will maintain records of personnel, equipment, load tickets, and material resources used to comply with this plan. Such documentation will then be used to support reimbursement from any Federal assistance that may be requested or required.

All City departments and agencies supporting debris operations will ensure 24-hour staffing capability during implementation of this plan, if the emergency or disaster requires or if directed by the City DM.

All City departments are responsible for the four year review of this plan in conjunction with the four year update to the City EOP. It will be the responsibility of each tasked department and agency to update its respective portion of the plan and ensure any limitations and shortfalls are identified and documented, and work-around procedures developed, if necessary.

The review will consider such items as:

- Changes in Mission
- Changes in Concept of Operations
- Changes in Organization
- Changes in Responsibility
- Changes in desired contracts
- Changes in pre-positioned contracts
- Changes in priorities

This plan also may be updated as necessary to ensure a coordinated response as other Debris Management Plans are developed. Surrounding cities may also develop Debris Management Plans that should be coordinated with the City's plan and other emergency plans. This coordination is especially important with respect to allocation of resources such as temporary staging areas and disposal facilities.

Appendix A: Acronyms and Definitions

List of Acronyms

AC	Acre
ACI	Advance Contracting Initiative (USACE)
B&G	Buildings and Grounds
C&D	Construction and Demolition
CY	Cubic Yard
DAC	Damage Assessment Coordinator
DAT	Damage Assessment Team
DCOT	Debris Contractor Oversight Team
DM	Debris Manager (or City Debris Manager)
DMC	Debris Management Center
DOT	Department of Transportation
DPW	Department of Public Works
DRC	Debris Removal Coordinator
EMA	Emergency Management Agency
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
ERT-A	Emergency Response Team A
ES	Emergency Services
ESF	Emergency Support Function
FBI	Federal Bureau of Investigations
FEMA	Federal Emergency Management Agency
GSA	General Services Administration
HHW	Household Hazardous Waste
NRP	National Response Plan

PIO	Public Information Officer
PRT	Planning and Response Team
PW	Public Works Department
TDSR	Temporary Debris Staging and Reduction
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VDEM	Virginia Department of Emergency Management
WMD	Weapons of Mass Destruction

Definitions

Burning – Reduction of woody debris by controlled burning. Woody debris can be reduced in volume by approximately 95% through burning. Air curtain burners are recommended because they can be operated in a manner to comply with clean-air standards.

Chipping or Mulching – Reducing wood related material by mechanical means into small pieces to be used as mulch or fuel. Woody debris can be reduced in volume by approximately 75%, based on data obtained during reduction operations. The terms “chipping” and “mulching” are often used interchangeably.

Construction, Demolition and Land-Clearing Wastes – Any type of solid waste resulting from land-clearing operations, the construction of new buildings or remodeling structures, or the demolition of any building or structure.

Debris - Scattered items and materials that were broken, destroyed, or displaced by a natural disaster. Examples: trees, construction and demolition material, personal property.

Debris Clearance – Clearing the major road arteries by pushing debris to the roadside to accommodate emergency traffic.

Debris Removal – Picking up debris and taking it to a temporary storage site or permanent landfill.

Final Debris Disposal – Placing mixed debris and/or residue from volume reduction operations into an approved landfill.

Force Account Labor – In this context, State, tribal or local government employees or contracted daily workers engaged in debris removal activities work paid-for on the basis of time taken and material consumed. Read more: <http://www.businessdictionary.com/definition/force-account-work.html>

Garbage – Waste that is normally picked up by a designated department (such as the Department of Solid Waste Management, or a Contractor). Examples: food, plastics, wrapping, papers.

Hazardous Waste – Any waste or combination of wastes of a solid, liquid, contained gaseous or semisolid form which because of its quantity, concentration, or physical, chemical, or infectious characteristics may:

- Cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or
- Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Also includes material and products from institutional, commercial, recreational, industrial and agricultural sources that contain certain chemicals with one or more of the following characteristics, as defined by the Environmental Protection Agency: 1) Toxic, 2) Flammable, 3) Corrosive; and/or 4) Reactive. Such wastes may include, but are not limited to, those that are persistent in nature, assimilated, or concentrated in tissue or which generate pressure through decomposition, heat, or other means. The term does not include solid or dissolved materials in domestic sewage or solid dissolved materials in irrigation return flows, or industrial discharges, which are point sources subject to state or federal permits.

Household Hazardous Waste (HHW) – Used or leftover contents of consumer products that contain chemicals with one or more of the following characteristics, as defined by the Environmental Protection Agency: 1) Toxic, 2) Flammable, 3) Corrosive and/or 4) Reactive. Examples of household hazardous waste include small quantities of normal household cleaning and maintenance products, latex and oil based paint, cleaning solvents, gasoline, oils, swimming pool chemicals, pesticides, and propane gas cylinders.

Hot Spots – Illegal dumpsites that may pose health and safety threats.

Illegal Dumping – Dumping garbage and rubbish, etc., on open lots is prohibited. No garbage, refuse, abandoned junk, solid waste or other offensive material shall be dumped, thrown onto, or allowed to remain on any lot or space within the District.

Industrial Waste – Any liquid, gaseous, solid, or other waste substance, or a combination thereof resulting from any process of industry, manufacturing, trade, or business or from the development of any natural resources.

Monitoring – Actions taken to ensure that a Contractor complies with the contract scope of work.

Mutual Aid Agreement – A written understanding between communities, states, or other government entities delineating the process of providing assistance during a disaster or emergency. (See FEMA Response and Recovery Directorate Policy Number 9523.6, “Mutual Aid Agreements for Public Assistance,” dated August 17, 1999.)

National Response Plan – A plan that describes the mechanism and structure by which the Federal government mobilizes resources and conducts activities to address the consequences of any major disaster or emergency that overwhelms the capabilities of State and local governments

Recycling – The recovery and reuse of metals, soils, and construction materials that may have a residual monetary value: The City of Manassas encourages the voluntary participation of all of its residents to reduce the waste stream through recycling. Residents are strongly encouraged to recycle all items that are recyclable and throw away for ultimate landfill disposal only those items, which cannot be recycled. Special containers are provided at numerous manned recycling and solid waste centers for the storage and collection of:

- Newspapers
- Green glass
- Brown glass
- Clear glass
- Aluminum and bi-metal beverage cans
- PET plastic milk jugs
- HDPE plastic drink bottles
- Used motor oil
- Lead acid batteries
- Scrap metals and appliances including refrigerators, stoves, water heaters, etc.
- Composts including leaves, limbs, brush, and yard wastes

Refuse and Recycling – Department typically responsible for managing and overseeing the collection of municipal solid waste, construction debris, recyclables, and disaster-related debris. Also responsible for managing refuse and recycling contract and special use permit for Manassas Transfer Station.

Rights-of-Way – The portions of land over which facilities, such as highways, railroads, or power lines are built. Includes land on both sides of the highway up to the private property line.

Scale/Weigh Station – A scale used to weigh trucks as they enter and leave a landfill. The difference in weight determines the tonnage dumped and a tipping fee may be charged accordingly. Also may be used to determine the quantity of debris picked-up and hauled.

Street Department – Department typically responsible for clearing debris from the roads and rights-of-way.

Sweeps – The number of times a Contractor passes through a community to collect all disaster-related debris from the rights-of-way. Usually limited to three passes through the community.

Temporary Debris Staging and Reduction (TDSR) Site – A location where debris is temporarily staged until it is sorted, processed, and reduced in volume and/or taken to a permanent landfill.

Tipping Fee – A fee based on weight or volume of debris dumped that is charged by landfills or other waste management facilities to cover their operating and maintenance costs. The fee also may include amounts to cover the cost of closing the current facility and/or opening a new facility.

Trash – Non-disaster related yard waste, white metals, or household furnishings placed on the curbside for pickup by local solid waste management personnel. Not synonymous with garbage.

United States Army Corps of Engineers (USACE) – The primary missions of the USACE are the design and management of construction projects for the Army and Air Force, and to oversee various flood control and navigation projects. The USACE may be tasked by FEMA to direct various aspects of debris operations when direct Federal assistance, issued through a mission assignment, is needed.

Volume Reduction Operations – Any of several processes used to reduce the volume of debris brought to a temporary debris storage and reduction site. It includes chipping and mulching of woody debris, shredding and baling of metals, air curtain burning, etc.

White Metals – Household appliances such as refrigerators, washers, dryers, and freezers.

Appendix B:
Debris Monitoring and Removal
Pre-Approved Contractors

Table B-1

Debris Monitoring Firms

Company	Contact Information
Tetra Tech, Inc. 10308 Eaton Place, Ste. 340 Fairfax, VA 22030	Jonathan Burgiel, Business Unit President Phone: (321) 441-8511 Fax: (321) 441-8501 Email: tdr.contracts@tetrattech.com Web: www.tetrattech.com

Table B-2

Pre-Qualified Debris Removal Contractors

Company	Contact Information
Ceres Environmental Services, Inc. 6968 PROFESSIONAL PARKWAY SARASOTA, FL 34240	Tia Laurie, Corporate Secretary Phone: (800) 218-4424 Fax: (866) 228-5636 Email: tia.laurie@ceresenv.com Web: www.ceresenv.com



CITY OF MANASSAS, VIRGINIA

FINANCE DEPARTMENT
PURCHASING DIVISION

8500 Public Works Drive, Manassas, VA 20110 Telephone: (703) 257-8368 Facsimile: (703) 257-5813

Website: www.manassascity.org

CITY OF MANASSAS STANDARD CONTRACT FOR GOODS, SERVICES, CONSTRUCTION AND INSURANCE RESULTING FROM AN RFP

CONTRACT NO: 21P012A

SUBJECT: DISASTER DEBRIS MONITORING SERVICES

Between:

**CITY OF MANASSAS
8500 PUBLIC WORKS DRIVE MANASSAS, VA 20110**

CONTACT: COLLEEN BURROUGHS, REFUSE AND RECYCLING COORDINATOR
PHONE: 703-257-8252
FAX: 703-330-4429
E-MAIL: cburroughs@manassasva.gov

And the Contractor:

**TETRA TECH, INC.
10308 EATON PL, STE 340
FAIRFAX, VA 22030**

CONTACT: JONATHAN BURGIEL, BUSINESS UNIT PRESIDENT PHONE: 321-441-8511
FAX: 321-441-8501
E-MAIL: tdr.contracts@tetrattech.com

This Contract (hereinafter, "Contract") is entered into on and as of September 23, 2021, by and between the CITY OF MANASSAS, a municipal corporation of the Commonwealth of Virginia (hereinafter, "City"), and Tetra Tech, Inc., (hereinafter "Contractor"), for Goods, Services, Construction and/or Insurance identified herein, on the following terms and conditions.

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3. **BASIC TERMS:**

• **DEFINITIONS:**

Capitalized terms that are defined in the VPPA, City Policy, or the City's standard Request for Proposal for Goods, Services, Construction or Insurance have the same meanings in this Contract as are given in that law, policy, or Request for Proposal, except as provided below. Capitalized terms not defined in those sources but used in this Contract have the following meanings, unless the context clearly requires otherwise.

Undefined terms have their common meanings appropriate to their context.

- **City or Owner:** The City of Manassas, Virginia or its actually authorized agents. Unless the context clearly requires otherwise, such as for an affirmative vote of the elected body, the City Manager, Purchasing Manager, or other designee of City Council may always act on behalf of the City. Under Virginia law, no employee or agent may bind the City unless he or she has actual authority to do so; the doctrine of apparent authority has no application to municipalities.
- **City Policy:** The applicable provision contained in the City of Manassas Public Procurement Policy, as amended.
- **"Contract Administrator"** assigned to administer the Contract for the City is Ms. Colleen Burroughs, Refuse and Recycling Coordinator, 703-257-8252, but the City may designate a new Contract Administrator by notice to the Contractor.
- **"Contractor's Representative"** means the person who is responsible for the performance obligation of the Contractor under this Contract. The initial Contractor's Representative is Jonathan Burgiel, Business Unit President, 321-441-8511 but the Contractor may designate a new Contractor's Representative by notice to the City.
- **"Drug-Free Workplace"** means a site for the performance of work done in connection with a specific contract awarded to a Contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, dispensation, possession or use of any controlled substance or marijuana during the performance of the Contract.
- **"Notice of Default"** means a notice sent to the other party's designee (Contract Administrator for the City, Contractor's Representative for the Contractor) setting forth the facts showing that party to be in default under the Contract.
- **"Notice of Termination"** means a notice sent to the other party's designee (Contract Administrator for the City, Contractor's Representative for the Contractor) informing that party of the termination of the Contract as of a particular date.
- **"RFP"** means the Request for Proposal which led to the formation of this Contract.

- “Using Department” for purposes of this Contract shall mean Public Works Department.
- **PURPOSE OF THE CONTRACT:**
 - The Contractor hereby agrees to provide the following Goods, Services, Construction and/or Insurance to the City of Manassas:

Contractor to provide Disaster Debris Monitoring Services within the City of Manassas in the event of a natural or manmade disaster, per specifications of RFP 21P012.

- **CONTRACT PERIOD AND EXTENSIONS:**
 - The base term for this Contract shall be for one (1) year, September 23, 2021 through September 22, 2022 and may be renewed for four (4) additional one (1) year periods.
 - This Contract may be extended as provided in the RFP or by change order or amendment. The City shall give the Contractor reasonable written notice of intent to renew prior to the expiration date of the current Contract. In the absence of any notification to renew, the Contract shall automatically terminate on the expiration date specified in the Contract. Agreement to extend the Contract term shall not be final until the Contractor provides written acknowledgement of the extension. The option to renew shall be exercised at the sole discretion of the City.
 - No fixed price Contract, however, may increase the price by more than twenty-five percent of the amount of the Contract or \$50,000, whichever is greater, without a recorded affirmative vote of the City Council. The City may extend the term of this Contract for Services to allow completion of any work undertaken but not completed during the original term of the Contract.
- **CONTRACT AMOUNT:**

In return for the Goods, Services, Insurance and/or Construction of the RFP identified above, and subject to the Termination for Non-Appropriation provision of this Contract, the City certifies that sufficient funds are budgeted and appropriated and shall compensate the Contractor in accordance with the payment provision of this Contract as set forth herein:

FEE SCHEDULE		
1	Fixed Site Debris Monitors	\$ 32.00 per hour
2	Field Debris Monitors	\$ 32.00 per hour
3	Hazard Tree, Stump, or Tree Limb Hanger Removal Monitor	\$ 32.00 per hour
4	Data Manager/Reporting Supervisor	\$ 49.00 per hour
5	GIS Analyst/Mapping Coordinator	\$ 45.00 per hour
6	Project Manager	\$ 72.00 per hour
7	Emergency Operations Manager	\$ 64.00 per hour
8	Field Supervisor	\$ 45.00 per hour
9	Clerical Staff/Data Entry Clerk	\$ 0.00 per hour
10	Environmental Specialist	\$ 55.00 per hour
11	Additional Cost for providing an Automated Debris Data Collection system if used instead of paper load tickets.	\$ 2.00
12	Other typical items and cost	
	Project Coordinator	\$ 32.00 per hour

4. FORMATION:**• CONDITIONS PRECEDENT TO FORMATION:**

Before any Contract between the City and the Contractor is effective, the following conditions precedent must be satisfied. Satisfaction of these conditions is the responsibility of the Contractor. If, after performance under the Contract, the City learns that a condition precedent was not met, the City may, if permitted by law, ratify the Contract by affirmative recorded vote or may disclaim it, in its sole discretion.

- Insurance: If the RFP requires certain insurance, the Contractor must provide proof of insurance in the amounts required by the Bid with an insurance company licensed to do business in the Commonwealth of Virginia. As used in this provision, “proof of insurance” means a copy of the relevant portions of the insurance declaration page, or its equivalent, showing continuing coverage at the required amounts.
- Unless the Specifications state otherwise, the City shall be made an additional insured on all required policies of insurance.
- No change, cancellation (other than noted below), or non-renewal shall be made in any insurance coverage without a thirty (30) day written notice to the Purchasing Manager. Notice for cancellation due to nonpayment of premium shall be no less than fifteen (15) days. The Contractor shall furnish proof of insurance prior to any change or cancellation date. The failure of the Contractor to deliver such proof of insurance is grounds for termination of the Contract.

- Insurance coverage required hereunder shall be in force throughout the Contract period. Should the Contractor fail to provide proof of insurance within ten (10) days of written notice requesting such at any time during the Contract term, the City shall have the absolute right to terminate the Contract.
- Compliance by the Contractor and any subcontractors with the foregoing requirements as to carrying insurance shall not relieve the Contractor or any subcontractors of their liabilities and obligations under this Contract. The Contractor shall assume all on-the-job responsibilities as to the control of persons directly employed by it and of the subcontractors and any person employed by the subcontractors.
- The City may and will, if requested by Contractor, reasonably accept proof of insurance provided by subcontractors or partners of the Contractor covering risks and hazards relating to work to be performed by such subcontractor and partners, in lieu of proof of insurance provided by Contractor. However, this shall not relieve Contractor of any of its other duties under this Paragraph II.A.1.
- Bonds: If the Bid requires payment or performance bonds (or certified checks or bank draft or Irrevocable Letter of Credit), then bonds with surety satisfactory to the City attorney shall be submitted to the Purchasing Manager for approval.
- Permits and licenses: If the procurement of the Goods, Services, Insurance or Construction that is the subject of this Contract requires possession of any licenses or receipt of any permits other than construction permits, then Contractor shall obtain those licenses and permits.
- Payment of Debts: Contractor must pay all amounts shown as due to the City on the City's accounts, even if a dispute exists as to the debt's validity or enforceability.
- **PARTIES:**
 - The sole parties to this Contract are the City of Manassas and the Contractor.
 - The General Contractor remains responsible for work of the subcontractor(s) notwithstanding the naming of the subcontractor(s) in the proposal, and the City reserves the right to approve or reject any subcontractor(s) or substitute subcontractor(s).
 - It is understood and agreed that the Contractor is at all times herein acting as an independent contractor.

- Neither this Contract, nor any part hereof, may be assigned by the Contractor to any other party without the express written permission of the City in advance. No assignment without such permission will relieve the Contractor of any responsibility under this Contract.
- There are no intended third-party beneficiaries of this Contract, unless it is made available by rider for other governmental entities to use. Making the Contract available to them by rider is the sole extent of the intended third-party benefit.
- If this Contract is made available by rider for other governmental entities to use, any contracts formed between the Contractor and such other governmental entities shall be solely between those parties. The City shall not be a party to any of these Contracts.

• **AUTHORITY TO EXECUTE:**

By executing this Contract on behalf of Contractor, the Contractor's Representative warrants that he or she has full authority to do so.

• **INCORPORATION OF DOCUMENTS:**

The documents listed below in this Section IID are hereby incorporated by reference and fully made a part of the Contract. This Contract and the incorporated documents describe the subject of the Procurement, the particulars of its performance, the process and time for payment, and the rights and remedies of the parties (collectively, "the terms"). In case of any conflict between those documents' terms, the documents shall be given precedence in the following order, from highest to lowest:

- Section II of the Request for Proposal (if any), inclusive of any Addendums, except to the extent modified through negotiation permitted by the VPPA,
- This Contract,
- Sections I and III-VI, both inclusive, of the RFP (if any),
- The Proposal of the Offeror.

5. **PERFORMANCE:**

• **CONTACTS:**

In addition to the Contract Administrator and the Contractor's Representative, the parties may designate additional contacts for exchange of information.

- **BEGINNING PERFORMANCE**

Contractor shall not begin performance under the Contract until the Contract Administrator issues it a purchase order, Procurement Card order, or other notification to proceed.

- **RISK OF LOSS AND ACCEPTANCE OF WORK:**

- Contractor shall perform the work and deliver all Goods in accordance with recognized and customarily accepted industry practices, and performance shall be considered complete when the Contract Administrator approves the Services as acceptable. If the Contract Administrator rejects any deliverable, the Contractor shall be notified and shall have fourteen (14) calendar days from date of issuance of notification to correct the deficiencies and resubmit the deliverable.
- Unless the City provides the materials or supplies, the Contractor bears the risk of damage or loss for materials or supplies covered by the Contract until delivery to the designated point. If the City rejects any deliverable, the Contractor bears all risk of damage or loss on them after notice of rejection. The Contractor must remove rejected materials or supplies at its own expense promptly after notification of rejection, unless public health and safety require immediate destruction or other disposal of a rejected delivery. If the Contractor does not remove rejected materials within ten (10) days after notification of rejection, the City may return the rejected materials or supplies to the Contractor at Contractor's risk and expense or may dispose of them as abandoned property.

- **WARRANTY:**

- The Contractor warrants that all Services it performs and all Goods, Insurance, and Construction it delivers to the City will be of good quality and meet the specifications of this Contract and of all literature supplied by the Contractor as part of the selection process which led to the award of this Contract. "Literature" as used in this provision means any and all brochures, fliers, catalogs, Proposals, web sites, email, or other information, in whatever written form, relating to the quality, utility, economic advantages, or composition of the Goods or Services. This warranty is in addition to and does not substitute for the Contractor's warranties of title, against infringement, of merchantability, and of fitness for particular purpose under Virginia Code §§ 8.2-312, 8.2-314, and 8.2-315, which the parties expressly agree apply to this Contract.
- The Contractor shall furnish all guarantees and warranties that the terms of this Contract require to the Purchasing Manager before the City makes final payment on the Contract. Unless otherwise stated, manufacturer's standard warranty applies.

• **INVOICES:**

- Unless otherwise provided in the RFP, Contractor shall submit all its invoices for payment in the fiscal year in which the Goods, Services, Insurance or Construction were provided or within thirty days thereafter. The City operates on a fiscal year beginning on July 1 and ending on June 30 of each calendar year. Late invoices are subject to rejection if no appropriated funds are available for their payment.
- The invoice must be in the name of the Contractor unless the City has received and approved an assignment.
- The City will not be responsible for any cost or expenses of operation of any kind associated with Contractor's provision of Services pursuant to this Contract, except as set out herein. Contractor shall be entitled to no fees, bonuses, contingent payments, or any other amount in connection with the Services to be rendered hereunder except as set out herein. The City shall have no obligation to reimburse, pay directly or otherwise satisfy any taxes or other expenses of the Contractor in connection with the performance of its obligations under this Contract except as stated herein. If Contractor is deemed not to be an independent contractor by any local, state, or federal governmental agency, Contractor agrees to indemnify and hold harmless the City for any and all fees, costs, and expenses, including, but not limited to, attorneys fees incurred thereby.
- The Contractor shall submit a proper invoice detailing the Goods, Services, Insurance or Construction provided, in duplicate. Such invoice shall include a detailed breakdown of all charges and shall be based on completion of tasks or deliverables for the period of time being billed.
- Invoices shall be submitted to the address shown on the purchase order.

• **PAYMENT:**

- In return for the Goods, Services, Construction and/or Insurance that are the subject of this Contract, and subject to the provision of this Contract relating to "Termination for Non-appropriation," the City shall compensate the Contractor within thirty (30) days after receipt of proper invoice for the amount of payment due or thirty (30) days after receipt of the Goods or Services, whichever is later.
- The City reserves the right to withhold any or all payments or portions thereof for Contractor's failure to perform in accordance with the provisions of the Contract or any modifications thereto. The City will not pay for any rejected deliverable.
- With Construction contracts that provide for progress payments in installments based upon an estimated percentage of completion, the City shall retain 5% of the amount earned for work done and materials delivered as retainage, to be paid in the final payment to the Contractor.

- Within seven days after receipt of amounts paid to the Contractor by the City for satisfactorily completed performance, the prime contractor agrees to:
 - Pay the subcontractor for the proportionate share of the total payment received from the City attributable to the work performed by the subcontractor under that contract; or
 - Notify the City and subcontractor, in writing, of his intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment except for amounts properly retained as allowed under section 3 above.

If the Contractor after having received payment from the City fails to pay each subcontractor its proportionate share of the total payment, the Contractor shall be obligated to pay interest to each subcontractor on all amounts that remain unpaid after the seven days following receipt by the Contractor of payment from the City.

- Unless otherwise provided under the terms of this Contract or by statute, interest shall accrue at a rate of one percent per month against the Contractor on any unpaid amounts owed to each subcontractor.
- The Contractor shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor.
- A Contractor that is an individual must provide his or her social security number and a Contractor that is any form of business entity must provide its federal employer identification number on a completed W-9 "Request for Taxpayer Identification Number and Certification" form, to be mailed to the City of Manassas, Accounting Division's Office, 9027 Center Street, Room 303, Manassas, VA 20110. A copy of this form can be downloaded from <http://www.irs.gov/pub/irs-pdf/fw9.pdf>. This information is required before payment can be made.

6. TERMINATION OF CONTRACT:

- **TERMINATION FOR DEFAULT:**

- Either party may terminate this Contract, without further obligation, for the default of the other party.
- With the exception of an emergency endangering life, safety, or the operation of the City government, a default will only exist after the party claiming default shall have provided notice and an opportunity to cure the default to the other party as follows:

- A written Notice of Default shall be given at least ten business days before the date set for termination and shall set forth the grounds for claiming default of the other party and the steps demanded to cure the default.
- If the party receiving the Notice of Default fails to cure the default before the end of the ten-business day period then that party shall be in default under the terms of the Contract and the non-defaulting party shall have the right to terminate the Contract by sending a written Notice of Termination to the defaulting party.
- **TERMINATION FOR CONVENIENCE:**
 - The City may terminate this Contract or any work or delivery required hereunder from time-to-time either in whole or in part, whenever the Contract Administrator, with the concurrence of the Purchasing Manager, determines that such termination is in the best interest of the City.
 - Termination may occur in whole or as to any discrete part of the Contract. A partial termination shall set forth the portions of the Contract which are terminated.
 - The effective date of the termination shall be three (3) days after issuance of a Notice of Termination signed by the Purchasing Manager and its mailing or delivery to the Contractor, or any later date specifically set forth in the Notice of Termination.
- **TERMINATION FOR NON-APPROPRIATION:**
 - If funds are not appropriated for purposes of this Contract for any succeeding fiscal year subsequent to the one in which this Contract is entered into, then the City may terminate this Contract upon thirty (30) days written notice to the Contractor. The notice shall set forth the grounds for termination and its effective date.
 - If the City terminates for non-appropriation, the City shall be liable only for payments due through the effective date of termination.
 - Until the effective date of the termination, the Contractor shall continue to perform its duties under the Contract and is not excused from performance related to any portion of the Contract.
- **CLAIMS UPON TERMINATION:**
 - Upon receipt of a Notice of Termination, the Contractor shall:
 - Cease any further deliveries or work due under this Contract, on the date, and to the extent, which may be specified in the Notice of Termination;

- Place no further orders with any subcontractors except as may be necessary to perform any portion of the Contract not subject to the Notice of Termination (i.e., in the case of partial termination);
- Terminate all subcontractors except to the extent necessary to complete work which was not subject to the Notice of Termination (i.e., in the case of partial termination);
- Settle all outstanding liabilities and claims which may arise out of such termination, with the ratification of the Contract Administrator and the Purchasing Manager; and
- Use its best efforts to mitigate any damages which may be sustained by the Contractor or any of its subcontractors as a consequence of termination under this clause.
- After complying with the foregoing provisions, the Contractor shall submit a termination claim within thirty days unless an extension is granted by the Contract Administrator. This termination claim shall document all amounts due under this provision.
- Upon receipt of the Contractor's termination claim, the Contract Administrator, with the approval of the Purchasing Manager, shall pay from the Using Department's budget the reasonable costs of termination, including a reasonable amount for profit on Services delivered or completed. In no event shall this amount be greater than the original Contract price, reduced by any payments made prior to Notice of Termination, and further reduced by the price of the Goods or Services not delivered, or those Goods, Services, or Insurance not provided, or Construction work not performed. The calculation of the amount to be paid the Contractor shall be documented and made a part of the Contract file.
- If the parties cannot agree on the whole amount to be paid to the Contractor by reason of termination under this clause, the Contract Administrator, with the approval of the Purchasing Manager, shall pay the Contractor from the Using Department's budget the amounts determined as follows, without duplicating any amount which may have already been paid under the preceding paragraph of this clause:
 - With respect to all Contract performance prior to the effective date of Notice of Termination, the total of:

- Cost of the Goods delivered or work performed; and
 - The reasonable cost of settling and paying any claims as provided above; and
 - A sum as profit on work performed determined by the Contract Administrator and Purchasing Manager to be fair and reasonable.
- The total sum to be paid shall not exceed the original Contract price, as reduced by the amount of payments otherwise made, and as further reduced by the Contract price of Goods, Services, Construction or Insurance not terminated.
- If the Contractor is not satisfied with any payments which the Contract Administrator and Purchasing Manager determines to be due under this provision, the Contractor may make a claim in accordance Section 7 of City Policy.
- In no event shall Contractor be entitled to any profits if this Contract is terminated for Contractor's default, and sums otherwise due to Contractor shall be reduced by the amount of any damages incurred by the City as a result of Contractor's default.
- The Contractor shall include similar provisions for termination in any subcontracts and shall require subcontractors to make reasonable efforts to mitigate damages if the Contract is terminated. Failure to include such provisions shall bar the Contractor from any recovery from the City whatsoever for loss or damage sustained by a subcontractor as a consequence of termination.

7. STATUTORY REQUIREMENTS:

• **EMPLOYMENT DISCRIMINATION:**

In all contracts, regardless of contract amount, the Contractor will abide by the provisions of the Americans with Disabilities Act, and will require each subcontractor to do so. If this Contract is for a consideration in excess of Ten Thousand Dollars (\$10,000.00), then during the performance of this Contract, the Contractor agrees as follows:

- The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, sexual orientation or gender identity, national origin, age, disability, status as a service disabled veteran, political affiliation, or other basis prohibited by state or federal law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

- The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such Contractor is an equal opportunity employer.
- Notices, advertisements, and solicitations placed in accordance with Federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
- The Contractor will include the provisions of this Contract section in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

• **ETHICS IN PUBLIC CONTRACTING:**

The provisions contained in Chapter 43, Article 6, Sections 2.2-4367 through 2.2-4377 of the Virginia Public Procurement Act, as set forth in the 1950 Code of Virginia, as amended, apply to this Contract. The provisions of Article 6 of Chapter 43 supplement, but do not supersede, other provisions of law including, but not limited to, the Virginia Conflict of Interest Act (§ 2.2-3100 et seq.), the Virginia Governmental Frauds Act (§ 18.2-498.1 et seq.) and Articles 2 and 3 of Chapter 10 of Title 18.2. The provisions apply notwithstanding the fact that the conduct described may not constitute a violation of the Virginia Conflict of Interests Act.

• **DRUG-FREE WORKPLACE:**

During the performance of this Contract the Contractor agrees to:

- Provide a Drug-Free Workplace for the Contractor's employees.
- Post in conspicuous places, available to employees and applicants for employment a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- State in all solicitations or advertisement for employees placed by or on behalf of the Contractor that the Contractor maintains a Drug-Free Workplace.
- Include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000.00, or so that the provisions will be binding upon each subcontractor or vendor.

- **FAITH-BASED ORGANIZATIONS:**

The City of Manassas in procuring Goods and Services, or in making disbursements pursuant to this section, shall not discriminate against a faith-based organization on the basis of the organization's religious character or impose conditions that restrict the religious character of the faith-based organization, except funds provided for expenditure pursuant to contracts with public bodies shall not be spent on religious worship, instruction, or proselytizing, or impair, diminish, or discourage the exercise of religious freedom by the recipients of such Goods, Services, or disbursement.

- **FOREIGN AND DOMESTIC BUSINESSES AUTHORIZED TO TRANSACT BUSINESS IN THE COMMONWEALTH:**

- A contractor organized as a stock or non-stock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall be authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Title 13.1 or Title 50 or as otherwise required by law.
- A contractor organized as a stock or non-stock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall not allow its existence to lapse or its certificate of authority or registration to transact business in the Commonwealth, if so required under Title 13.1 or Title 50, to be revoked or cancelled at any time during the term of this Contract. Notwithstanding any other provision of this Contract, the City may void any Contract with a business entity if the business entity fails to remain in compliance with this provision.

- **LEGAL COMPLIANCE:**

- The Contractor shall be solely responsible for complying with all applicable federal, state and municipal laws, codes and regulations during the performance of the Contract.
- The Contractor has the responsibility to ensure that its forces and its subcontractors under this Contract comply with all applicable Occupational Safety and Health Administration (OSHA) requirements and all applicable State and City safety and occupational health standards. The Contractor is responsible for the safety of its employees. The Contractor has the sole responsibility and authority to prevent any unsafe acts or conditions that may cause injury or damage to any persons or property within and around the work site area under this Contract.
- The Contractor agrees that it does not, and shall not during the performance of the Contract for Goods and Services, knowingly employ an unauthorized alien or aliens as defined in the Federal Immigration Reform and Control Act of 1986.

8. DISPUTES:

• **GOVERNING LAW:**

This Contract is governed by the law of the Commonwealth of Virginia, including but not limited to the Virginia Public Procurement Act (VPPA), Sections 2.2-4300 et seq. of the Code of Virginia (1950), as amended. This Contract is also governed by the applicable City Policies.

• **HOLD HARMLESS:**

- To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold harmless the City and its officers, agents, employees, community representatives, volunteers or others working on behalf of the City from any and all claims, judgments, suits, losses, damages, payments, costs, fines and/or fees levied against the City and expenses of every nature and description, including attorney's fees, arising out of, connected or associated with or resulting from the lack of performance or the negligent performance of work as described in this Contract, Contract Documents or any agreement that results from this Contract. Further, if the Contractor subcontracts for work, it will require in its subcontracts that each subcontractor indemnify, defend, and hold harmless the City and its officers, agents, employees and community representatives, from any and all claims and losses accruing or resulting from the negligent performance of work as described in any agreement that results from this Contract.
- To the fullest extent permitted by law, the Contractor shall also indemnify, defend, and hold harmless the City and its officers, agents, employees, community representatives, volunteers or others working on behalf of the City against all costs, including reasonable attorney's fees, arising from liens encumbering the City's Property filed by subcontractors, sub-subcontractors, material suppliers, and all other persons and entities acting for and under the Contractor, and the Contractor shall immediately discharge or bond such liens off.
- Virginia is a Dillon Rule state. Unless specifically permitted by statute, indemnification or any attempt to have the City hold others harmless is invalid and unenforceable as an impermissible waiver of the City's sovereign immunity which may create potential future debt in violation of Virginia Constitutional and statutory requirements. The City cannot waive its sovereign immunity.

• **CONDITIONS PRECEDENT TO PURSUIT OF LEGAL REMEDIES:**

Before the Contractor may exercise any legal remedy, it may have in relation to rights arising out of this Contract, it must comply fully and strictly with each provision of Section 7 of City Policy. The City does not have administrative appeals procedures under Virginia Code § 2.2-4365.

- **VENUE:**

Any action brought under this Contract must be brought in the state courts for the City of Manassas and may not be removed to the Federal Court system. Contractor expressly waives any objection to venue or jurisdiction of the Prince William County Courts in Manassas, VA.

- **LIMITATIONS ON ACTIONS:**

Any action brought under this Contract, except an action for breach of warranty, shall be brought within the shorter of the statutory limitations period and the period of three years from the date of final payment without any tolling of this statutory limitations period for any reason whatsoever.

- **WAIVER OF JURY TRIAL:**

In any action brought under this Contract, the parties expressly waive their right to trial by jury and agree to submit all questions of fact to the judge as trier of fact.

9. **GENERAL PROVISIONS:**

- **TIME OF THE ESSENCE:**

Time shall be of the essence to this Contract, except where it is herein specifically provided to the contrary.

- If the Contractor at any time finds that the schedule will not be met for any reason, the Contractor shall immediately provide written notice to the Contract Administrator setting forth all facts and circumstances related to the delay.
- Where the Contractor is prevented from completing any part of the Work within the Contract Period due to abnormal weather conditions the Contract Period will be extended in an amount calculated as stated below if a Claim is made for extension in writing and provided to the City within the time frame and in the manner prescribed and if the performance of the Work is not, was not, or would not have been delayed by any other cause for which the Contractor is not entitled to an extension of the Contract Period under the Contract Documents.
- Contractor acknowledges and agrees that adjustments in the Contract Period will be permitted for a delay only to the extent such delay (i) is not caused, or could not have been anticipated, by Contractor; (ii) could not be limited or avoided by the Contractor's timely notice to the City of the delay or reasonable likelihood that a delay will occur; and (iii) is of a duration not less than one day. Such an adjustment of time shall be Contractor's sole and exclusive remedy for the delays described in this Section.

- Actual adverse weather delay days must prevent work on critical activities outdoors for fifty percent (50%) or more of Contractor's scheduled workday in order to be counted. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. Where Contractor is prevented from completing any part of the Work within the Contract Period due to abnormal weather conditions, the Contract Period will be extended in an amount equal to the time lost due to such delay if a Claim is made therefore as provided herein. Abnormal weather conditions occur only if the total number of actual adverse weather days exceeds the standard for that month as shown in the following table:

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
7	7	8	7	8	7	8	8	6	6	6	6

- Upon commencement of on-site activities and continuing throughout construction, Contractor shall record daily the occurrence of adverse weather and resultant impact to normally scheduled work and within 30 days of the last day of any month (hereinafter referred to as the "Reporting Month"), Contractor shall submit a written adverse weather report, including copies of Contractor's daily weather reports and applicable climatologically data from the National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location, unless the City allows, in writing, an additional period of time for the submission of said report. Notwithstanding any other provisions, failure to submit the required written report within the time specified above shall be deemed to be and shall constitute a waiver by Contractor of any and all claims for delay due to adverse weather conditions occurring during said Reporting Month.
- The City shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- Contractor shall not be entitled to an adjustment in Contract Price or Contract Period for delays within the control of Contractor. Delays attributable to and within the control of a subcontractor or supplier shall be deemed to be delays within the control of Contractor.
- INTERPRETATION AND MODIFICATION OF THE CONTRACT:**
 - This Contract, including its incorporated documents, contains the whole agreement between the parties as to its subject, and no prior or contemporaneous communications, representations, or agreements, written or verbal, may alter, add to, or contradict any provision in it. There are no promises, terms, conditions, or obligations related to the subject of this Contract other than those contained herein.

- All modifications and changes to the Contract shall be in writing and signed by the Purchasing Manager.
- If a Court of competent jurisdiction finds any provision of this Contract to be invalid, such ruling shall not invalidate the entire Contract but shall apply only to the provision in question and the remaining provisions shall continue to be valid, binding and in full force and effect to the maximum extent permitted by law.
- The Contract Administrator, with the concurrence of the Purchasing Manager, shall have the authority to order changes in this Contract, which affect the cost or time of performance. Such changes shall be ordered in writing specifically designated to be a “Change Order” and signed by the City Manager, or Purchasing Manager.
 - Such orders shall be limited to reasonable changes in the supplies, Services to be performed or the time of performance; provided that the Contractor shall not be excused from performance under the changed Contract by failure to agree to such changes, and it is the express purpose of this provision to permit unilateral changes in the Contract subject to the conditions and limitations herein.
 - Contractor need not perform any work described in any Change Order unless it has received a written certification from the City that there are funds budgeted and appropriated sufficient to cover the cost of such changes.
 - The Contractor shall make a demand for payment for completed changed work within 30 days of completion of Change Order, unless such time period is extended in writing, or unless the Contract Administrator requires submission of a cost proposal prior to the initiation of any changed work or Services.
 - No claim for changes made by Change Order shall be considered if made after final payment in accordance with the Contract.
- **EXAMINATION OF RECORDS:**
 - The Contractor agrees that the City or any duly authorized representative of the City may have access to and the right to examine and copy any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this Contract. This right shall expire on the third anniversary of the issuance of final payment under this Contract.

- The Contractor further agrees to include in any subcontract for more than \$10,000 entered into as a result of this Contract, a provision to the effect that the subcontractor agrees that the City or any duly authorized representative may have access to and the right to examine and copy any directly pertinent books, documents, papers, and records of such subcontractor involved in transactions related to such subcontract, or this Contract. The term subcontract as used herein shall exclude subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public. This right expires on the third anniversary of the issuance of final payment to the subcontractor.
- **ASSIGNMENT OF RIGHTS:**
 - Antitrust: By entering into a Contract, the Contractor conveys, sells, assigns, and transfers to the City all right, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular Goods or Services purchased or acquired by the City under said Contract.
 - Warranty: By entering into a Contract, the Contractor conveys, sells, assigns and transfers to the City all warranties related to Goods or Services provided to the City under this Contract.

IN TESTIMONY WHEREOF, the City of Manassas has caused its name to be hereunto subscribed pursuant to authority heretofore duly granted by the City Council of the City of Manassas; and

Contractor has caused its name to be hereunto subscribed by Contractor's Representative, and (if a Corporation) has caused its corporate seal to be duly affixed and attested by the person authorized to do so, signifying that it intends to be bound by this Contract.

CITY OF MANASSAS
by:


Authorized Official

Terry A Burk
+ Name and Title

Print Name and Title

CONTRACTOR
By:


Contractor's Representative

Jonathan Burgiel, Business Unit President

Print Name and Title



CITY OF MANASSAS, VIRGINIA

FINANCE DEPARTMENT
PURCHASING DIVISION

8500 Public Works Drive, Manassas, VA 20110 Telephone: (703) 257-8368 Facsimile: (703) 257-5813

Website: www.manassascity.org

CITY OF MANASSAS STANDARD CONTRACT FOR GOODS, SERVICES, CONSTRUCTION AND INSURANCE RESULTING FROM AN RFP

CONTRACT NO: 21P011A

SUBJECT: DISASTER DEBRIS REMOVAL SERVICES

Between:

CITY OF MANASSAS
8500 PUBLIC WORKS DRIVE MANASSAS, VA 20110

CONTACT: COLLEEN BURROUGHS, REFUSE AND RECYCLING COORDINATOR

PHONE: 703-257-8252

FAX: 703-330-4429

E-MAIL: cburroughs@manassasva.gov

And the Contractor:

**CERES ENVIRONMENTAL SERVICES, INC. 6968 PROFESSIONAL
PARKWAY
SARASOTA, FL 34240**

CONTACT: DAWN BROWN, ASSISTANT CORPORATE SECRETARY PHONE: 800-218-4424

FAX: 866-228-5636

E-MAIL: dawn.brown@ceresenv.com

This Contract (hereinafter, "Contract") is entered into on and as of September 23, 2021, by and between the CITY OF MANASSAS, a municipal corporation of the Commonwealth of Virginia (hereinafter, "City"), and Ceres Environmental Services, Inc., (hereinafter "Contractor"), for Goods, Services, Construction and/or Insurance identified herein, on the following terms and conditions.

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10. **BASIC TERMS:**

• **DEFINITIONS:**

Capitalized terms that are defined in the VPPA, City Policy, or the City's standard Request for Proposal for Goods, Services, Construction or Insurance have the same meanings in this Contract as are given in that law, policy, or Request for Proposal, except as provided below. Capitalized terms not defined in those sources but used in this Contract have the following meanings, unless the context clearly requires otherwise.

Undefined terms have their common meanings appropriate to their context.

- **City or Owner:** The City of Manassas, Virginia or its actually authorized agents. Unless the context clearly requires otherwise, such as for an affirmative vote of the elected body, the City Manager, Purchasing Manager, or other designee of City Council may always act on behalf of the City. Under Virginia law, no employee or agent may bind the City unless he or she has actual authority to do so; the doctrine of apparent authority has no application to municipalities.
- **City Policy:** The applicable provision contained in the City of Manassas Public Procurement Policy, as amended.
- **"Contract Administrator"** assigned to administer the Contract for the City is Ms. Colleen Burroughs, Refuse and Recycling Coordinator, 703-257-8252, but the City may designate a new Contract Administrator by notice to the Contractor.
- **"Contractor's Representative"** means the person who is responsible for the performance obligation of the Contractor under this Contract. The initial Contractor's Representative is Dawn Brown, Assistant Corporate Secretary, 800-218-4424 but the Contractor may designate a new Contractor's Representative by notice to the City.
- **"Drug-Free Workplace"** means a site for the performance of work done in connection with a specific contract awarded to a Contractor in accordance with this chapter, the employees of whom are prohibited from engaging in the unlawful manufacture, sale, dispensation, possession or use of any controlled substance or marijuana during the performance of the Contract.
- **"Notice of Default"** means a notice sent to the other party's designee (Contract Administrator for the City, Contractor's Representative for the Contractor) setting forth the facts showing that party to be in default under the Contract.
- **"Notice of Termination"** means a notice sent to the other party's designee (Contract Administrator for the City, Contractor's Representative for the Contractor) informing that party of the termination of the Contract as of a particular date.
- **"RFP"** means the Request for Proposal which led to the formation of this Contract.

- “Using Department” for purposes of this Contract shall mean Public Works Department.
- **PURPOSE OF THE CONTRACT:**
 - The Contractor hereby agrees to provide the following Goods, Services, Construction and/or Insurance to the City of Manassas:

Contractor to perform disaster debris removal, reduction, disposal and other emergency clean-up activities associated with a hurricane, storm, tornado or other natural or manmade disaster, per specifications of RFP 21P011.

- **CONTRACT PERIOD AND EXTENSIONS:**
 - The base term for this Contract shall be for one (1) year, September 23, 2021 through September 22, 2022 and may be renewed for four (4) additional one (1) year periods.
 - This Contract may be extended as provided in the RFP or by change order or amendment. The City shall give the Contractor reasonable written notice of intent to renew prior to the expiration date of the current Contract. In the absence of any notification to renew, the Contract shall automatically terminate on the expiration date specified in the Contract. Agreement to extend the Contract term shall not be final until the Contractor provides written acknowledgement of the extension. The option to renew shall be exercised at the sole discretion of the City.
 - No fixed price Contract, however, may increase the price by more than twenty-five percent of the amount of the Contract or \$50,000, whichever is greater, without a recorded affirmative vote of the City Council. The City may extend the term of this Contract for Services to allow completion of any work undertaken but not completed during the original term of the Contract.
- **CONTRACT AMOUNT:**

In return for the Goods, Services, Insurance and/or Construction of the RFP identified above, and subject to the Termination for Non-Appropriation provision of this Contract, the City certifies that sufficient funds are budgeted and appropriated and shall compensate the Contractor in accordance with the payment provision of this Contract as set forth herein:

Contractor shall be compensated per the rates as shown on the attached Proposal Submission Form or on Attachment “A”.

11. FORMATION:

• CONDITIONS PRECEDENT TO FORMATION:

Before any Contract between the City and the Contractor is effective, the following conditions precedent must be satisfied. Satisfaction of these conditions is the responsibility of the Contractor. If, after performance under the Contract, the City learns that a condition precedent was not met, the City may, if permitted by law, ratify the Contract by affirmative recorded vote or may disclaim it, in its sole discretion.

- Insurance: If the RFP requires certain insurance, the Contractor must provide proof of insurance in the amounts required by the Bid with an insurance company licensed to do business in the Commonwealth of Virginia. As used in this provision, “proof of insurance” means a copy of the relevant portions of the insurance declaration page, or its equivalent, showing continuing coverage at the required amounts.
- Unless the Specifications state otherwise, the City shall be made an additional insured on all required policies of insurance.
- No change, cancellation (other than noted below), or non-renewal shall be made in any insurance coverage without a thirty (30) day written notice to the Purchasing Manager. Notice for cancellation due to nonpayment of premium shall be no less than fifteen (15) days. The Contractor shall furnish proof of insurance prior to any change or cancellation date. The failure of the Contractor to deliver such proof of insurance is grounds for termination of the Contract.
- Insurance coverage required hereunder shall be in force throughout the Contract period. Should the Contractor fail to provide proof of insurance within ten (10) days of written notice requesting such at any time during the Contract term, the City shall have the absolute right to terminate the Contract.
- Compliance by the Contractor and any subcontractors with the foregoing requirements as to carrying insurance shall not relieve the Contractor or any subcontractors of their liabilities and obligations under this Contract. The Contractor shall assume all on-the-job responsibilities as to the control of persons directly employed by it and of the subcontractors and any person employed by the subcontractors.
- The City may and will, if requested by Contractor, reasonably accept proof of insurance provided by subcontractors or partners of the Contractor covering risks and hazards relating to work to be performed by such subcontractor and partners, in lieu of proof of insurance provided by Contractor. However, this shall not relieve Contractor of any of its other duties under this Paragraph II.A.1.

- Bonds: If the Bid requires payment or performance bonds (or certified checks or bank draft or Irrevocable Letter of Credit), then bonds with surety satisfactory to the City attorney shall be submitted to the Purchasing Manager for approval.
- Permits and licenses: If the procurement of the Goods, Services, Insurance or Construction that is the subject of this Contract requires possession of any licenses or receipt of any permits other than construction permits, then Contractor shall obtain those licenses and permits.
- Payment of Debts: Contractor must pay all amounts shown as due to the City on the City's accounts, even if a dispute exists as to the debt's validity or enforceability.
- **PARTIES:**
 - The sole parties to this Contract are the City of Manassas and the Contractor.
 - The General Contractor remains responsible for work of the subcontractor(s) notwithstanding the naming of the subcontractor(s) in the proposal, and the City reserves the right to approve or reject any subcontractor(s) or substitute subcontractor(s).
 - It is understood and agreed that the Contractor is at all times herein acting as an independent contractor.
 - Neither this Contract, nor any part hereof, may be assigned by the Contractor to any other party without the express written permission of the City in advance. No assignment without such permission will relieve the Contractor of any responsibility under this Contract.
 - There are no intended third-party beneficiaries of this Contract, unless it is made available by rider for other governmental entities to use. Making the Contract available to them by rider is the sole extent of the intended third-party benefit.
 - If this Contract is made available by rider for other governmental entities to use, any contracts formed between the Contractor and such other governmental entities shall be solely between those parties. The City shall not be a party to any of these Contracts.
- **AUTHORITY TO EXECUTE:**

By executing this Contract on behalf of Contractor, the Contractor's Representative warrants that he or she has full authority to do so.

• **INCORPORATION OF DOCUMENTS:**

The documents listed below in this Section IID are hereby incorporated by reference and fully made a part of the Contract. This Contract and the incorporated documents describe the subject of the Procurement, the particulars of its performance, the process and time for payment, and the rights and remedies of the parties (collectively, “the terms”). In case of any conflict between those documents’ terms, the documents shall be given precedence in the following order, from highest to lowest:

- Section II of the Request for Proposal (if any), inclusive of any Addendums, except to the extent modified through negotiation permitted by the VPPA,
- This Contract,
- Sections I and III-VI, both inclusive, of the RFP (if any),
- The Proposal of the Offeror.

12. **PERFORMANCE:**

• **CONTACTS:**

In addition to the Contract Administrator and the Contractor’s Representative, the parties may designate additional contacts for exchange of information.

• **BEGINNING PERFORMANCE**

Contractor shall not begin performance under the Contract until the Contract Administrator issues it a purchase order, Procurement Card order, or other notification to proceed.

• **RISK OF LOSS AND ACCEPTANCE OF WORK:**

- Contractor shall perform the work and deliver all Goods in accordance with recognized and customarily accepted industry practices, and performance shall be considered complete when the Contract Administrator approves the Services as acceptable. If the Contract Administrator rejects any deliverable, the Contractor shall be notified and shall have fourteen (14) calendar days from date of issuance of notification to correct the deficiencies and resubmit the deliverable.

- Unless the City provides the materials or supplies, the Contractor bears the risk of damage or loss for materials or supplies covered by the Contract until delivery to the designated point. If the City rejects any deliverable, the Contractor bears all risk of damage or loss on them after notice of rejection. The Contractor must remove rejected materials or supplies at its own expense promptly after notification of rejection, unless public health and safety require immediate destruction or other disposal of a rejected delivery. If the Contractor does not remove rejected materials within ten (10) days after notification of rejection, the City may return the rejected materials or supplies to the Contractor at Contractor's risk and expense or may dispose of them as abandoned property.
- **WARRANTY:**
 - The Contractor warrants that all Services it performs and all Goods, Insurance, and Construction it delivers to the City will be of good quality and meet the specifications of this Contract and of all literature supplied by the Contractor as part of the selection process which led to the award of this Contract. "Literature" as used in this provision means any and all brochures, fliers, catalogs, Proposals, web sites, email, or other information, in whatever written form, relating to the quality, utility, economic advantages, or composition of the Goods or Services. This warranty is in addition to and does not substitute for the Contractor's warranties of title, against infringement, of merchantability, and of fitness for particular purpose under Virginia Code §§ 8.2-312, 8.2-314, and 8.2-315, which the parties expressly agree apply to this Contract.
 - The Contractor shall furnish all guarantees and warranties that the terms of this Contract require to the Purchasing Manager before the City makes final payment on the Contract. Unless otherwise stated, manufacturer's standard warranty applies.
- **INVOICES:**
 - Unless otherwise provided in the RFP, Contractor shall submit all its invoices for payment in the fiscal year in which the Goods, Services, Insurance or Construction were provided or within thirty days thereafter. The City operates on a fiscal year beginning on July 1 and ending on June 30 of each calendar year. Late invoices are subject to rejection if no appropriated funds are available for their payment.
 - The invoice must be in the name of the Contractor unless the City has received and approved an assignment.

- The City will not be responsible for any cost or expenses of operation of any kind associated with Contractor's provision of Services pursuant to this Contract, except as set out herein. Contractor shall be entitled to no fees, bonuses, contingent payments, or any other amount in connection with the Services to be rendered hereunder except as set out herein. The City shall have no obligation to reimburse, pay directly or otherwise satisfy any taxes or other expenses of the Contractor in connection with the performance of its obligations under this Contract except as stated herein. If Contractor is deemed not to be an independent contractor by any local, state, or federal governmental agency, Contractor agrees to indemnify and hold harmless the City for any and all fees, costs, and expenses, including, but not limited to, attorneys fees incurred thereby.
- The Contractor shall submit a proper invoice detailing the Goods, Services, Insurance or Construction provided, in duplicate. Such invoice shall include a detailed breakdown of all charges and shall be based on completion of tasks or deliverables for the period of time being billed.
- Invoices shall be submitted to the address shown on the purchase order.
- **PAYMENT:**
 - In return for the Goods, Services, Construction and/or Insurance that are the subject of this Contract, and subject to the provision of this Contract relating to "Termination for Non-appropriation," the City shall compensate the Contractor within thirty (30) days after receipt of proper invoice for the amount of payment due or thirty (30) days after receipt of the Goods or Services, whichever is later.
 - The City reserves the right to withhold any or all payments or portions thereof for Contractor's failure to perform in accordance with the provisions of the Contract or any modifications thereto. The City will not pay for any rejected deliverable.
 - With Construction contracts that provide for progress payments in installments based upon an estimated percentage of completion, the City shall retain 5% of the amount earned for work done and materials delivered as retainage, to be paid in the final payment to the Contractor.
 - Within seven days after receipt of amounts paid to the Contractor by the City for satisfactorily completed performance, the prime contractor agrees to:
 - Pay the subcontractor for the proportionate share of the total payment received from the City attributable to the work performed by the subcontractor under that contract; or

- Notify the City and subcontractor, in writing, of his intention to withhold all or a part of the subcontractor's payment with the reason for nonpayment except for amounts properly retained as allowed under section 3 above.

If the Contractor after having received payment from the City fails to pay each subcontractor its proportionate share of the total payment, the Contractor shall be obligated to pay interest to each subcontractor on all amounts that remain unpaid after the seven days following receipt by the Contractor of payment from the City.

- Unless otherwise provided under the terms of this Contract or by statute, interest shall accrue at a rate of one percent per month against the Contractor on any unpaid amounts owed to each subcontractor.
- The Contractor shall include in each of its subcontracts a provision requiring each subcontractor to include or otherwise be subject to the same payment and interest requirements with respect to each lower-tier subcontractor.
- A Contractor that is an individual must provide his or her social security number and a Contractor that is any form of business entity must provide its federal employer identification number on a completed W-9 "Request for Taxpayer Identification Number and Certification" form, to be mailed to the City of Manassas, Accounting Division's Office, 9027 Center Street, Room 303, Manassas, VA 20110. A copy of this form can be downloaded from <http://www.irs.gov/pub/irs-pdf/fw9.pdf>. This information is required before payment can be made.

13. **TERMINATION OF CONTRACT:**

- **TERMINATION FOR DEFAULT:**

- Either party may terminate this Contract, without further obligation, for the default of the other party.
- With the exception of an emergency endangering life, safety, or the operation of the City government, a default will only exist after the party claiming default shall have provided notice and an opportunity to cure the default to the other party as follows:
 - A written Notice of Default shall be given at least ten business days before the date set for termination and shall set forth the grounds for claiming default of the other party and the steps demanded to cure the default.
 - If the party receiving the Notice of Default fails to cure the default before the end of the ten-business day period then that party shall be in default under the terms of the Contract and the non-defaulting party shall have the right to terminate the Contract by sending a written Notice of Termination to the defaulting party.

- **TERMINATION FOR CONVENIENCE:**

- The City may terminate this Contract or any work or delivery required hereunder from time-to-time either in whole or in part, whenever the Contract Administrator, with the concurrence of the Purchasing Manager, determines that such termination is in the best interest of the City.
- Termination may occur in whole or as to any discrete part of the Contract. A partial termination shall set forth the portions of the Contract which are terminated.
- The effective date of the termination shall be three (3) days after issuance of a Notice of Termination signed by the Purchasing Manager and its mailing or delivery to the Contractor, or any later date specifically set forth in the Notice of Termination.

- **TERMINATION FOR NON-APPROPRIATION:**

- If funds are not appropriated for purposes of this Contract for any succeeding fiscal year subsequent to the one in which this Contract is entered into, then the City may terminate this Contract upon thirty (30) days written notice to the Contractor. The notice shall set forth the grounds for termination and its effective date.
- If the City terminates for non-appropriation, the City shall be liable only for payments due through the effective date of termination.
- Until the effective date of the termination, the Contractor shall continue to perform its duties under the Contract and is not excused from performance related to any portion of the Contract.

- **CLAIMS UPON TERMINATION:**

- Upon receipt of a Notice of Termination, the Contractor shall:
 - Cease any further deliveries or work due under this Contract, on the date, and to the extent, which may be specified in the Notice of Termination;
 - Place no further orders with any subcontractors except as may be necessary to perform any portion of the Contract not subject to the Notice of Termination (i.e., in the case of partial termination);
 - Terminate all subcontractors except to the extent necessary to complete work which was not subject to the Notice of Termination (i.e., in the case of partial termination);

- Settle all outstanding liabilities and claims which may arise out of such termination, with the ratification of the Contract Administrator and the Purchasing Manager; and
- Use its best efforts to mitigate any damages which may be sustained by the Contractor or any of its subcontractors as a consequence of termination under this clause.
- After complying with the foregoing provisions, the Contractor shall submit a termination claim within thirty days unless an extension is granted by the Contract Administrator. This termination claim shall document all amounts due under this provision.
- Upon receipt of the Contractor's termination claim, the Contract Administrator, with the approval of the Purchasing Manager, shall pay from the Using Department's budget the reasonable costs of termination, including a reasonable amount for profit on Services delivered or completed. In no event shall this amount be greater than the original Contract price, reduced by any payments made prior to Notice of Termination, and further reduced by the price of the Goods or Services not delivered, or those Goods, Services, or Insurance not provided, or Construction work not performed. The calculation of the amount to be paid the Contractor shall be documented and made a part of the Contract file.
- If the parties cannot agree on the whole amount to be paid to the Contractor by reason of termination under this clause, the Contract Administrator, with the approval of the Purchasing Manager, shall pay the Contractor from the Using Department's budget the amounts determined as follows, without duplicating any amount which may have already been paid under the preceding paragraph of this clause:
 - With respect to all Contract performance prior to the effective date of Notice of Termination, the total of:
 - Cost of the Goods delivered or work performed; and
 - The reasonable cost of settling and paying any claims as provided above; and
 - A sum as profit on work performed determined by the Contract Administrator and Purchasing Manager to be fair and reasonable.
 - The total sum to be paid shall not exceed the original Contract price, as reduced by the amount of payments otherwise made, and as further reduced by the Contract price of Goods, Services, Construction or Insurance not terminated.

- If the Contractor is not satisfied with any payments which the Contract Administrator and Purchasing Manager determines to be due under this provision, the Contractor may make a claim in accordance Section 7 of City Policy.
- In no event shall Contractor be entitled to any profits if this Contract is terminated for Contractor's default, and sums otherwise due to Contractor shall be reduced by the amount of any damages incurred by the City as a result of Contractor's default.
- The Contractor shall include similar provisions for termination in any subcontracts and shall require subcontractors to make reasonable efforts to mitigate damages if the Contract is terminated. Failure to include such provisions shall bar the Contractor from any recovery from the City whatsoever for loss or damage sustained by a subcontractor as a consequence of termination.

14. **STATUTORY REQUIREMENTS:**

• **EMPLOYMENT DISCRIMINATION:**

In all contracts, regardless of contract amount, the Contractor will abide by the provisions of the Americans with Disabilities Act, and will require each subcontractor to do so. If this Contract is for a consideration in excess of Ten Thousand Dollars (\$10,000.00), then during the performance of this Contract, the Contractor agrees as follows:

- The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, sexual orientation or gender identity, national origin, age, disability, status as a service disabled veteran, political affiliation, or other basis prohibited by state or federal law relating to discrimination in employment, except where there is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.
- The Contractor, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, will state that such Contractor is an equal opportunity employer.
- Notices, advertisements, and solicitations placed in accordance with Federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirements of this section.
- The Contractor will include the provisions of this Contract section in every subcontract or purchase order over \$10,000, so that the provisions will be binding upon each subcontractor or vendor.

• **ETHICS IN PUBLIC CONTRACTING:**

The provisions contained in Chapter 43, Article 6, Sections 2.2-4367 through 2.2-4377 of the Virginia Public Procurement Act, as set forth in the 1950 Code of Virginia, as amended, apply to this Contract. The provisions of Article 6 of Chapter 43 supplement, but do not supersede, other provisions of law including, but not limited to, the Virginia Conflict of Interest Act (§ 2.2-3100 et seq.), the Virginia Governmental Frauds Act (§ 18.2-498.1 et seq.) and Articles 2 and 3 of Chapter 10 of Title 18.2. The provisions apply notwithstanding the fact that the conduct described may not constitute a violation of the Virginia Conflict of Interests Act.

• **DRUG-FREE WORKPLACE:**

During the performance of this Contract the Contractor agrees to:

- Provide a Drug-Free Workplace for the Contractor's employees.
- Post in conspicuous places, available to employees and applicants for employment a statement notifying employees that the unlawful manufacture, sale, distribution, dispensation, possession, or use of a controlled substance or marijuana is prohibited in the Contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- State in all solicitations or advertisement for employees placed by or on behalf of the Contractor that the Contractor maintains a Drug-Free Workplace.
- Include the provisions of the foregoing clauses in every subcontract or purchase order of over \$10,000.00, or so that the provisions will be binding upon each subcontractor or vendor.

• **FAITH-BASED ORGANIZATIONS:**

The City of Manassas in procuring Goods and Services, or in making disbursements pursuant to this section, shall not discriminate against a faith-based organization on the basis of the organization's religious character or impose conditions that restrict the religious character of the faith-based organization, except funds provided for expenditure pursuant to contracts with public bodies shall not be spent on religious worship, instruction, or proselytizing, or impair, diminish, or discourage the exercise of religious freedom by the recipients of such Goods, Services, or disbursement.

• **FOREIGN AND DOMESTIC BUSINESSES AUTHORIZED TO TRANSACT BUSINESS IN THE COMMONWEALTH:**

- A contractor organized as a stock or non-stock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall be authorized to transact business in the Commonwealth as a domestic or foreign business entity if so required by Title 13.1 or Title 50 or as otherwise required by law.
- A contractor organized as a stock or non-stock corporation, limited liability company, business trust, or limited partnership or registered as a registered limited liability partnership shall not allow its existence to lapse or its certificate of authority or registration to transact business in the Commonwealth, if so required under Title 13.1 or Title 50, to be revoked or cancelled at any time during the term of this Contract. Notwithstanding any other provision of this Contract, the City may void any Contract with a business entity if the business entity fails to remain in compliance with this provision.

• **LEGAL COMPLIANCE:**

- The Contractor shall be solely responsible for complying with all applicable federal, state and municipal laws, codes and regulations during the performance of the Contract.
- The Contractor has the responsibility to ensure that its forces and its subcontractors under this Contract comply with all applicable Occupational Safety and Health Administration (OSHA) requirements and all applicable State and City safety and occupational health standards. The Contractor is responsible for the safety of its employees. The Contractor has the sole responsibility and authority to prevent any unsafe acts or conditions that may cause injury or damage to any persons or property within and around the work site area under this Contract.
- The Contractor agrees that it does not, and shall not during the performance of the Contract for Goods and Services, knowingly employ an unauthorized alien or aliens as defined in the Federal Immigration Reform and Control Act of 1986.

15. **DISPUTES:**

• **GOVERNING LAW:**

This Contract is governed by the law of the Commonwealth of Virginia, including but not limited to the Virginia Public Procurement Act (VPPA), Sections 2.2-4300 et seq. of the Code of Virginia (1950), as amended. This Contract is also governed by the applicable City Policies.

- **HOLD HARMLESS:**

- To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold harmless the City and its officers, agents, employees, community representatives, volunteers or others working on behalf of the City from any and all claims, judgments, suits, losses, damages, payments, costs, fines and/or fees levied against the City and expenses of every nature and description, including attorney's fees, arising out of, connected or associated with or resulting from the lack of performance or the negligent performance of work as described in this Contract, Contract Documents or any agreement that results from this Contract. Further, if the Contractor subcontracts for work, it will require in its subcontracts that each subcontractor indemnify, defend, and hold harmless the City and its officers, agents, employees and community representatives, from any and all claims and losses accruing or resulting from the negligent performance of work as described in any agreement that results from this Contract.
- To the fullest extent permitted by law, the Contractor shall also indemnify, defend, and hold harmless the City and its officers, agents, employees, community representatives, volunteers or others working on behalf of the City against all costs, including reasonable attorney's fees, arising from liens encumbering the City's Property filed by subcontractors, sub-subcontractors, material suppliers, and all other persons and entities acting for and under the Contractor, and the Contractor shall immediately discharge or bond such liens off.
- Virginia is a Dillon Rule state. Unless specifically permitted by statute, indemnification or any attempt to have the City hold others harmless is invalid and unenforceable as an impermissible waiver of the City's sovereign immunity which may create potential future debt in violation of Virginia Constitutional and statutory requirements. The City cannot waive its sovereign immunity.

- **CONDITIONS PRECEDENT TO PURSUIT OF LEGAL REMEDIES:**

Before the Contractor may exercise any legal remedy, it may have in relation to rights arising out of this Contract, it must comply fully and strictly with each provision of Section 7 of City Policy. The City does not have administrative appeals procedures under Virginia Code § 2.2-4365.

- **VENUE:**

Any action brought under this Contract must be brought in the state courts for the City of Manassas and may not be removed to the Federal Court system. Contractor expressly waives any objection to venue or jurisdiction of the Prince William County Courts in Manassas, VA.

• **LIMITATIONS ON ACTIONS:**

Any action brought under this Contract, except an action for breach of warranty, shall be brought within the shorter of the statutory limitations period and the period of three years from the date of final payment without any tolling of this statutory limitations period for any reason whatsoever.

• **WAIVER OF JURY TRIAL:**

In any action brought under this Contract, the parties expressly waive their right to trial by jury and agree to submit all questions of fact to the judge as trier of fact.

16. **GENERAL PROVISIONS:**

• **TIME OF THE ESSENCE:**

Time shall be of the essence to this Contract, except where it is herein specifically provided to the contrary.

- If the Contractor at any time finds that the schedule will not be met for any reason, the Contractor shall immediately provide written notice to the Contract Administrator setting forth all facts and circumstances related to the delay.
- Where the Contractor is prevented from completing any part of the Work within the Contract Period due to abnormal weather conditions the Contract Period will be extended in an amount calculated as stated below if a Claim is made for extension in writing and provided to the City within the time frame and in the manner prescribed and if the performance of the Work is not, was not, or would not have been delayed by any other cause for which the Contractor is not entitled to an extension of the Contract Period under the Contract Documents.
- Contractor acknowledges and agrees that adjustments in the Contract Period will be permitted for a delay only to the extent such delay (i) is not caused, or could not have been anticipated, by Contractor; (ii) could not be limited or avoided by the Contractor's timely notice to the City of the delay or reasonable likelihood that a delay will occur; and (iii) is of a duration not less than one day. Such an adjustment of time shall be Contractor's sole and exclusive remedy for the delays described in this Section.

- Actual adverse weather delay days must prevent work on critical activities outdoors for fifty percent (50%) or more of Contractor's scheduled workday in order to be counted. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. Where Contractor is prevented from completing any part of the Work within the Contract Period due to abnormal weather conditions, the Contract Period will be extended in an amount equal to the time lost due to such delay if a Claim is made therefore as provided herein. Abnormal weather conditions occur only if the total number of actual adverse weather days exceeds the standard for that month as shown in the following table:

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
7	7	8	7	8	7	8	8	6	6	6	6

- Upon commencement of on-site activities and continuing throughout construction, Contractor shall record daily the occurrence of adverse weather and resultant impact to normally scheduled work and within 30 days of the last day of any month (hereinafter referred to as the "Reporting Month"), Contractor shall submit a written adverse weather report, including copies of Contractor's daily weather reports and applicable climatologically data from the National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location, unless the City allows, in writing, an additional period of time for the submission of said report. Notwithstanding any other provisions, failure to submit the required written report within the time specified above shall be deemed to be and shall constitute a waiver by Contractor of any and all claims for delay due to adverse weather conditions occurring during said Reporting Month.
- The City shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- Contractor shall not be entitled to an adjustment in Contract Price or Contract Period for delays within the control of Contractor. Delays attributable to and within the control of a subcontractor or supplier shall be deemed to be delays within the control of Contractor.
- **INTERPRETATION AND MODIFICATION OF THE CONTRACT:**
 - This Contract, including its incorporated documents, contains the whole agreement between the parties as to its subject, and no prior or contemporaneous communications, representations, or agreements, written or verbal, may alter, add to, or contradict any provision in it. There are no promises, terms, conditions, or obligations related to the subject of this Contract other than those contained herein.

- All modifications and changes to the Contract shall be in writing and signed by the Purchasing Manager.
- If a Court of competent jurisdiction finds any provision of this Contract to be invalid, such ruling shall not invalidate the entire Contract but shall apply only to the provision in question and the remaining provisions shall continue to be valid, binding and in full force and effect to the maximum extent permitted by law.
- The Contract Administrator, with the concurrence of the Purchasing Manager, shall have the authority to order changes in this Contract, which affect the cost or time of performance. Such changes shall be ordered in writing specifically designated to be a “Change Order” and signed by the City Manager, or Purchasing Manager.
 - Such orders shall be limited to reasonable changes in the supplies, Services to be performed or the time of performance; provided that the Contractor shall not be excused from performance under the changed Contract by failure to agree to such changes, and it is the express purpose of this provision to permit unilateral changes in the Contract subject to the conditions and limitations herein.
 - Contractor need not perform any work described in any Change Order unless it has received a written certification from the City that there are funds budgeted and appropriated sufficient to cover the cost of such changes.
 - The Contractor shall make a demand for payment for completed changed work within 30 days of completion of Change Order, unless such time period is extended in writing, or unless the Contract Administrator requires submission of a cost proposal prior to the initiation of any changed work or Services.
 - No claim for changes made by Change Order shall be considered if made after final payment in accordance with the Contract.
- **EXAMINATION OF RECORDS:**
 - The Contractor agrees that the City or any duly authorized representative of the City may have access to and the right to examine and copy any directly pertinent books, documents, papers, and records of the Contractor involving transactions related to this Contract. This right shall expire on the third anniversary of the issuance of final payment under this Contract.

- The Contractor further agrees to include in any subcontract for more than \$10,000 entered into as a result of this Contract, a provision to the effect that the subcontractor agrees that the City or any duly authorized representative may have access to and the right to examine and copy any directly pertinent books, documents, papers, and records of such subcontractor involved in transactions related to such subcontract, or this Contract. The tenn subcontract as used herein shall ex.elude subcontracts or purchase orders for public utility services at rates established for unifonn applicability to the general public. This risftt expires on the third anniversary of the issuance of final payment to the subcontractor.

• **ASSIGNMENT OF RIGHTS:**

1. Antitrust: By entering into a Contract, the Contnctor conveys, sells, assigns, and transfers to the City aJl rights, title and interest in and to all causes of action it may now have or hereafter acquire under the antitrust laws of the United States and the Commonwealth of Virginia, relating to the particular Goods or Services purchased or acquired by the City under said Contract.

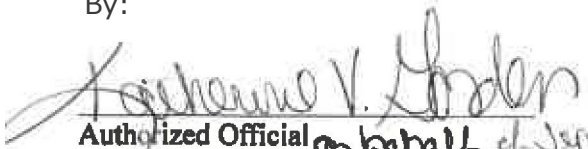
2. Wamnty: By entering into a Contract, the Contractor conveys, sells, assigns and transfers to the City all warranties related to Goods or Services provided to the City under this Contract.

IN TESTIMONY WHEREOF, the City of Manassas has caused its name to be hereunto subscribed pursuant to authority heretofore duly granted by the City Council of the City of Manassas; and

Contractor has caused its name to be hereunto subscribed by Contractor's Representative, and (If a Corporation) has caused its corporate seal to be duly affixed and attested by the person authorized to do so, signifying that it intends to be bound by this Contract.


CITY OF MANASSAS

By:


Authorized Official *on behalf of Jerry Buck*
of Purchasing Manager
Katherine V. Gordon, Buyer
Print Name and Title
on behalf of Purchasing Manager

CONTRACTOR

By:


Contractor's Representative
Tia Laurie, Corporate Secretary
Print Name and Title

RFP NO: 21P011

REQUEST FOR PROPOSAL

ATTACHMENT "A"

VII. PROPOSAL SUBMISSION FORM

HOURLY EQUIPMENT AND LABOR PRICE SCHEDULE

Equipment Type	Hourly Equipment Rate
Bobcat Loader, 60 Hp, w/grapple, w/Operator	\$ 95.00
Bucket Truck w/Operator (lift height)	\$215.00
Crash Truck w/Impact Attenuator and driver	\$ 95.00
Dozer, Tracked, D5 or similar w/Operator (Wt./Hp.)	\$150.00
Dozer, Tracked, D6 or similar w/Operator (Wt./Hp.)	\$160.00
Dozer, Tracked, D7 or similar w/Operator (Wt./Hp.)	\$165.00
Dozer, Tracked, D8 or similar w/Operator (Wt./Hp.)	\$175.00
Dump Truck, 18 CY-20 CY w/CDL Driver	\$ 85.00
Dump Truck, 21 CY-30 CY w/CDL Driver	\$ 89.00
Dump Truck, 31 CY-70 CY w/CDL Driver	\$ 94.00
Dump Truck 70 CY-110 CY w/CDL Driver	\$ 98.00
Generator/ Light Plant w/fuel and maintenance(Specify KW)	\$ 42.00
Grader w/12' Blade and Operator (Wt./Hp.)	\$155.00
Hydraulic Excavator, 1.5 CY (Wt./Hp.) w/Operator	\$170.00
Hydraulic Excavator, 2.5 CY (Wt./Hp.) w/Operator	\$178.00
Knuckle boom Loader,10,000 lb. capacity w/Operator	\$192.00
Lowboy Trailer w/Tractor and Driver	\$115.00
Mobile Crane (Adequate for hanging limbs/leaning trees) w/Operator (lift capacity)	\$189.00
Pickup Truck, .5 Ton Pickup Truck, 1.0 Ton Truck, Flatbed w/Driver (Model/Hp.)	\$ 18.90
Water Truck,3,000-5,000 gal w/CDL Driver (list tank capacity)	\$ 98.00
Wheel Loader, 2.5 CY, 950 or similar (Wt./Hp.) w/Operator	\$135.00
Wheel Loader, 3.5 – 4.0 CY, 966 or similar (Wt. & Hp) w/Operator	\$150.00
Wheel Loader, 4.5 CY, 980 or similar (Wt./Hp.) w/Operator	\$175.00
Wheel Loader-Backhoe, 1.0 – 1.5 CY (Wt./Hp.) w/Operator	\$120.00
Other – Provide Separate List (Wt./Hp.) w/Operator	
Labor Category	Hourly Labor Rate
Operations (Project) Manager w/communications and Pickup	\$ 80.00
Crew Foreman w/Cell Phone and Pickup	\$ 58.00
Certified Tree Climber with Chainsaw	\$ 52.00
Certified Chainsaw Operator (saw man)	\$ 44.00
Laborer w/small tools, traffic control, or flag person	\$ 37.00

REQUEST FOR PROPOSAL

ATTACHMENT "A"

UNIT RATE PRICE SCHEDULE

Service Provided	Cost
Eligible Public Right of Way Vegetative Debris Removal (Collect & Haul)	(\$ Per CY)
Work consists of removal and transport of vegetative debris on the Public Right of Way to a City approved TDSR or other designated disposal facility.	\$8.54
*Alternative Price by Ton (do not include in Total)	(\$ Per Ton) \$98.16
**Alternative Price Per Cubic Yard (CY) inclusive of the following four Unit Rate Price Schedule items:	(\$ Per CY) \$14.38
<input type="checkbox"/> Eligible Public Right of Way Vegetative Debris Removal (Collect & Haul) <input type="checkbox"/> Removal of Eligible Hazardous Trees <input type="checkbox"/> Removal of Eligible Hazardous Limbs <input type="checkbox"/> Extraction of Eligible Hazardous Stumps above 24 inch and larger. (do not include in Total)	
***Alternative Price by Ton inclusive of the following four Unit Rate Price Schedule items:	(\$ Per Ton) \$148.24
<ul style="list-style-type: none"> • Eligible Public Right of Way Vegetative Debris Removal (Collect & Haul) • Removal of Eligible Hazardous Trees • Removal of Eligible Hazardous Limbs • Extraction of Eligible Hazardous Stumps above 24 inch and larger. (do not include in Total)	
Eligible Public Right of Way C&D Debris Removal (Collect & Haul)	(\$ Per Ton)
Work consists of removal and transport of C&D debris on the Public Right of Way to a City designated disposal facility.	\$59.85
Eligible Demolition, Removal, and Transport of Structures	(\$ Per Ton)
Work consists of all labor, equipment, fuel and miscellaneous costs necessary to demolish structures on private property.	\$80.00
TDSR Management and Operations	(\$ Per CY)
Work consists of the management and operation of TDSR(s) for acceptance, management, segregation and staging of disaster related debris.	\$1.15
*Alternative Price by Ton (do not include in Total)	(\$ Per Ton) \$7.80
Grinding of Eligible Vegetative Storm Debris (Reduction of Storm Generated Debris)	(\$ Per CY)
Work consists of all labor, equipment, fuel and miscellaneous costs necessary to reduce storm generated debris by grinding.	\$4.19
*Alternative Price by Ton (do not include in Total)	(\$ Per Ton) \$44.54

RFP NO: 21P011

REQUEST FOR PROPOSAL

ATTACHMENT "A"

Service Provided	Cost
Incineration of Eligible Storm Debris (Reduction of Storm Generated Debris)	(\$ Per CY)
Work consists of all labor, equipment, fuel and miscellaneous costs necessary to reduce storm generated debris by incineration.	\$1.38
*Alternative Price by Ton (do not include in Total)	(\$ Per Ton) \$16.28
Disposal of Eligible Reduced Vegetative Debris at City Approved Final Disposal Site Est.	(\$ Per Ton)
Work consists of loading and transport of reduced debris from a City TDSR to a Final Disposal Facility.	\$9.98
Removal of Eligible Hazardous Trees	(\$Per Tree)
Work consists of removing hazardous trees.	
9. 6 inch to 12.99 inch diameter	\$55.00
• 13 inch to 23.99 inch diameter	\$115.00
• 24 inch to 35.99 inch diameter	\$225.00
• 36 inch to 47.99 inch diameter	\$385.00
• 48 inch and larger diameter	\$535.00
Removal of Eligible Hazardous Limbs	(\$Per Tree)
Total Work consists of removing (cutting) hazardous limbs from trees. Unit price is per tree.	\$85.00
Extraction of Eligible Hazardous Stumps	Cost
Work consists of removing hazardous stumps, backfill, transport and final disposal. All-inclusive price.	(\$Per Stump)
I. Greater than 24 inch to 36.99 inch diameter	\$245.00
A. 37 inch to 48.99 inch diameter	\$345.00
I. 49 inch and larger diameter	\$415.00
Eligible HHW Removal, Transport and Disposal	(\$Per Pound)
Total Work consists of all labor, equipment, fuel and miscellaneous costs for removal, transportation and disposal of Eligible Household Hazardous Waste at City approved TSDF.	\$11.88
Removal of Eligible Abandoned Vehicles	(\$Per Unit)
Work consists of the removal of Eligible abandoned vehicles in areas identified and approved by the City and subsequently transported to a City approved staging area.	\$175.00

Service Provided	Cost
Removal and Final Disposal of Eligible Putrescent Debris	(\$ Per Ton)
Work consists of the removal of food products from staged white goods and removal of animal carcasses approved by the City and final disposal in City approved facility.	\$300.00
Eligible Public Right of Way White Goods Removal and Recycling	(\$ Per Unit)
Work consists of all labor, equipment, fuel and miscellaneous costs for removal, transportation and recycling of White Goods.	\$34.00
*Alternative Price by Ton (do not include in Total)	(\$ Per Ton) \$750.00
Freon Removal from Eligible White Goods	(\$ Per Unit)
Work consists of the recovery and disposal of refrigerants from items containing Freon.	\$28.00
Eligible Electronic Waste (E-Waste) Removal and Recycling	(\$ Per Unit)
Work consists of the removal, transportation to County approved staging area and packaging for recycling.	\$42.00
*Alternative Price by Ton (do not include in Total)	(\$ Per Ton) \$693.00
Eligible Small Motorized Equipment (SME) Removal and Disposal	(\$ Per Unit)
Work consists of collection, oil and fuel recovery and disposal and recycling at a County approved facility.	\$75.00

CITY OF MANASSAS EQUIPMENT LIST

City Equipment Available

AP2	2019 FREIGHTLINER 108SD	DUMP TRUCK
AP6	2020 BOBCAT T650	SKID STEER
AP8	2018 BOBCAT 3400G	UTV
AP9	2014 New Holland POWERSTAR 4.75	TRACTOR
E12	2014 International WORKSTAR 7300	BUCKET TRUCK
E25	2015 DODGE 5500 4x4	BUCKET TRUCK
E27	2018 HYUNDAI 20L-7M	FORK LIFT
E27A	2011 MASTERCRAFT MC/M-12-1112B	FORK LIFT
E38	2005 BOBCAT 430G	MINI EXCAVATOR
E4	2021 FREIGHTLINER M2106	BUCKET TRUCK
E7	2021 FREIGHTLINER 108SD	DIGGER TRUCK
E7A	2007 International 4300	DIGGER TRUCK
E8	2018 FORD F450	DUMP TRUCK
M4	2001 FORD F550	BUCKET TRUCK
PDEZGO	2012 EZ-GO ST STHL GCRB4/6	UTV
R10	2002 John Deere 5420 TRACT	TRACTOR
R11	2017 TORO 74943	MOWER
R12	2014 DR FIELD&BRUSH FBM 145E	BUSH HOE
R13	2014 John Deere 5085E	TRACTOR
R14	2015 TORO SNOW BLAST	SNOW BLOWER
R16	2009 FORD F750 SuperDuty	CHIPPER TRUCK
R23	2014 TORO 74942	MOWER
R24	2009 TORO MOWER	MOWER
R25	2022 TORO 72505	MOWER
R26	2022 TORO 72921	MOWER
R30	2019 TORO 74906	MOWER
r32	2014 TORO 74942	MOWER
R33	2014 TORO 74942	MOWER
R35	2014 TORO 30464N	SNOW BLOWER
R36	2001 John Deere 1332DDE	SNOW BLOWER
R36C	2007 HUSQVARNA 1330SBEXP	SNOW BLOWER
R37	2009 WOODS BB7200X	BUSH HOG
R38	2018 VERMEER BC1000XL 31VP	CHIPPER TRUCK
R39	2022 TORO 39521	MOWER
R5	2007 FORD F450	DUMP TRUCK
R9	2020 VEN-TRAC 4500P	SNOW BLOWER
S10	2014 FREIGHTLINER 108SD	DUMP TRUCK
S11	2021 FREIGHTLINER 108SD	DUMP TRUCK
S12	2011 FREIGHTLINER M2106	POT HOLE TRUCK
S13	2016 BUYERS SCH096C	SALT SPREADER
S14	2006 International DUMP	TANDEM DUMP TRUCK
S14C	2008 HENDERSON SPREADER	SALT SPREADER
S15	2021 John Deere 710L	BACKHOE
S16	2012 FORD F450	DUMP TRUCK
S17	2021 BOMAG BT 50	TAMPER
S18	2018 ODB LEAF LCT600	LEAF MACHINE

S18A	2014 ODB LEAF LCT600	LEAF MACHINE
S19	2018 ODB LEAF LCT600	LEAF MACHINE
S20	2014 VOLVO DD25	ROOLER
S21	2002 HOLDER C9700H	SNOW BLOWER
S22	2006 GMC C7500	DUMP TRUCK
S23	2020 MAULDIN M415-XT	MOTOR GRADER/LOADER
S24	2000 INGERSOLL P185WJD	AIR COMPRESSOR
S25	2002 WACKER WP1550AW	PLATE TAMPER
S26	2004 John Deere 410G	BACKHOE
S27	2021 BOMAG BT 50	TAMPER
S28	1997 WACKER 1550AW	PALTE TAMPER
S30A	1995 WACKER BS60Y	TAMPER
S31	1998 FORD V390THA	VACTOR TRUCK
S32	2000 CATERPILLAR 953C	TRACK LOADER
S34	2014 FREIGHTLINER 108SD	DUMP TRUCK
S35	2020 FREIGHTLINER 108SD	DUMP TRUCK
S35B	2012 SWENSON EV-150 VBX	SALT SPREADER
S38	2017 FREIGHTLINER 114SD	TANDEM DUMP TRUCK
S38A	2002 SWENSON EV-150 VBX	SALT SPREADER
S4	2017 FREIGHTLINER M2106	SWEEPER
S40	2022 CRAFTCO MELTER	CRACK SEALER
S44	2007 INGERSOLL AIR COMPR	AIR COMPRESSOR
S45	2015 FREIGHTLINER 108SD	DUMP TRUCK
S45B	2007 SWENSON EV-150 VBX	SALT SPREADER
S46	2023 John Deere 544P	RUBBER TIRE LOADER
S50	2019 FREIGHTLINER 108SD	DUMP TRUCK
S50A	2019 GOOD ROADS M3-15 SS	SALT SPREADER
S50B	2004 GMC C7500	CRASH CUSION
S52	2005 GMC C7500	DUMP TRUCK
S55	2000 WACKER RT820 ROLL	SHEEP FOOT COMPACTOR
S57	2017 John Deere 50G	MINI EXCAVATOR
S59	2020 FORD F450	DUMP TRUCK
S59B	2021 SALT DOGG HOPPER SPREADER	SALT SPREADER
S66	2019 MARSHALLTOWN 600CM	CEMENT MIXER
S67	2018 John Deere 325G	SKID STEER
S67A	2005 BOBCAT T190	SKID STEER
S68	2022 HUSQVARNA SAW	SAW
S7	2022 FREIGHTLINER M2106	SWEEPER
S70	2013 AMERICAN CMS-T33X	MESSAGE BOARD
S71	2013 AMERICAN CMS-432-T	MESSAGE BOARD
S8	2015 FREIGHTLINER 108SD	DUMP TRUCK
S9	2013 International WORKSTAR 7300	DUMP TRUCK
T11	2002 TARGET SAW PRO35 III	CEMENT SAW
T2	2019 FORD F550	BUCKET TRUCK
T9A	2021 TRANTEX 20H20	THERMO TRAILER
W12	2018 John Deere 324E	SKID STEER
W15	2001 FREIGHTLINER FL112	TANDEM DUMP TRUCK
W17	2019 FREIGHTLINER 114SD	TANDEM DUMP TRUCK
W19	2016 DOOSAN P185	AIR COMPRESSOR
W21	2014 CATERPILLAR PKG 1851	WATER PUMP
W22	2004 John Deere 710G	BACKHOE

W25	2018 VOLVO DD25B	ROOLER
W26	2014 RAM 5500 4x4	CRAIN TRUCK
W29	2014 John Deere 410K	BACKHOE
W30	2002 FORD F550	JETTER TRUCK
W33	1996 INGERSOLL P185WJD	AIR COMPRESSOR
W34	2017 VAC TRON LP573GT	MINI VACTOR
W35	2017 FREIGHTLINER 114SD	VACTOR TRUCK
W37	2016 DOOSAN LSC-60	LIGHT TOWER
W40	2020 DOOSAN LCV6WKUB	LIGHT TOWER
W41	2021 VER-MAC ST-4X8	MESSAGE BOARD
W44	2017 AMERICAN CMS-432-T	MESSAGE BOARD
W46	2008 CATERPILLAR 924H	RUBBER TIRE LOADER
W47	2020 VER-MAC PCMS 3812	MESSAGE BOARD
W49	2021 VER-MAC ST-4X8	MESSAGE BOARD
W50	2008 CATERPILLAR 3000	MINI EXCAVATOR
W52	2012 John Deere 319D	SKID STEER
W57	2018 KAWASAKI MULE	UTV
W7	2017 FORD F550	DUMP TRUCK

Appendix C:
Debris Control Zone Map

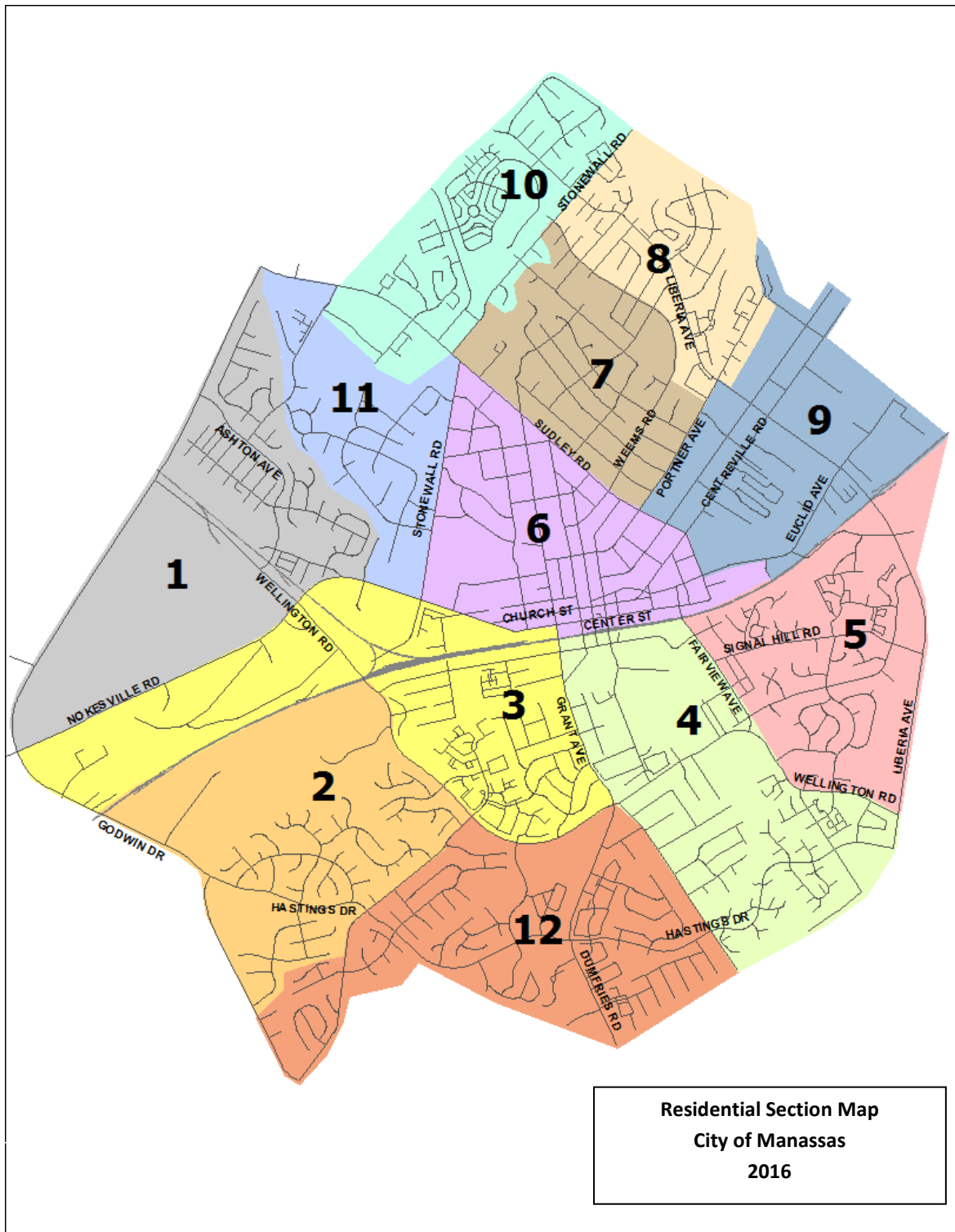


TABLE C-1

Debris Zoning Map – Housing Distribution					
Zone	Single Family	Townhouse	Condo	Apartment	Mobile
1	333	505			
2	764				
3	84	1312	568	164	
4	688	101	214	283	
5	473	169	361	482	
6	508	91		12	
7	544				
8	363	995		246	
9	19	11	64	79	196
10	568	160	362	293	
11	348		110		
12	794	264	373	635	
Total	5486	3608	2052	2194	196

Appendix D:

Critical Facilities

In accordance with the Emergency Operations, the City Critical Facilities are as follows:

Fire Stations

- City Of Manassas Fire & Rescue Stations

9322 Centerville Road, Manassas, VA 20110 (Zone 6)

10306 Dumfries Road, Manassas, VA 20110 (Zone 12)

Police Stations

- City of Manassas Public Safety Building
9608 Grant Avenue, Manassas, VA 20110 (Zone 3)

Emergency Operations Center

- 9608 Grant Avenue, Manassas, Virginia 20110 (Zone 3)

Hospitals/Medical Facilities

- Prince William Hospital
8700 Sudley Road, Manassas, VA 20110 (Zone 10)

Staging Area

Vegetation Only

Site		Address
Stonewall Park		8300 Stonewall Road, Manassas, VA 20110
Byrd Park		8528 Cavalry Lane, Manassas, VA 20110
Round Elementary School (upper parking lot)		10100 Hastings Dr, Manassas, VA 20110

Destination

Trash and Vegetation

Site	Address
Prince William County Landfill	14811 Dumfries Rd, Manassas, VA 20112

Appendix E



City of Manassas Department of Public Works Snow Removal Plan



City of Manassas

Department of Public Works

Snow Removal Plan

Purpose

To outline priorities and processes for snow removal operations within the City of Manassas.

Objectives

The Street Department is the primary responder during snow events within the City. Street Department crews are responsible for snow removal and the de-icing of roads to:

- Improve public safety
- Ensure that emergency responders can reach residents
- Keep commuters and commerce moving safely through our community

This aligns with City of Manassas Code of Ordinances, Chapter 102, §102:7 and Chapter 114, Division 8, §114:621- §114:650. This is also in alignment with Code of Virginia, §15.2-1115.

Risk Mitigation

- To effectively prepare for and manage priorities, staff and resources required to safely remove snow from public thoroughfares and public parking lots within the City of Manassas;
- To ensure safe passage for pedestrians and vehicles using public thoroughfares and public parking lots within the City of Manassas;
- To inform and integrate with Emergency Responders and City Departments during snow/ice events within the City of Manassas;
- To reduce reputational risk by using effective processes for handling and disseminating information both internally and externally.

Intended Audience

- City Manager
- Public Works and Utilities Staff
- Emergency Responders
- City of Manassas Staff
- City of Manassas Residents

City of Manassas - Snow Removal Plan

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1. Background

The City of Manassas Public Works Department maintains all public streets and all school, commuter, rail and public parking lots including City Hall, Animal Shelter, Boys and Girls Club, Public Works Facility, Fire, Rescue and Police. Public Works crews clear all sidewalks around these facilities.

The Street Department promptly and efficiently removes snow and applies chemicals and abrasives for the control of ice and snow on over 254 lane miles of roadway in the city. In addition, it provides snow removal on parking lots at all eight of the city schools, the removal of snow at the seven municipal parking lots, and all city building parking lots. This also includes removing snow on sidewalks in front of city owned properties.

2. Mobilization of Crews and Equipment

The Public Works Department mobilizes necessary personnel and equipment, when the weather forecast calls for a high probability of a snow or an ice storm. If a snow or ice storm occurs at night or without warning, the Public Works and Utilities Operations center provides notification to the appropriate personnel.*

*Note: In the event of emergency or significant snow accumulation that may exceed fleet capacity for timely snow removal; the City uses private contractors and equipment.

Crews

The mobilization of personnel is adjusted, as required, to prepare for the onset of a snow or ice event. Crews work twelve-hour shifts, as required, and are kept on standby in order to respond quickly to incidents and changes in weather as they occur.

Equipment

The City maintains a fleet of 24 trucks and additional equipment for snow removal.

3. Snow Emergency Routes

The following streets are designated as Snow Emergency Routes, in the City of Manassas. During snow and ice events, the Department of Public Works acts in accordance with City of Manassas Code of Ordinances, Chapter 102, §102:7 and Chapter 114, Division 8, §114:621-§114:650:

Dumfries Road/Route 234
Hastings Drive
Godwin Drive
Liberia Avenue
Richmond Avenue
Fairview Avenue
Grant Avenue
Wellington Road
Ashton Avenue
Cockrell Road

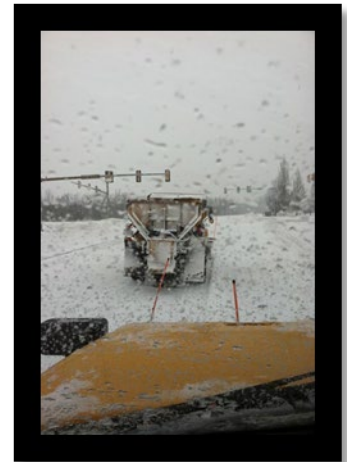
Nokesville Road/Route 28
Center Street
Prescott Avenue
Sudley Road/Route 234
Church Street
Zebedee Street
Centreville Road
Mathis Avenue
Portner Avenue
(Public Works to Liberia Avenue)
Euclid Avenue

Please refer to Snow Removal map Appendix A

4. Treating Roads: First Run and Second Run Routes

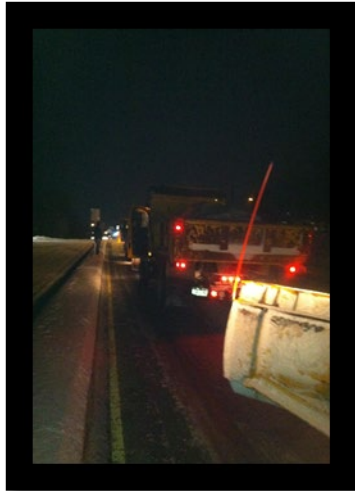
There are six First Run and six Second Run Routes.

During a snow or ice event, roads are treated on a priority basis. The first priority is to treat Snow Emergency Routes and primary roads, which are defined as First Run Snow Routes. Once these roads are passable, school bus routes and collector streets, defined as Second Run Snow Routes will be treated. If a storm continues, crews may have to return to the First Run Snow Routes to keep these streets clear and passable.



Please refer to Appendix B, C, and F for a full listing of First Run and Second Run Routes, as well as snow removal service levels.

5. Plowing - First and Second Run Routes



Street plowing begins once snow reaches a depth of approximately 2-3 inches. Streets are plowed starting with First Run Snow Routes. Once these roads are passable, Second Run Snow Routes are plowed. In the event of heavy snowfall, crews may have to return to the First Run Snow Routes to keep these streets clear and passable.

Once the snow has stopped falling or the snow event is under control, snow piles will be hauled from the Old Town area at the discretion of the Public Works Department depending on the snow accumulation and the weather forecast.

Please refer to Appendix B, C, and F for a full listing of First Run and Second Run Routes, as well as snow removal service levels.

6. Public Buildings and Parking Lots

Snow Removal

City crews remove snow from the seven municipal parking lots and all City building parking lots.

Sidewalks

Sidewalks, in the City of Manassas, are cleared by the Buildings and Grounds Department. Crews work in three teams and clear sidewalks and walkways according to an agreed schedule of priority areas.

Please refer to Appendix D for a full listing of designated priority areas.

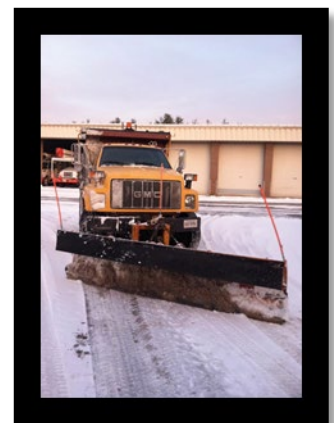
7. Schools

Snow Removal

City crews remove snow from parking lots at all eight of the City schools.

The bus loops at all City schools are plowed and treated as Second Run snow routes. If the schools remain open, crews will keep the bus routes and the parking lots and other roads passable.

If schools are closed, crews do not plow them until all other First Run and six Second Run Routes all complete.



Sidewalks

School sidewalks, including the areas around the building and parking lots, are cleared by the School Board Staff. The Buildings and Grounds Department clear the sidewalks along the street in front of the schools. These crews work in three teams and clear sidewalks and walkways according to an agreed schedule of priority areas.

Please refer to Appendix D for a full listing of designated priority areas.

8. Plowing Residential Areas

There are twelve Residential Sections.

Once plowing of all First and Second Run Routes is completed, crews begin plowing **Residential Sections**. Many of the residential streets with the City are treated as **First and Second Run Routes**. The remaining streets are plowed curb to curb in **Residential Sections**. These are the same sections designated in the City's Leaf Collection map. Each street will be cleared as completely as possible and treated where required depending on conditions.

Sand and salt is not spread on all residential streets. Streets in residential areas, including intersections and hills, are treated with chemicals and abrasives for the control of ice and snow only where necessary, depending on forecasts and conditions. Privately owned property, including streets are maintained and treated by property owners and relevant Homeowner's Associations.

Please refer to Appendix E for a map of designated residential areas.

9. Residential Sidewalks and Private Property

For rules/guidelines to remove snow from residential sidewalks and sidewalks bordering private property, please refer to City of Manassas Ordinance Chapter 102, §102.7.

The same requirements exist with respect to ice or sleet on sidewalks. Sidewalks must be covered, within the time required in this section, with sawdust, ashes or other material, which will make the sidewalk safe for travel. Clearing sidewalks of unoccupied properties is the responsibility of the property owner.

City staff regularly inspects sidewalks for safety. Residents are advised that they are liable for the cost of snow/ice removal if the City determines that it poses a hazard to public safety.

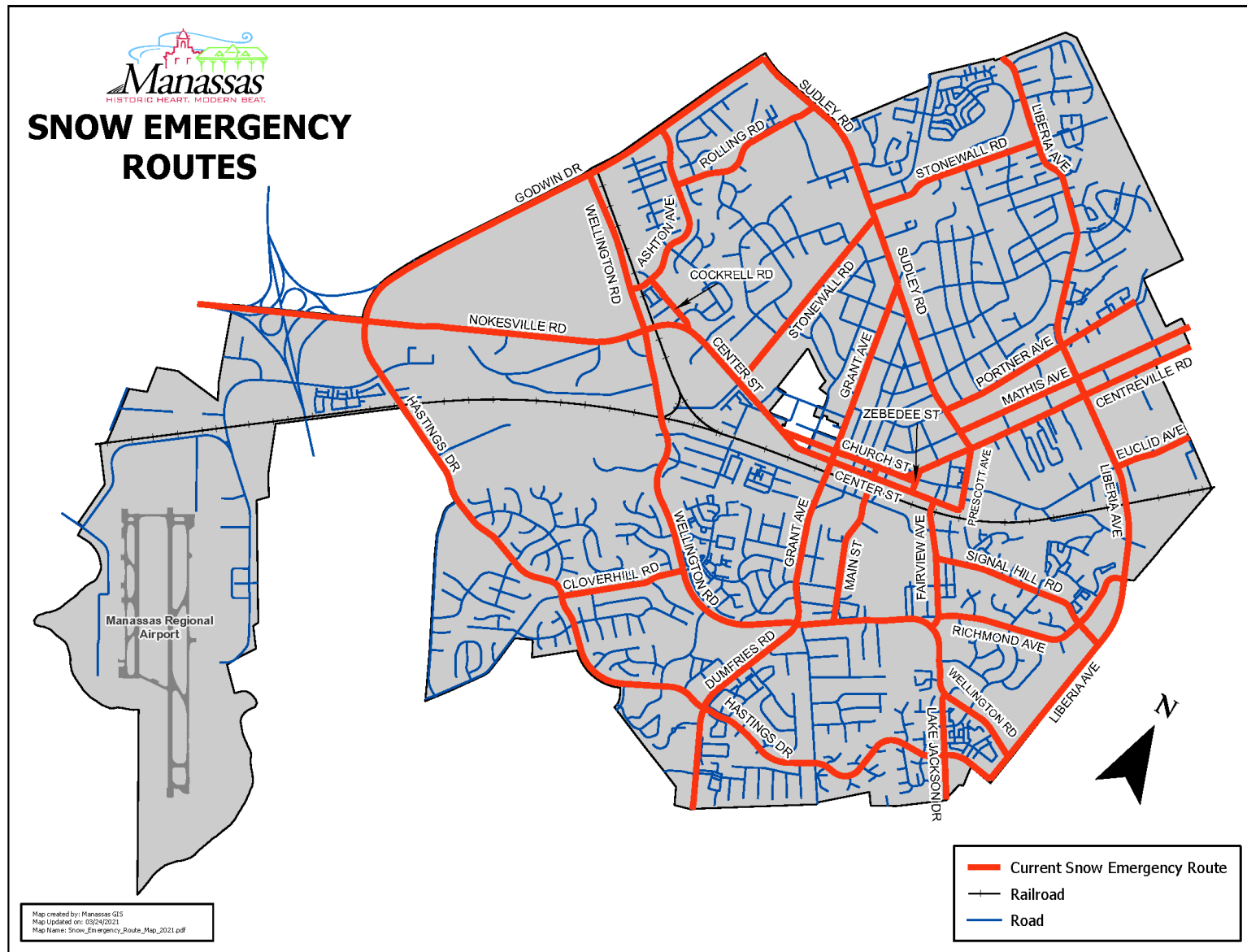
10. Communication during Incidents and Emergencies

The Department of Public Works regularly notifies citizens of snow removal procedures through the City website and City Connect newsletter.

All general public inquiries are directed to the Public Works office during regular business hours 703-257-8378. Outside regular business hours, all inquiries should be directed to Public Works and Utilities Operations 703-257-8353.

In the event of an incident or emergency in relation to snow removal within the City of Manassas, Emergency Services, the Director of Public Works and Utilities, City Manager and Safety Officer must be notified. They will determine the appropriate information and means of delivery to ensure public safety.

Appendix E-1



Appendix E-2

First Run Snow Routes		
Street Name	From	To
Ashton Ave		
Breeden Ave		
Center St		
Centreville Rd	Center St	City Limits
Church St		
Clover Hill Rd	Godwin Dr	Wellington Rd
Cockrell Rd		
Digges Rd	Next to Hospital	
Dumfries Rd		
Euclid Ave	Quarry Rd	City Limits
Fairview Ave		
Godwin Dr		
Grant Ave	Sudley Rd	Wellington Rd
Hastings Dr	Godwin Dr	Prince William Prkwy
Lake Jackson Dr	Wellington Rd	City Limits
Liberia Ave	City Limits	Prince William Prkwy
Main St	Prince William St	Wellington Rd
Mathis Ave	Sudley Rd	City Limits
Nokesville Rd	Center St	City Limits
Portner Ave	Public Works Dr	Sudley Rd
Prescott Ave		
Public Works Dr		
Quarry Rd	Euclid Ave	Zebedee St
Richmond Ave	Liberia Ave	Fairview Ave
Rolling Rd		
Signal Hill Rd	Fairview Ave	Richmond Ave
Stonewall Rd	Liberia Ave	Center St
Sudley Rd		
Wellington Rd	Godwin Dr	Liberia Ave
Zebedee St		

Appendix E-3

Second Run Snow Routes

Street Name	From	To	Street Name	From	To
Abbott Rd	Winterset Dr	Hasting Dr	Mayfield School		
Amaryllis Ave	Gloxinia Wy	Wellington Rd	Metz School		
Aspen Ln			Milic St		
Baldwin School			Nagle St		
Battlefield Dr			Oakenshaw Dr	Signal Hill Rd	Wellington Rd
Bayberry Ave			Observation Rd	Wakeman Dr	Airport Tower
Beech Pl			Orchard Ln		
Bens Way	Shannon Ln	Flowerden Ln	Osborn School		
Berkshire St			Park Ave	Park St	Rolling Rd
Bragg Ln			Park St	Peabody St	Stonewall Rd
Buckner Rd			Peabody St	Center St	Stonewall Rd
Burnside Rd			Peabody St	Stonewall Rd	Park St
Byrd Dr			Pickett Ln		
Cedar Ridge Dr	Shannon Ln	Godwin Dr	Plantation Ln		
Central Park Dr			Portner Ave	Sudley Rd	Grant Ave
Clover Hill Rd	Wellington Rd	Cul-de-sac	Prince William St		
Clover Hill Rd	Hastings Dr	City Limits	Quarry Rd	Euclid Ave	Liberia Ave
Clover Hill Ct	Constance Pl	Clover Hill Rd			
Confederate Trl			Round School		
Constance Pl	Waterford Dr	Clover Hill Ct	Sarajevo Ct	Karlo St	Milic St
Dean School			Shannon Ln		
Flowerden Ln	Bens Way	Clover Hill Rd			
Forestwood Ln	Stonewall Rd	Plantation Ln	South Grant Ave	Hastings Dr	Virginia Ave
Gateway Blvd			Spruce Wood Dr	Lucasville Rd	Cul-de-sac
George St			Stonewall Rd	Center St	Railroad Tracks
Gloxinia Wy	Strawflower Ln	Amaryllis Ave	Stonewall Rd	Liberia Ave	Stonewall Park
Godwin Dr	Hastings Dr	Clover Hill Rd	Strawflower LN	Clover Hill Rd	Gloxinia Wy
Grant Ave	Jackson Ave	Sudley Rd	Stuart Ave		
Greenleaf Dr	Cedar Ridge Dr	Shannon Ln	Sumner Lake Blvd	Liberia Ave	Plantation Ln
Hampton Rd			Sweetbriar St		
Haydon School			Taney Rd		
Hendley Rd			Thornwood Ln		
Hood Rd			Town Ln		
Jackson Ave			Traveller St		
Janja Ct	Hastings Dr	Karlo St	Tudor Ln	Prince William St	Fairview Ave
Karlo St	Janja Ct	Sarajevo Ct	Wakeman Dr	Gateway Blvd	End
Lee Ave	West St	Courthouse	Waterford Dr	Clover Hill Rd	Constance Pl
Liberty St			Weems Rd		
Lucasville Rd	Hastings Dr	City Limits	Weems School		
Main St	Prince William St	Sudley Rd	West St	Prince William St	Stuart Ave
			Winterset Dr		
Mathis Ave	Sudley Rd	Main St	Zimbrow Ave	Confederate Trl	Cockrell Rd
Maury Ln					

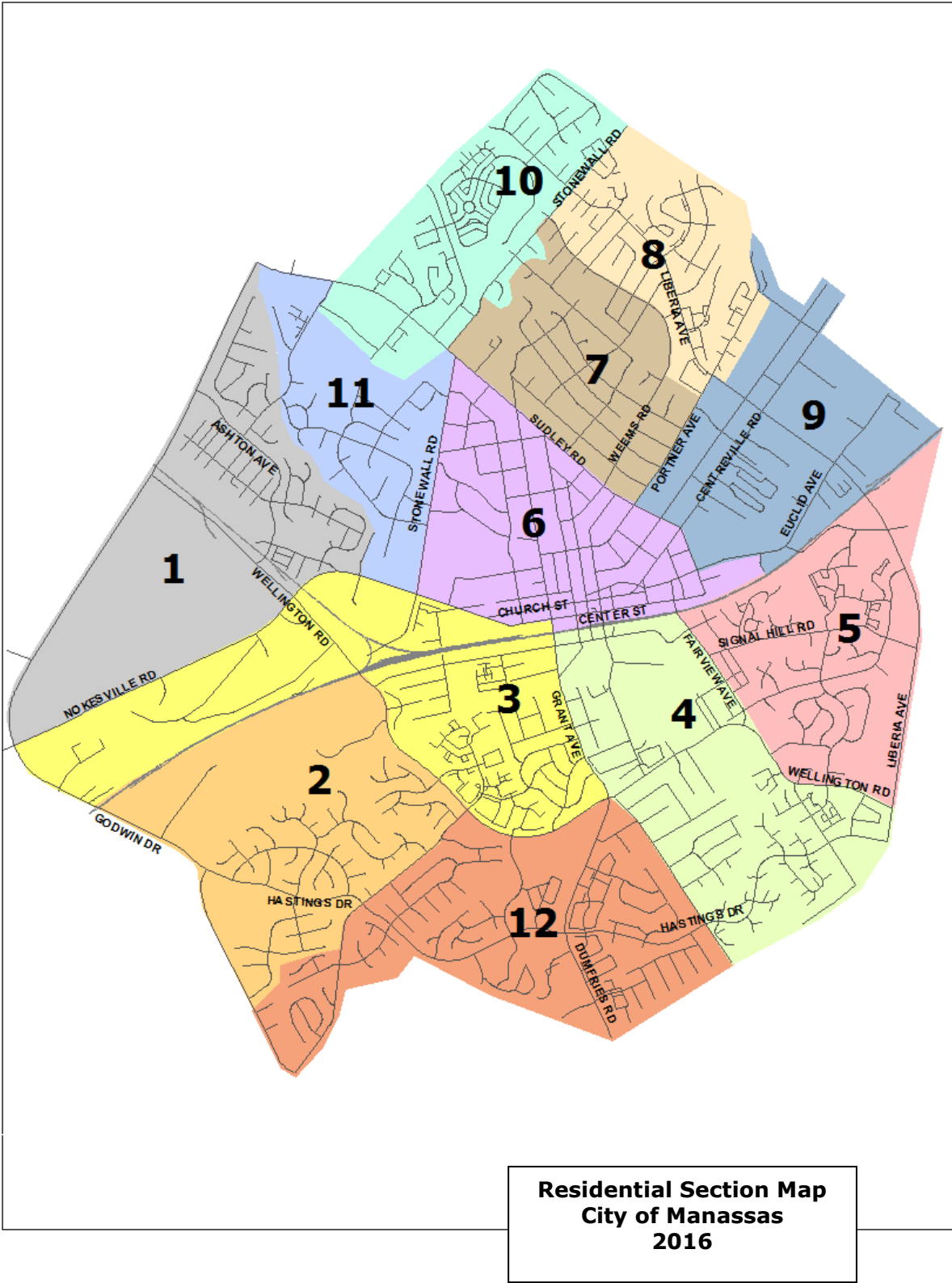
Appendix E-4

Sidewalk Clearance Priority List

Priority #1
Train Depot and Commuter Lot
Depot platforms at West Street (Platforms need to be cleaned between each train arriving and departing if snowing heavily.) Sidewalks around West Street parking lot. Sidewalks from RR tracks to Prince William Street on West Street and Battle Street. Sidewalks from Prince William Street to Tudor Lane on South Main Street Sidewalk on Prince William Street. to parking lot D.
Priority #2
City Hall
Front and rear entrances and sidewalks. Sidewalks in front of property on Center Street.
Public Works
Sidewalks and entrance areas.
Police Department
Sidewalks on Fairview Avenue entrance area and around building.
City Square
Walkways around Pavilion. Walkway from Main Street to West Street (behind Fosters Grill.)
Priority #3
Commuter Lot L
Sidewalks on Church Street and Quarry Road.
Underpass – Grant Avenue
Sidewalks on both sides from Prince William Street to Center Street.
Priority #4
Schools
<ul style="list-style-type: none"> ❖ Baldwin: School side of street on South Main Street. Asphalt walk from Main Street. to Bartow Street. ❖ Haydon: School side of street on Park Avenue and walkway from Zimbrow Avenue to Park Street. ❖ Mayfield: School side of street on Signal Hill Road. ❖ Metz: School side of street on Wellington Road and back entrance to Osbourn on Wellington Road. ❖ Osbourn: School side of South Main Street and both sides of Tudor Lane to “Do Not Enter” sign. ❖ Round: School side of street on Hastings Drive. from America House property to Battlefield Drive. ❖ Weems: School side of street on Traveler Street and Weems Road.
Priority #5
Museum
Sidewalks on Prince William Street and South Main Street. Sidewalks from Prince William Street to Museum building and all of the brick area.
Animal Shelter
Entrance and sidewalks around building.
Nelson Park
Nelson Park: Sidewalk on Grant Avenue and Sudley Road and Gazebo.
Stonewall Park
Around cul-de-sac at the park and steps.
Candy Factory
Sidewalk and entrance on Main Street and Battle Street.

Appendix E-5

Residential Section Map



Appendix E-6

Levels of Service for Snow and Ice Control – From End of Storm

Accumulation (inches)	1 st and 2 nd Run Routes Plowed/Treated/Cleared	Residential Streets Completed	Schools and Commuter Parking Lots
0-2	Within 12 hours	n/a	After all routes are at least passable
2-4	Within 18 hours	Within 24 hours	
4-8	Within 24 hours	Within 36 hours	
8-12	Within 30 hours	Within 48 hours	
12-18	Within 36 hours	Within 60 hours	
18+	Within 48 hours	Within 78 hours	
Ice or Freezing Rain	Within 12 hours	Spot treated as needed	

- ❖ For snow storms accumulating 4” or greater, contracted pickups will be utilized from the beginning of the event. This chart only depicts when City resources will complete their routes.

Primary Road Clearance List

In accordance with the Emergency Operations the highest priority for debris removal will be to open emergency routes and exits and entrances to the City Critical Facilities such as but not limited to, fire stations, police stations, Emergency Operations Center, and hospitals/medical facilities.

The top priority routes will be cleared first. All roads shown in red below are priority and will be cleared first. All secondary roads will be cleared in accordance with the residential zoning as shown in Appendix: C Debris Control Zone Map

The following streets are designated as Emergency Clearance Routes, in the City of Manassas.

Emergency Routes

Dumfries Road/Route 234
Hastings Drive
Godwin Drive
Liberia Avenue
Richmond Avenue
Fairview Avenue
Grant Avenue
Wellington Road
Ashton Avenue
Cockrell Road

Nokesville Road/Route 28
Center Street
Prescott Avenue
Sudley Road/Route 234
Church Street
Zebedee Street
Centreville Road
Mathis Avenue
Portner Avenue
(Public Works to Liberia Avenue)
Euclid Avenue

First Run Removal Routes	
<ul style="list-style-type: none"> Ashton Avenue Breeden Avenue Center Street Centreville Road Church Street Cloverhill Road: Wellington Road – Hastings Drive Cockrell Road Digges Road near Prince William Hospital Dumfries Road: Wellington Road - City limits Euclid Avenue Fairview Avenue: Wellington Road – Quarry Road Godwin Drive: Sudley Road – Hastings Drive Grant Avenue: Sudley Road - Wellington Road Hastings Drive: Godwin Drive – Dumfries Road Hastings Drive: Dumfries Road - Lake Jackson Drive Lake Jackson Drive Liberia Avenue: Centreville Road – City limits 	<ul style="list-style-type: none"> Liberia Avenue: Centreville Road – Hastings Drive Mathis Avenue: Sudley Road – City limits Nokesville Road Portner Avenue: Breeden Avenue - Sudley Road Prescott Avenue Public Works Drive Quarry Road: Euclid Avenue – Zebedee Street Richmond Avenue: Liberia Avenue – Fairview Avenue Stonewall Road: Liberia Avenue – Center Street Sudley Road Wellington Road: Grant Avenue – Godwin Drive Wellington Road: Grant Avenue - Liberia Avenue Wellington Road: Liberia Avenue – Lake Jackson Drive Zebedee Street

Second Run Removal Routes

<ul style="list-style-type: none"> • Amaryllis Avenue: Gloxinia Way – Wellington Road • Aspen Lane • Battlefield Drive • Bayberry Avenue • Beech Place • Bens Way: Shannon Lane – Flowerden Lane • Berkshire Street • Bragg Lane • Buckner Road • Byrd Drive • Cedar Ridge Drive: Shannon Lane – Greenleaf Drive • Central Park Drive • Stonewall Road: Center Street – Wellington Road • Cloverhill Court: Constance Place – Cloverhill Road • Cloverhill Road: Hastings Road – City limits • Cloverhill Road: Wellington Road – Cul-de-Sac • Constance Place: Waterford Drive – Cloverhill Court • Dean School (Bus Loop) • Flowerden Lane: Bens Way – Cloverhill Road • Forestwood Lane • Gateway Boulevard • George Street • Gloxinia Way: Strawflower Lane – Amaryllis Avenue • Grant Avenue: Jackson Avenue – Sudley Road • Greenleaf Drive: Cedar Ridge Drive – Shannon Lane • Hampton Road • Hendley Road • Hood Road • Jackson Avenue • Liberty Street • Observation Road: Wakeman Drive – Tower • Old Godwin Drive: Hastings Road – Cloverhill Road • Orchard Lane: Dumfries Road – South Grant Avenue 	<ul style="list-style-type: none"> • Maury Lane • Pickett Lane • Plantation Lane • Prince William Street • Rolling Road • Sweetbriar Street • Park Avenue: Park Street – Rolling Road • Peabody Street: Stonewall Road – Park Street • Burnside Road • Confederate Trail • Zimbardo Avenue: Confederate Trail – Center Street • Haydon School (Bus Loop) • Round School (Bus Loop) • Shannon Lane • Signal Hill Road: Fairview Avenue – Richmond Avenue • South Grant Avenue: Orchard Lane – Hastings Drive • South Main Street: Prince William Street – Richmond Avenue • Stonewall Road: Liberia Avenue – Stonewall Park • Strawflower Lane: Cloverhill Road – Gloxinia Way • Sumner Lake Boulevard • Taney Road • Thornwood Lane • Town Lane • Traveler Street • Tudor Lane: Prince William Street – Fairview Avenue • Wakeman Drive: Gateway – Cul-de-Sac • Waterford Drive: Cloverhill Road – Constance Place • Weems Road • Weems School (Bus Loop) • West Street: Prince William Street – Stuart Avenue
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**Appendix F:
Temporary Debris Staging
and Reduction Areas**

Temporary Debris Staging and Reduction Sites are typically temporary in nature and used for debris segregation, stockpiling or reduction. The following Temporary Debris Staging and Reduction Sites are available for debris:

Site	Address
Stonewall Park	8300 Stonewall Rd, Manassas, VA 20110
Byrd Park	8528 Cavalry Lane, Manassas, VA 20110
Round Elementary School (upper parking lot)	10100 Hastings Dr, Manassas, VA 20110

Figure F-1: Stonewall Park

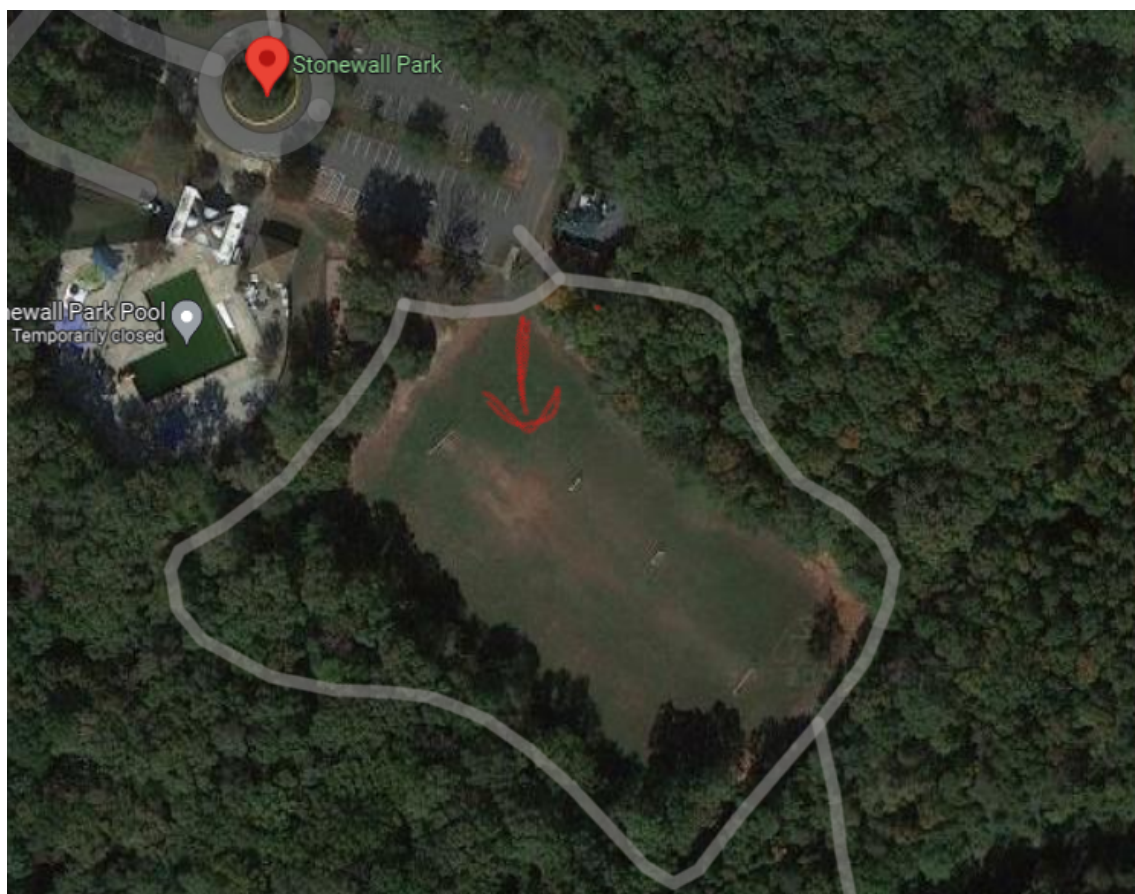


Figure F-2: Byrd Park

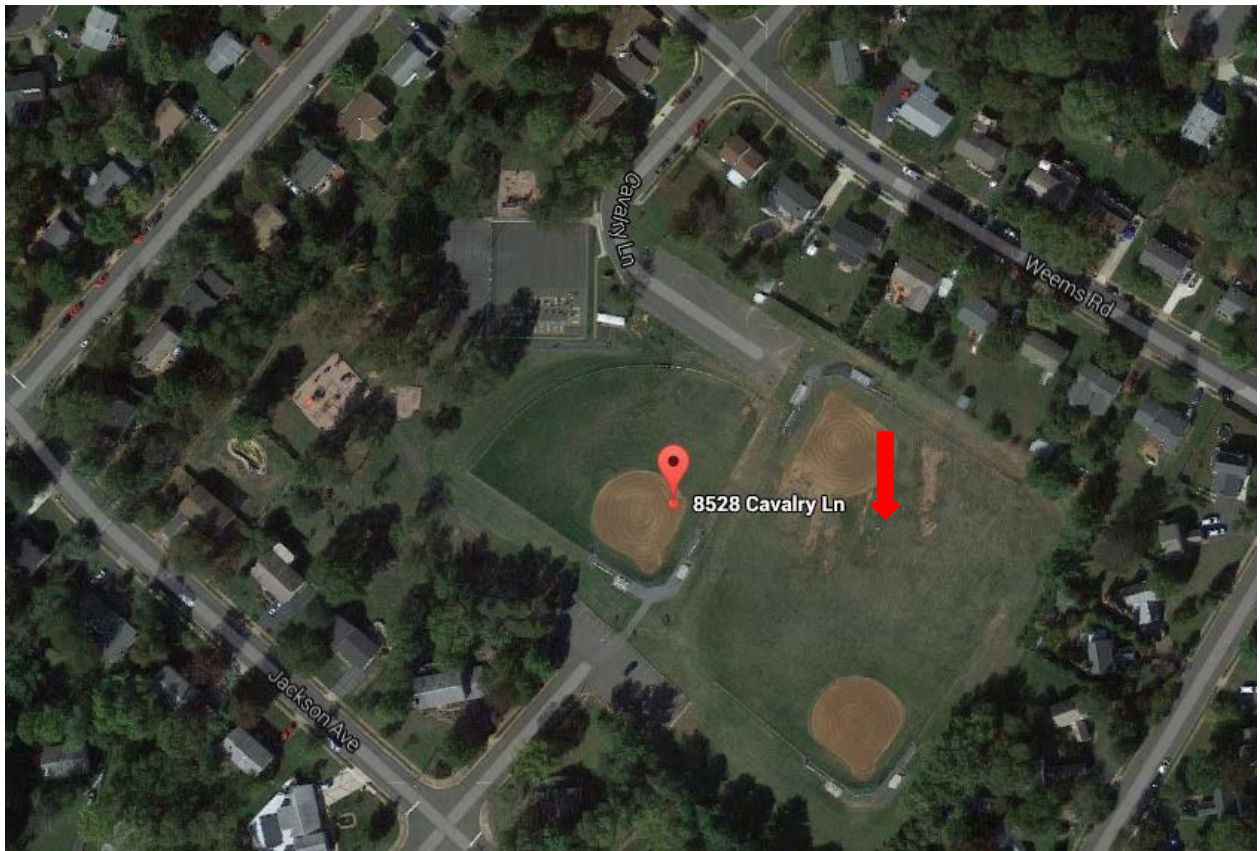


Figure F-3: Round Elementary School



COMMONWEALTH OF VIRGINIA
TEMPORARY DEBRIS STAGING AND
REDUCTION SITE SELECTION AND OPERATING
GUIDELINES

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General

All activities associated with large-scale debris removal and ultimate disposal operations depend upon the availability of suitable temporary debris staging and reduction (TDSR) sites. Identifying these potential sites before a major natural disaster will expedite debris removal actions. Local debris managers and staff should be involved with identifying and maintaining current listings of potential TDSR sites in areas prone to natural disasters. Pre-disaster site selection teams should include local officials who are familiar with the area and represent multiple professional disciplines, if possible, to help identify potential problems

The preparation and operation of a TDSR site(s) are usually left to the debris disposal contractor. However, debris managers and staff should understand how a TDSR site is set up and operated. This information is extremely valuable in developing ultimate disposal plans, keeping local government officials and the public informed on debris removal and disposal operations, and ensuring compliance with environmental regulations. Section 1 of this document provides guidance on how to identify and select TDSR sites. See section 5 for a listing of reproducible forms. See section 6 for Debris Management Environmental Considerations.

Responsibilities

Pre-disaster site selection teams should:

- Include local officials who are familiar with the area.
- Be interdisciplinary to help identify potential problems.
- Investigate and evaluate potential sites before a major natural disaster.
- Develop and maintain current listings of potential debris storage sites in areas prone to natural disasters.

Consult and coordinate with:

- Local residents.
- Conservation agencies.
- Environmental groups and agencies.
- State Historical Preservation Office.

Site Ownership

- Use public lands first to avoid costly leases.
- Use private lands only if public sites are unavailable.
- Have attorneys review leases to avoid extensive damage claims upon site closeout.

Site Location

- Consider the locations with respect to noise, traffic, and the environment.
- When selecting public or private sites consider pre-existing conditions that may hinder or help the operation.
- Avoid environmentally sensitive areas such as:
 - Wetlands.
 - Rare and critical habitats of animal and plant species.
 - Well fields and surface water supplies.
- Historic/archaeological sites should be avoided as well.
- Develop procedures for temporary waivers.
- Look for sites with good ingress/egress to accommodate heavy truck traffic.
- Consider adjusting traffic signals to accommodate projected truck traffic on critical haul routes.

Site Size

- Pre-designated sites should be on public property and consist of between 50 and 200 acres.
- The required size of the site will depend on:
 - Expected volume of debris to be collected.
 - Planned volume reduction methods.
- Identifying large sites mean fewer sites and easier site closeout.

Site Neighbors

- Notify citizens early about the planned activities and possible ramifications from:
 - Dust and smoke from burning.
 - Around-the-clock light and noise from equipment operation.
 - Traffic.
- Avoid locating near:
 - Residential areas.
 - Schools.
 - Churches.
 - Hospitals.
 - Other sensitive areas.

Existing Landfills

- Identify locations of existing landfills.
- Determine their present debris capacity and logistical capabilities.
- Review any State-to-State or county-to-county landfill agreements.

Recycling

Recycling success will depend on the types of debris and the local recycling environment. Identify recycling possibilities, such as:

- Timber agreements.
- Mulch and chip disposal in the agriculture community.
- Fuel sources for incinerators or heating.

Temporary Debris Staging and Reduction (TDSR)

Site Investigation Form

The TDSR Site Investigation form in section 5 should be used to evaluate potential TDSR sites.

Temporary Debris Staging and Reduction (TDSR)

Site Setup and operations

TDSR Site Setup

Site topography and soil/substrate conditions should be evaluated to determine best site layout. When planning site preparation, think of ways to make restoration easier. For example, if the local soils are very thin, the topsoil can be scraped to bedrock and stockpiled in perimeter berms. Upon site closeout, the uncontaminated soil can be spread to preserve the integrity of the tillable soils.

The checklist below is a TDSR baseline data checklist that should be used to evaluate a site before a contractor begins operations, and used during and after operations to ensure that site conditions are properly documented. See section 5 for a reproducible TDSR Site Baseline Data Checklist.

TDSR Site Baseline Data Checklist

Before Activities Begin

- ☐ Take ground or aerial photographs and/ or video.
- ☐ Note important features, such as structures, fences, culverts, and landscaping.
- ☐ Take random soil samples*.
- ☐ Take random groundwater samples*.
- ☐ Take water samples from existing wells*.
- ☐ Check the site for volatile organic compounds.

*Follow all local, State, and Federal requirements for environmental testing.

After Activities Begin

- ☐ Establish groundwater-monitoring wells.
- ☐ Take groundwater samples.
- ☐ Take spot soil samples at household hazardous waste, ash, and fuel staging areas.

Progressive Updates

- ☐ Update videos/photographs.
- ☐ Update maps/sketches of site layout.
- ☐ Update quality assurance reports, fuel spill reports, etc.

TDSR Site Operations

Debris removal/disposal should be viewed as a multi-staged operation with continuous volume reduction. There should be no significant accumulation of debris at the TDSR sites. Instead, debris should be constantly flowing to air curtain burners, grinders, or recycled with the residue and mixed construction and demolition materials going to a landfill.

The contractor hired to operate a TDSR site must establish lined temporary staging areas for household hazardous waste (HHW), fuels, ash (if air curtain burning will be done on site), and other materials that may contaminate soils and groundwater. Plastic liners should be placed under stationary equipment such as generators and mobile lighting plants. These actions should be included as a requirement in the contract scope of work. If the site is also an equipment staging area, fueling and equipment repair should be monitored to prevent and mitigate spills of petroleum products and hydraulic fluids.

The contractor must establish a buffer zone to abate concerns over smoke, dust, noise, and traffic in neighboring areas. Traffic patterns must be designed to accommodate on-site operations as well as neighborhood traffic patterns. Materials should be segregated based on planned volume reduction methods. Operations that modify the site, such as substrate compaction and over excavation of soils when loading debris for final disposal, will adversely affect site restoration.

TEMPORARY DEBRIS STAGING AND REDUCTION (TDSR) SITE CLOSEOUT

TDSR Site Closeout Inspection

Each TDSR site will eventually be emptied of all material and be restored to its previous condition and use. The contractor is required to remove and dispose of all mixed debris, construction and demolition debris, and debris residue to approved landfills. Appropriate local inspectors will monitor all closeout activities to ensure that the contractor complies with the Debris Removal and Disposal Contract. Additional measures may be necessary to meet county, state and federal environmental requirements due to the nature of the TDSR site operation

TDSR Site Closeout Planning

The contractor must assure the Debris Manager that all TDSR sites are properly remediated. There will be significant costs associated with this operation as well as close scrutiny by the local press and environmental groups. Site remediation will go smoothly if baseline data collection and site operation procedures are followed.

TDSR Site Closeout Steps

1. The contractor is responsible for removing all debris from the site.
2. The contractor conducts an environmental assessment with Debris Manager and landowner (if site is leased).
3. The contractor should develop a remediation plan.
4. Remediation plan should be reviewed by the Debris Manager, landowner, and appropriate environmental agency.
5. The remediation plan should be approved by the appropriate environmental agency.
6. Contractor executes the plan.
7. The contractor obtains acceptance from the Debris Manager, appropriate environmental agency, and the landowner.

TDSR Site Remediation

During the debris removal process and after the material has been removed from each of the TDSR sites, environmental monitoring will be needed to close each of the sites. This is to ensure that no long-term environmental contamination is left on the site. The monitoring should be done on three different media: ash, soil, and groundwater.

- Ash. The monitoring of the ash should consist of chemical testing to determine the suitability of the material for either agricultural use or as a landfill cover material.
- Soil. Monitoring of the soils should be by portable inspection methods to determine if any of the soils are contaminated by volatile hydrocarbons. The contractors may do this if it is determined that hazardous material, such as oil or diesel fuel was spilled on the site. This phase of the monitoring should be done after the stockpiles are removed from the site.
- Ground Water. The monitoring of the groundwater should be done to determine the probable effects of rainfall leaching through either the ash areas or the stockpile areas.

TDSR Site Closeout Coordination

The contractor will coordinate the following closeout requirements through the Debris Management Center staff:

- Coordinate with local and state officials responsible for construction, real estate, contracting, project management, and legal counsel regarding requirements and support for implementation of a site remediation plan.
- Establish an independent testing and monitoring program. The contractor is responsible for environmental restoration of both public and leased sites. The contractor will also remove all debris from sites for final disposal at landfills prior to closure.
- Reference appropriate and applicable environmental regulations.

- Prioritize site closures.
- Schedule closeout activities.
- Determine separate protocols for ash, soil and water testing.
- Develop decision criteria for certifying satisfactory closure based on limited baseline information.
- Develop administrative procedures and contractual arrangements for closure phase.
- Inform local and State environmental agencies regarding acceptability of program and established requirements.
- Designate approving authority to review and evaluate contractor closure activities and progress.
- Retain staff during closure phase to develop site-specific remediation for sites, as needed, based on information obtained from the closure checklist shown below.

TDSR Site Closure Checklist

- ☐ Site number and location.
- ☐ Date closure complete.
- ☐ Household hazardous waste removed.
- ☐ Contractor equipment and temporary structures removed
- ☐ Contractor petroleum spills remediated.
- ☐ Ash piles removed.
- ☐ Comparison of baseline information to conditions after the contractor has vacated the temporary site.
- ☐ Appendices.
 - Closure documents.
 - Contracting status reports.
 - Contract.
 - Testing results.
 - Correspondence.
 - Narrative responses.

See Section 5 for a reproducible TDSR Site Closeout Checklist.

TDSR Site Final Closeout

Once a TDSR site is no longer needed, it should be closed in accordance with the following guidelines. Closeout or re-approval of a TDSR site should be accomplished within 30 days of receiving the last load of debris

Closeout is not considered complete until the following occurs:

- All processed and unprocessed vegetative material and inert debris shall be removed to a properly approved solid waste management site.
- Tires must be disposed of at a scrap tire collection/processing facility; white goods and other metal scrap should be separated for recycling.
- Burn residues shall be removed to a properly approved solid waste management site or land applied in accordance with these guidelines.

- All other materials, unrecoverable metals, insulation, wall board, plastics, roofing material, painted wood, and other material from demolished buildings that is not inert debris as well as inert debris that is mixed with such materials shall be removed to a properly permitted C & D recycling facility, C & D landfill, or municipal solid waste landfill.

TDSR Site Re-approval

Approved TDSR sites will require re-approval for long-term staging, continuing reduction processing, and permanent disposal if site is not closed out in accordance with guidelines stated above. TDSR sites shall be managed and monitored in accordance with local Health Department requirements and to prevent threats to the environment or public health.

EMERGENCY DEBRIS WASTEPILE PERMITTING CRITERIA

General

This is an application for an emergency permit to dispose of waste generated as the result of natural or manmade disasters. The emergency permit request may be oral or written. If oral, it shall be followed within five days by a written emergency permit application. Oral responses can only be given if the applicant is fully aware of the site requirements outlined in this application, otherwise a written request must be provided using this application. Mail or fax the written request to the Department.

Emergency Permits are valid for 90 days from the time they are issued. All associated waste activities must be inclusive in the 90-day period.

Department of Environmental Quality (DEQ) Contact:

Recommend that the following DEQ contact be consulted prior to submitting the following forms to obtain current requirements.

DEQ Central Office
629 East Main Street
Richmond, VA 23240
Attn: Mr. Paul Ferrel
Phone: (804) 698-4214 or (804) 698-4000

See Website for complete Land Management Permits Guidance:

<http://www.mde.state.md.us/Permits/WasteManagementPermits/index.asp#waste>
Instructions

Read all sections carefully. Fill in all of the information on DEQ Form EDWP-01 and all applicable information on DEQ Form EDWP-02. See Paragraph 5 for a reproducible copy of the form. Public notice information required by the applicant is found on EDWP-03 and a certification signature is required on EDWP-04. See Paragraph 5 below for a reproducible copy of the forms. Note that a site map, flood map, US Fish and Wildlife Service National Wetlands Inventory Map and a list of wastes to be received, and the manner and location of their treatment, storage and disposal must accompany this application. The site may either

be selected prior to the emergency or immediately after the emergency. The Department encourages pre-selection. Follow the applicable guidelines below.

Pre-Selected Sites

If the site is pre-selected, public participation must be held in accordance with the Virginia Solid Waste Management Regulations (VSWMR) regulations 9 VAC 20-80-485.A.5 and 9 VAC 20-80-485.B.4. The Department will not consider approval of a pre-selected site without public participation. Pre-selected sites, if approved, will be granted an emergency permit upon request at the time of the emergency.

The applicant needs only to contact the Department, either orally or in writing, and provide a notice that a pre-selected site will be used for the present emergency. The notice shall include, as a minimum, the applicants name and contact information, the nature of the emergency, and the location of the site and owners name. Oral requests shall be followed with a written request within five days. DEQ Form EDWP-01 and DEQ Form EDWP-02 must be on file with the Department prior to the emergency for all pre-selected sites. The public notice form is found on form EDWP-03. See Paragraph 5 below for a reproducible copy of the forms.

Post Emergency Sites

In the case of selecting a site immediately after an emergency, the Department may grant a temporary emergency permit through oral or written requests. The applicant may verbally relate the information requested on DEQ Form EDWP-01 and DEQ Form EDWP-02 but must provide written copies within five days or as soon as the infrastructure support will allow. See Paragraph 5 below for a reproducible copy of the forms. In addition, a public notice as per 9 VAC 20-80-485.B.4 shall be published, by the applicant, within five days of the request, or as soon as practicable, in order for the emergency permit to become effective. A copy of the advertisement shall be faxed to the Department once it is published. Disposal of waste may commence upon verbal approval but all waste activities must cease after 90 days.

FORMS

The following forms may be reproduced:

- Temporary Debris Staging and Reduction (TDSR) Site Investigation Form
- Temporary Debris Staging and Reduction (TDSR) Site Base Line Data Checklist
- Temporary Debris Staging and Reduction (TDSR) Site Closure Checklist
- DEQ FORM EDWP-01 - Emergency Debris Wastepile Permit Information
- DEQ FORM EDWP-02 - Emergency Debris Wastepile Siting Criteria
- DEQ FORM EDWP-03 - Public Notice for Emergency Permits
- DEQ FORM EDWP-04 - Certification
- DEQ FORM EDWP-05 - Attachment A thru Attachment D
- DEQ FORM EDWP-06 - Attachment D (Continued) thru Attachment F

TEMPORARY DEBRIS STAGING AND REDUCTION (TDSR) SITE INVESTIGATION FORM									
DATE:				TIME:					
SITE NAME:									
SITE ADDRESS:									
SITE COORDINATES:									
SITE DESCRIPTION:									
SITE RECOMMENDED FOR USE:				Yes				No	
CHARACTERISTIC		Yes	No	CHARACTERISTIC		GOOD	FAIR	POOR	
Public Property				Surface Drainage					
In 100 Year Floodplain				Noise Acceptability					
>200 Acres				Smoke Acceptability					
>100 Acres				Suitable Ingress/Egress					
>50 Acres				Suitable in Wet Weather					
<50 Acres				Site Lends Itself to Easy Preparation					
EXPLAIN "YES" RESPONSES									
Close to Schools, Hospitals, Residential, Churches									
Obvious Environmental Concerns									
Mostly Open/Clear									
Wetlands/Creeks/ Ponds									
Developed									
Brownfield									
Paved Surfaces									
Already Fenced									
Adjacent to Airfield									
On-site Utilities									
Requires Access Roads/Internal Roads									
Capable of Handling Large No. of Vehicles									
Proximity to Major Roadway									
COMMENTS:									
VEGETATIVE COVER:		NONE		LIGHT			MEDIUM		DENSE
CLOSEST LANDFILL AND APPROX. DISTANCE:									
PROPOSED SITE OWNER:									
OWNER'S PHONE NUMBER AND ADDRESS:									
PHOTOGRAPHS WERE TAKEN:				YES			NO		
PHOTOGRAPH NUMBERS:									

SKETCH ON BACK

TEMPORARY DEBRIS STAGING AND REDUCTION SITE

BASELINE DATA CHECKLIST

The following site baseline data checklist should be used to evaluate a site before a contractor begins operations and used during and after to ensure that site conditions are properly documented

Before Activities Begin

- ☐ Take ground or aerial photographs and/ or video.
- ☐ Note important features, such as structures, fences, culverts, and landscaping.
- ☐ Take random soil samples.
- ☐ Take random groundwater samples.
- ☐ Take water samples from existing wells.
- ☐ Check the site for volatile organic compounds.

After Activities Begin

- ☐ Establish groundwater-monitoring wells.
- ☐ Take groundwater samples.
- ☐ Take spot soil samples at household hazardous waste, ash, and fuel Staging areas.

Progressive Updates

- ☐ Update videos/photographs.
- ☐ Update maps/sketches of site layout.
- ☐ Update quality assurance reports, fuel spill reports, etc.

TEMPORARY DEBRIS STAGING AND REDUCTION SITE

CLOSURE CHECKLIST

The private sector debris removal contractors must assure the City Deputy Debris Manager that all TDSR sites are properly remediated. There will be significant costs associated with this operation as well as close scrutiny by the local press and environmental groups. Site remediation will go smoothly if baseline data collection and site operation procedures are followed.

- Contractor responsible for removing all debris from the site.
- Contractor conducts an environmental assessment with Debris Management Center staff and landowner.
- Contractor develops a remediation plan.
- Remediation plan reviewed by Debris Management Center staff, landowner, and appropriate environmental agency.
- Remediation plan approved by the appropriate environmental agency.
- Contractor executes the plan.
- Contractor obtains acceptance from County Deputy Debris Manager, appropriate environmental agency, and the landowner.

The following checklist should be used to document site closure activities

- ☐ Site number and location.
- ☐ Date closure complete.
- ☐ Household hazardous waste removed.
- ☐ Contractor equipment and temporary structures removed.
- ☐ Contractor petroleum spills remediated.
- ☐ Ash piles removed.
- ☐ Comparison of baseline information to conditions after the contractor has vacated the temporary site.
- ☐ Appendices.

Closure Documents.

- Contracting status reports.
- Contract.
- Testing results.
- Correspondence.
- Narrative responses.

DEQ Contact Information

Department of Environmental Quality 13901 Crown Court Woodbridge, VA 22193 Attention: Solid Waste Permitting	Phone: (703) 583-3800 Fax: (703) 583-3821 Please call prior to faxing to inform staff
---	---

EMERGENCY DEBRIS WASTEPILE SITING CRITERIA

Put a T or X in the Yes / No Columns as necessary. Additional information is provided as attachments A-F. Please read each criterion carefully. Sign the certification on DEQ FORM EDWP-04.

SITING CRITERIA		YES	NO
1	Site Location Map Attached		
2	Not prone to base floods [100 year flood plain, coastal flooding] or inundation. *Copy of FEMA Map or Equivalent is attached		
3	Site is geologically stable. (see Attachment A)		
4	Site has adequate berm area and terrain to manage leachate release.		
5	Not closer than:		
	100 feet from any regularly flowing surface water body or river.		
	200 feet from any well, spring, or other groundwater source of drinking water		
6	WETLANDS SHALL NOT BE IMPACTED. (see Attachment B)		
	US Fish and Wildlife Service National Wetlands Inventory Map is attached.		
7	Site characteristics:		
	Slopes less than 33%		
	No springs seeps or other groundwater intrusions		
	No gas, water, sewage, or electrical or other transmission lines under the site.		
	No existing open dump, unpermitted landfill, lagoon, or similar facility on site.		
	Specific site conditions which may be considered for exemption (applies only to site characteristics)		
	SPECIFY:		
8	No strip mines, exposed bedrock or quarries present. (See Attachment C)		
	If No, does the site have a liner as per Attachment C?		
9	Fifty-foot firebreak around disposal areas and from all treelines		
10	Does not impact cemeteries (public, private, pet) or culturally sensitive areas.		
11	Has ample access for delivery vehicles.		
12	Is anticipated waste acceptable for disposal? (See Attachment D)		
	(90 day permit, all activities inclusive)		
13	Can the waste be segregated for disposal? (See Attachment D)		
14	Public notice form with required information attached.		
	(See Attachment F. Form should be faxed with other required forms. May be verbal over phone, if necessary.)		
15	For pre-selected sites, was a public meeting held?		
	Public Meeting Location:		
	Date: ____/____/_____(mm/dd/yyyy)		
16	Can the site be closed in accordance with Department standards? (See Attachment E)		

Public Notice for Emergency Permits

Type of media (e.g. newspaper or radio)	
Name of media (e.g. newspaper)	
Contact Name	
Phone Number	
Fax Number	
Publication Cycle	

NEWSPAPER ADVERTISEMENT

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF WASTE PERMITTING
PUBLIC NOTICE FOR A TEMPORARY EMERGENCY PERMIT
TO TREAT AND STORE SOLID WASTE

DUE TO _____,
(Emergency)
FOR _____, VA
(City, town, county)

Due to the recent emergency from _____, and pursuant to the requirements of 9 VAC 20-80-485 .B.4 of the Virginia Solid Waste Management Regulations (VSWMR), Permitting of Solid Waste Management Facilities, The Virginia Department of Environmental Quality (Regional Office Address & ZIP, hereby authorizes _____ to operate a temporary emergency debris site located at _____.

The site will receive the following solid wastes:

_____.

Typical treatment, storage, and disposal options will include:

_____.

The site meets the minimum siting requirements deemed necessary for environmental protection and public safety. Groundwater monitoring is not required but leachate management and run-off control are required. The permit will expire 90 days from the date of verbal or written authorization given on _____. Closure shall include the removal of wastes, waste constituents, and all temporary features used in support of the waste activities associated with deposit, environmental protection, maintenance, and operation. Final closure should return the site to as near as natural condition as possible prior to the disposal of waste. If there are any questions or concerns regarding the issuance of the temporary emergency permit, please contact the Department at (XXX) XXXXXXXX or at the above address.

Revised 9/03

DEQ FORM EDWP-03

ALL APPLICATIONS MUST BE SIGNED

CERTIFICATION:

I hereby affirm that the information provided on this application is accurate and complete to the best of my knowledge. I fully understand the requirements of the siting criteria and that an emergency permit is valid for 90 days from the time of issuance. All activities must be inclusive in the 90-day period. Failure to provide accurate and complete information or follow the requirements and conditions of this application may result in permit denial or revocation. I have enclosed a copy of the advertisement that was published in the local newspaper.

Signed_____Date_____
(Type or Print dd/mm/yyyy)

Title or Authority by_____
(Type or Print)

The following items must be returned to the Department:

- _____ Contact Information (EDWP-01)
- _____ Siting Checklist (EDWP-02)
- _____ Copy of Advertised Public Notice
- _____ Certification (EDWP-04)

ATTACHMENT A: GEOLOGY

Emergency debris (ED) wastepiles shall not be sited in geologically unstable areas where inadequate foundation support for the structural components of the wastepile exists. Factors to be considered when determining unstable areas shall include:

- a) Soil conditions that may result in differential settling and subsequent failure of containment berms;

EXAMPLES

- highly compressible clays
- collapsible soils
- liquefiable soil
- expansive soils
- frost-susceptible soil
- peat
- soils susceptible to hydrocompaction
- other conditions not explicitly listed

- b) Geologic or geomorphologic features that may result in sudden or non-sudden events and subsequent failure of containment berms;

EXAMPLES

- Landslide prone areas
- Abandoned river channels and lakes
- highly erosion-prone areas
- over sole source aquifer
- highly karstic areas
- groundwater seeps
- other conditions not explicitly listed
- structural discontinuities such as extreme folding, faulting, fracturing and jointing

- c) Man-made features or events (both surface and subsurface) that may result in sudden or non-sudden events and subsequent failure of containment berms;

EXAMPLES

- Emergency routes
- unpermitted landfills
- sludge lagoons
- unsuitable fill
- adjacent to highly explosive products such as chemical, petroleum or fertilizer storage bins
- downstream of weakened or damaged dams or other water retention structures
- over underground excavations such as storage tanks, sewer and traffic tunnels, mine shafts
- other conditions not explicitly listed

d. Presence of sink holes within the disposal area.

ATTACHMENT B: WETLANDS

Wetlands shall be avoided at all times. Existing wetland delineation maps prepared the US Fish and Wildlife Service shall be used to determine prohibited areas. Attach an applicable Wetlands Inventory Map with this application. Wetlands that are encountered on the site yet are not covered by the map shall not be used unless the U.S. Army Corps of Engineers provides an approval letter and it is attached to this application.

ATTACHMENT C: STRIP MINES, EXPOSED BEDROCK AND QUARRIES

In strip mine pits, all coal seams and coal outcrops shall be isolated from solid waste materials by a minimum of five feet of natural or compacted soils with a hydraulic conductivity less $1 \times 10^{-7} \text{cm/sec}$. Exposed bedrock and quarry faces shall also be lined with five feet of natural or compacted soil with a hydraulic conductivity $\# 1 \times 10^{-7} \text{cm/sec}$.

ATTACHMENT D: WASTE

Acceptable Waste

Demolition waste, construction waste, debris waste, land clearing debris, discarded tires, and white goods, free of chloroflourocarbons and PCBs. No other wastes are authorized for the ED wastepile. Liquid waste, sludge waste, radioactive waste, friable asbestos, medical waste and other similar waste shall be prohibited.

Hazardous waste shall be prohibited from the emergency wastepile except when a separate, distinct area can be lined with concrete, collection berms and ditches are erected, and containment booms, in conjunction with other containment strategies, are used.

Segregation

1. The limits of the wastepile shall be large enough to allow segregation of waste with 50-foot firebreak between each segregated area and any adjacent wastepiles or treelines.
2. Each segregated area shall be large enough to accommodate expected volume of waste type.
3. The following wastes require separate disposal areas within the limits of the emergency wastepile.
 - A. Yard Waste and Woody Products such as trees, stumps, untreated wood and timber, paper products, and untreated wooden household furnishings.
 - B. Treated and Painted Wood Products.
 - C. White Goods.
 - D. Tires.
 - E. Concrete, Asphalt and Building Material (friable asbestos is prohibited).
 - F. Hazardous Waste (if allowed).

ATTACHMENT E: CLOSURE

Closure shall include the removal of wastes, waste constituents and all temporary features used in support of the waste activities associated with deposit, environmental protection, maintenance and operation. Final closure should return the site to as near as natural condition as possible prior to the disposal of waste.

ATTACHMENT F: PUBLIC NOTICE

VSWMR 9 VAC 20-80-485.B.4 requires a public notice to be accompanied with the written permit. The Applicant will fill out DEQ FORM EDWP-03 and fax that to a newspaper in the largest circulation for that municipality. The generic form contains the required information. The form is self-explanatory and may be filled in by hand. PRINT, do not use cursive. It must be legible. A copy of the advertisement from the newspaper must be submitted to the Department within 24 hours after submitting the contact information and siting checklist. Once the Department receives the required permit application and a copy of the advertisement from the applicant the permit will be signed and issued. The actual publication date of the advertisement should be the soonest date possible depending on the soonest newspaper publication date.

ACRONYMS

ACM	Asbestos Containing Material
DEQ	Department of Environmental Quality
FEMA	Federal Emergency Management Agency
HHW	Household Hazardous Waste
TDSR	Temporary Debris Staging and Reduction
USACE	U.S. Army Corp of Engineers
UST	Underground Storage Tank
VSWMR	Virginia Solid Waste Management Regulations

LANDFILLS

Prince William County Landfill
14811 Dumfries Rd, Manassas, VA 20112

Appendix G:
Debris Contract Oversight Team
Standard Operating Guidelines

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Debris Removal and Disposal Operations

The City Debris Manager (DM) and Debris Management Center (DMC) staff will coordinate debris removal and disposal operations for all portions of the City. Phase II operations involve the removal and disposal of curbside debris by Public Works, Buildings and Grounds, and Utilities. While City agencies will provide oversight of their own removal operations, contractor operations will be overseen by the Debris Contractor Oversight Team (DCOT).

Mixed debris will be collected and hauled from assigned Debris Control Zones to designated temporary TDSR sites or to designated landfill locations. Clean woody debris will be hauled to the nearest designated vegetative TDSR site for eventual burning or grinding.

Load tickets will be used to track all debris that is loaded, hauled, and disposed of. Load tickets are to be used by both in-house and contracted haulers and will serve as supporting documentation for contractor payment as well as for requests for federal assistance or reimbursement.

Franchise garbage contractors will continue to pickup refuse in accordance with current procedures, routes, and removal schedules. They will haul disaster debris as requested by the contracting authority.

Debris Contractor Oversight Team

The Debris Contractor Oversight Team (DCOT) is responsible for the coordination, oversight, and monitoring of all debris removal and disposal operations performed by City debris removal and disposal Contractors.

The DCOT supervisor and team members will be detailed from Public Works, or a contractor. The DCOT team may also be supplemented with contracted inspectors and other personnel as needed.

The DCOT team supervisor will be located at the Debris Management Center (DMC) and will provide overall supervision of the two field-based monitoring elements as described below. The DMC is located at the City of Manassas Public Works, 8500 Public Works Drive, Manassas 20110. Specific DCOT Supervisor responsibilities include the following:

1. Planning, TDSR site inspection, quality control, and other contractor oversight functions.
2. Receiving and reviewing all debris load tickets that have been verified by a Disposal Site Monitor (see description below).
3. Making recommendations to the DRC regarding distribution of in-house and contractor work assignments and priorities.
4. Reporting on progress and preparation of status briefings.
5. Providing input to the City PIO on debris removal and disposal activities and pickup schedules.

The DCOT Supervisor will oversee the activities of two types of field-based inspection teams. The functions and responsibilities of the field inspectors are described in the following sections.

Roving Monitors

Teams of Roving Monitors will be assigned to a specific Debris Control Zones or to a specific Contractor depending upon the distribution of work assignments. Their mission is to act as the “eyes and ears” for the Debris Manager and DCOT Supervisor to ensure that all contract requirements, including safety, are properly implemented and enforced.

Staff to fulfill the Roving Monitor positions will be provided by Public Works, or a contractor. Roving Monitors will have the authority to monitor contractor operations and to report back to the DCOT Supervisor. Roving Monitors may request contract compliance, but do not have the authority to otherwise direct Contractor operations or to modify the contract scope of work.

The following actions will be initiated immediately after a debris-generating disaster:

1. The Debris Manager will establish two-person roving monitor teams with their own transportation and communications.
2. Roving Monitor teams will be assigned to each contractor’s debris removal and disposal zone.

Once assigned, Roving Monitors will monitor debris operations on a full-time basis and make unannounced visits to all loading and disposal sites within their assigned debris management zone(s). In addition, Roving Monitors are responsible to do the following:

1. Obtain and become familiar with all debris removal and disposal contracts for which they are providing oversight.
2. Observe all phases of debris management operation, to include loading sites, TDSR sites.
3. Complete a Debris Loading Site Monitoring Checklist (Attachment 2) for every site visited.
4. Complete a Debris Disposal Site Monitoring Checklist (Attachment 3) for every TDSR site visited. Ensure that operations are being followed as specified in the applicable Debris Removal and Disposal Contract with respect to local, state, and federal regulations.
5. Complete the Stockpiled Debris Field Survey Form (Attachment 4) at least weekly at all temporary TDSR sites to determine estimated quantities of debris stockpiled.
6. Periodically measure curbside debris using the estimating formulas shown in Attachment 5.
7. Prepare a daily written report of all contractor activities observed to include photographs and the aforementioned checklists.

Roving Monitors will also submit daily written reports to the DCOT supervisor outlining their observations with respect to the following:

1. Is the contractor using the site properly with respect to layout and environmental considerations?
2. Has the contractor established environmental controls in equipment staging areas, fueling, and equipment repair areas to prevent and mitigate spills of petroleum products and hydraulic fluids?
3. Are plastic liners in place under stationary equipment such as generators and mobile lighting plants?
4. Has the contractor established appropriate rodent control measures?
5. Has the contractor established procedures to mitigate:
 - a) Dust – Are water trucks employed to keep the dust down?
 - b) Noise – Have berms or other noise abatement procedures been employed?
 - c) Traffic – Does the TDSR site have a suitable layout for ingress and egress to help traffic flow?

Roving Monitor's reports will also include observations at loading sites, disposal sites, and the locations of any illegal dumping sites.

Load Site Monitors

Load Site Monitors will be stationed at designated contractor loading sites.

Load Site Monitor positions will be staffed from Public Works, or a contractor.

Load Site Monitors will be assigned to each contractor loading site within designated Debris Control Zones. The Load Site Monitors' primary function is to verify that debris being picked up is eligible under the terms of the contract. They will initiate and sign load tickets (see Figure 1 in main text) as verification that the debris being picked up is eligible.

The primary tracking mechanism for all debris loaded, hauled, and disposed of will be the Load Ticket. Load tickets will be initiated at pickup and closed-out upon drop-off of each load, and are to be used by both District and contracted haulers.

Disposal Site Monitors

Disposal Site Monitors will be staffed by Public Works, or a contractor. The Disposal Site Monitors will be stationed at all temporary TDSR sites for the purpose of verifying the quantity of material being hauled by the contractor.

The Disposal Site Monitor will estimate the cubic yards of debris in each truck entering the temporary TDSR site and will record the estimated quantity on pre-numbered debris load tickets. The contractor will only be paid based on the number of cubic yards of material deposited at the disposal site as recorded on the debris load tickets.

The Disposal Site Monitor will be responsible for completing and signing each load ticket and returning DCOT copies to the DCOT Supervisor. In addition, Disposal Site Monitors will

maintain a daily Debris Disposal Site Load Tracking Log (Attachment 6), which will also be returned to the DCOT at the end of each day.

At each temporary TDSR site and landfill disposal site, the contractor will be required to construct and maintain a monitoring station tower for use by the Disposal Site Monitor. The contractor will construct the monitoring station towers of pressure treated wood with a floor elevation that affords the Disposal Site Monitor a complete view of the load bed of each piece of equipment being utilized to haul debris. The contractor will also provide each site with chairs, table, and portable sanitary facilities.

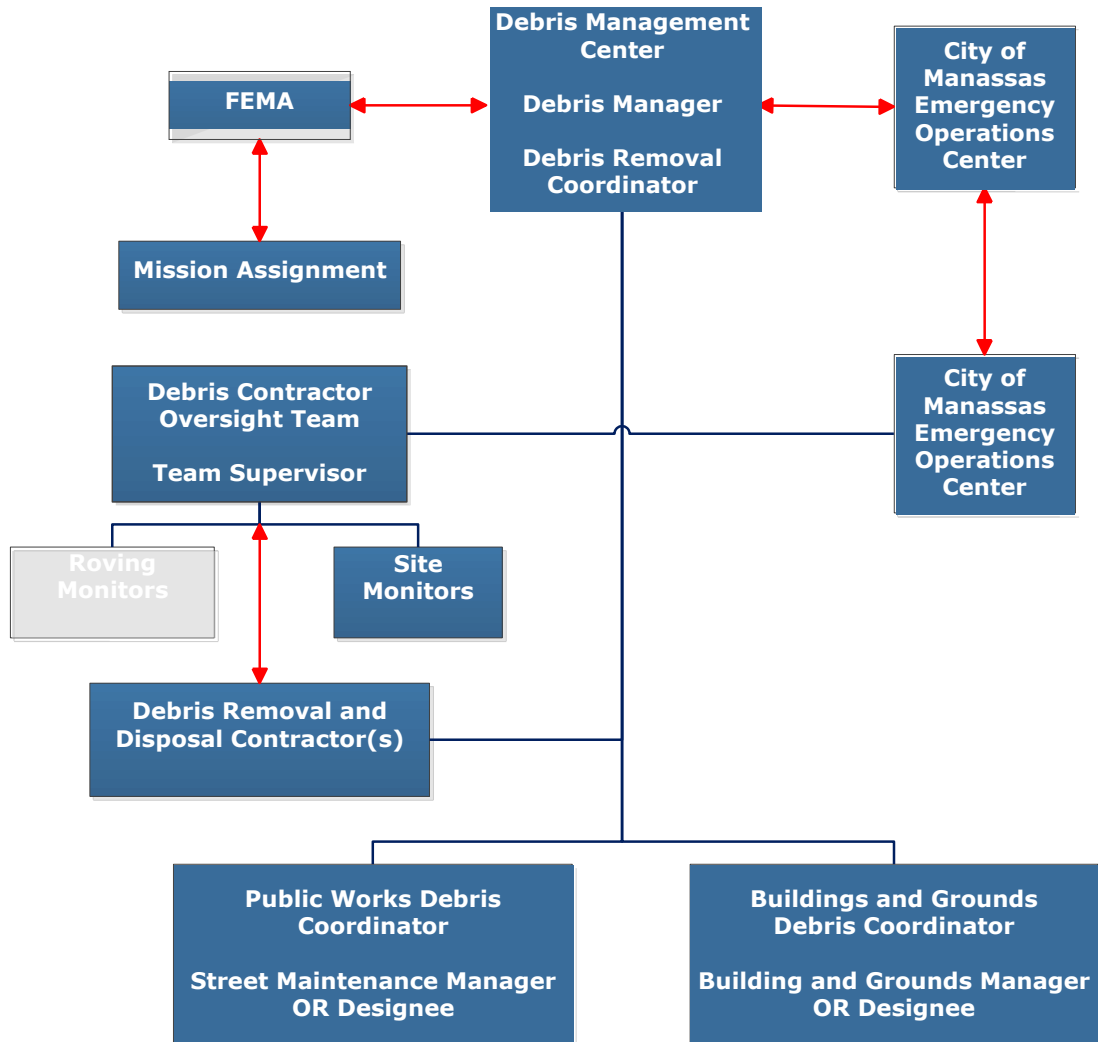
Annual Training Workshop

The DCOT Supervisor will be responsible for coordinating an annual training workshop for all assigned DCOT personnel. The purpose of the workshop is to review the Debris Management Plan procedures and to ensure that the DCOT operation works smoothly. Items of discussion will include:

1. Contractor responsibility
2. Mobilization sites
3. Logistical support
4. Pre-storm mobilization
5. Procedures for call-up of Contractor personnel and equipment
6. Haul routing
7. Contractor vehicle identification and registration
8. Debris hauling load ticket administration
9. Mobilization and operation of the TDSR sites
10. Contractor payment request submission, review, and verification
11. Special procedures for Household Hazardous Waste
12. TDSR site closure requirements

This training will be scheduled annually in May, prior to the start of the Hurricane Season.

City of Manassas Debris Management Center Organization Debris Contractor Oversight Team



Debris Loading Site Monitoring Checklist

Debris Loading Site Monitoring Checklist				
Date:				
Arrival Time:		Departure Time:	Weather Conditions:	
Loading Site Location:				
(Street address or nearest intersection)				
GPS Location:		N	W	
Loading Site Monitor's Name:				
(Print Name)				
Roving Monitor's Name:				
(Print Name)				
(Signature)				
Loading Site				
1. Is the Site Monitor filling out the Load Ticket properly?			YES	NO
If NO, explain actions taken:				
2. Is the Contractor loading eligible debris from the designated right-of way (approximately 15' from curb)?			YES	NO
If NO, explain actions taken:				
3. Is the Contractor loading trucks to capacity?			YES	NO
If NO, explain actions taken:				
4. Identify Contractor's truck numbers observed while on site:				
5. Were photographs taken at the loading site?			YES	NO
If YES, list photo log numbers:				
General Notes and Comments: (Include observations within the general area as to overall cleanup activities)				
(Use reverse side if necessary)				

Stockpiled Debris Field Survey Form

Stockpiled Debris Survey Form									
Type of Material:									
	Clean Vegetative		Mixed		C&D		Mulch		Other:
Stockpile Location:									
Average length of Stockpile:			Feet						
Average length of Stockpile:			Feet						
Average length of Stockpile:			Feet						
Total cubic feet:			Cubic Feet						
Total cubic yards:			Cubic Yards (Cubic Feet divide d by 27)						
Government's Representative:							Date:		
Contractors Representative:							Date:		
Remarks:									
Stockpiled Debris Field Survey Form									
See Sketch of Site on Reverse Side									
Stockpile Location:									
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">Width</div> <div style="border: 1px solid black; width: 50px; height: 20px;"></div> <div style="border: 1px solid black; padding: 5px;">Feet</div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">Height</div> <div style="border: 1px solid black; width: 50px; height: 20px;"></div> <div style="border: 1px solid black; padding: 5px;">Feet</div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">Height</div> <div style="border: 1px solid black; width: 50px; height: 20px;"></div> <div style="border: 1px solid black; padding: 5px;">Feet</div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">Height</div> <div style="border: 1px solid black; width: 50px; height: 20px;"></div> <div style="border: 1px solid black; padding: 5px;">Feet</div> </div>									
Length		Feet	Height		Feet	Length		Feet	
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px;">Width</div> <div style="border: 1px solid black; width: 50px; height: 20px;"></div> <div style="border: 1px solid black; padding: 5px;">Feet</div> </div> <div style="border: 1px solid black; padding: 5px; width: 100px; margin: 0 auto;">L'xW'xH' = CY</div> <div style="border: 1px solid black; padding: 5px; width: 100px; margin: 0 auto; text-align: center;">27</div>									
Remarks:									

Debris Estimating Formulas

Estimating Rule of Thumb:

- 15 trees, 8 inches in diameter = 40 CY
- Single wide mobile home = 290 CY
- Double wide mobile home = 415 CY
- Root system (8'-10' dia.) = One flat bed trailer to move
- Treat debris piles as a cube, not a cone, when performing estimates.
- Average pace = 2' 6"

Formulas

Conversions:

- 27 cubic feet=1 cubic yard
- One mile=5280 feet or 1760 yards

Building formula:

$L' \times W'$ (building footprint) x No. of Stories x 0.2 = _____ Cubic Yards of debris

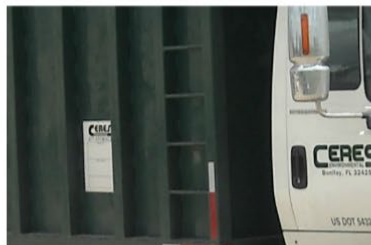
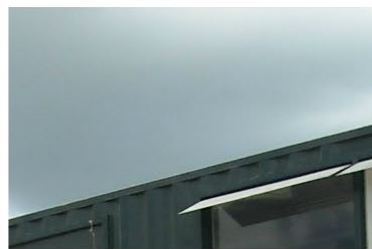
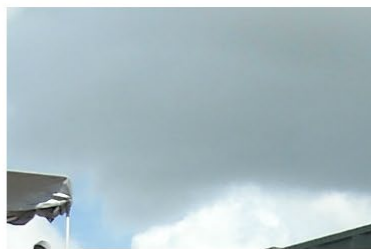
Debris pile formula: $(L' \times W' \times H') / 27 =$ _____ Cubic Yards of debris.

Conversion Factors from Cubic Yards to Tons

- Mixed Construction & Demolition Debris = 500 LBS/CY or $CY \times 0.25 =$ Tons
- Yard Vegetation = 300 LBS/CY or $CY \times 0.15 =$ Tons
- Mulch = 500 LBS/CY or $CY \times 0.25 =$ Tons
- Regular Trash = 300 LBS/CY or $CY \times 0.15 =$ Tons
- Concrete = 2000 LBS/CY or $CY \times 1.0 =$ Tons
- Sand = 2600 LBS/CY or $CY \times 1.3 =$ Tons
- Land Clearing (Root balls with dirt) 1500 LBS/CY or $CY \times 0.75 =$ Tons

Debris Disposal Site Load Tracking Log

[illegible]



Disaster Debris Management Avoiding the Disaster After the Disaster

Manassas, VA

Jan 19, 2023

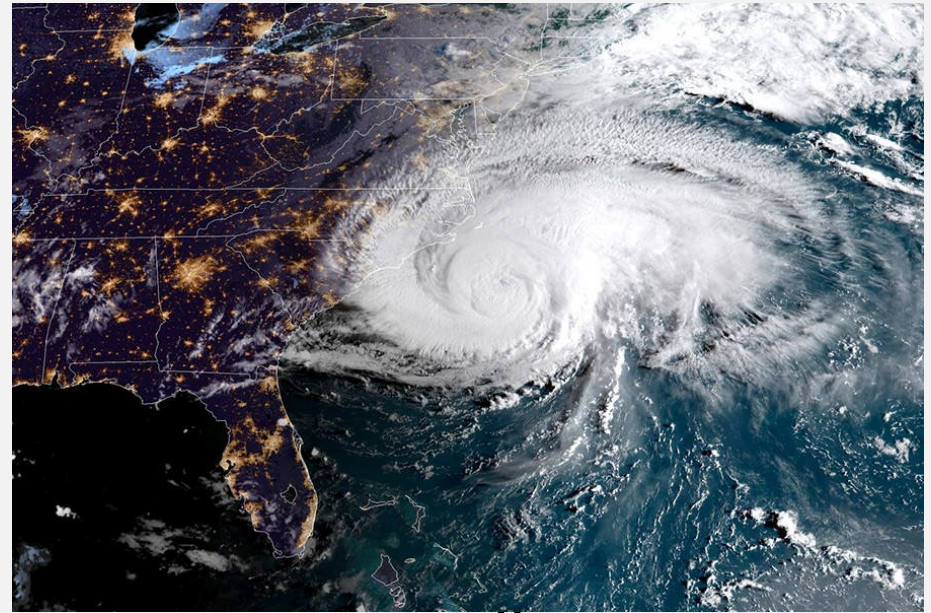
Proven. Responsive. *Ready.*



Introduction

Kerry Kennedy, P.E., Area/Operations Manager/IC Ceres Environmental

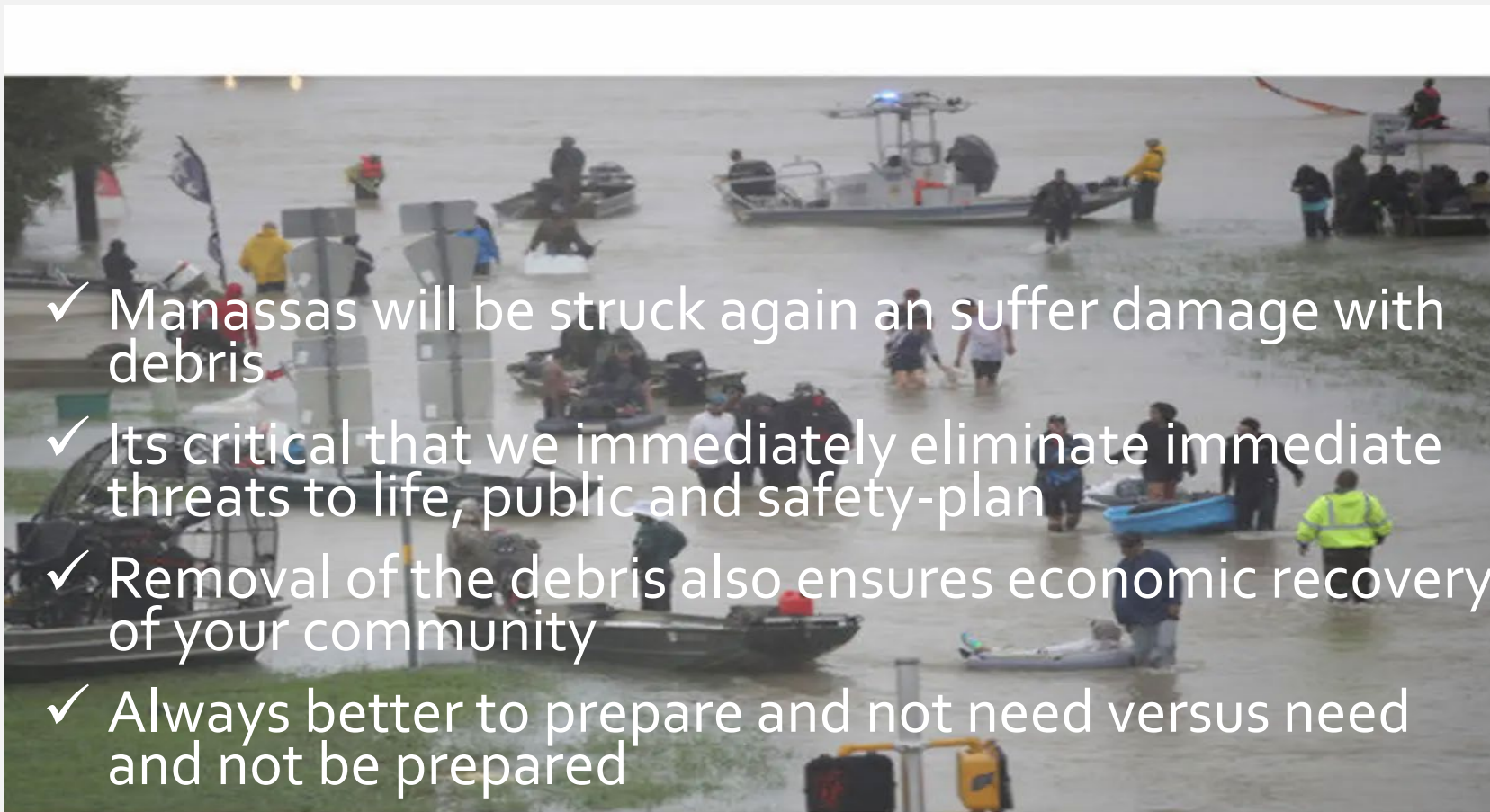
- 34 years USACE
- USACE Civil engineer, senior exercise/contingency planner, program manager; Debris Subject Matter Expert
- USACE Debris Mission Manager for Hurricane Georges, Katrina, Floyd;
- Ceres PM for Debris for St. Johns during Hurricane Maria/Irma
- Ceres Operations Manager for NorCal wildfires
- Ceres Area Manager for Hurricane Florence and Michael
- Ceres Incident Commander for the Butte County Fire, Paradise, Ca.



Why Are We Planning for Debris?

3

Your Community Needs You!



- ✓ Manassas will be struck again and suffer damage with debris
- ✓ It's critical that we immediately eliminate immediate threats to life, public and safety-plan
- ✓ Removal of the debris also ensures economic recovery of your community
- ✓ Always better to prepare and not need versus need and not be prepared

Debris Best Management Practices

4

What threats does Manassas face?

Varying threats result in different debris needs

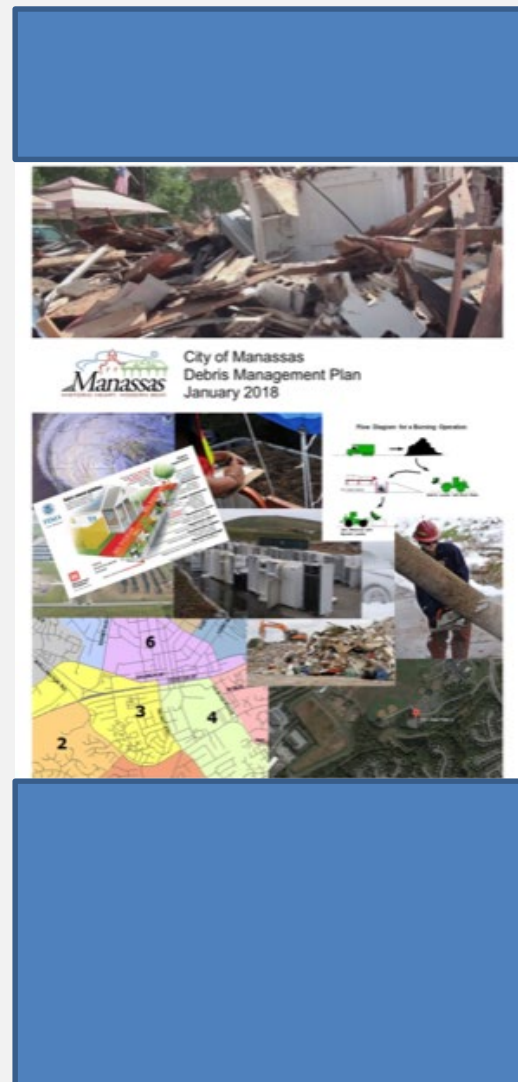
		Typical Debris Streams								
		Vegetative	Construction & Demolition (C&D)	Personal Property/ Household Items	Hazardous Waste	Household Hazardous Waste (HHW)	White Goods	Soil, Mud, and Sand	Vehicles	Putrescent
Types of Disasters	Tornadoes	X	X	X	X	X	X		X	X
	Floods /Hurricanes	X	X	X	X	X	X	X	X	X
	Earthquakes		X	X		X	X	X		X
	Winter Storms	X				X				X
	Acts of Terrorism	X	X	X	X	X	X	X	X	X

Planning for Debris also..

5

City of Manassas Debris Plan

- If we plan and execute properly, we can maximize reimbursement
- If disaster is FEMA declared, then Labor paid for
- We can formalize response procedures for your staff and Ceres/Tetra Tech if activated
- Planning can provide for faster response knowing roles and responsibilities
- What should the city do initially?
- Where does Ceres/Tetra Tech fit in?
- How can we work together?



Planning for Debris-Post Event Options

6

- City Performs immediate actions
- City performs entire workload
- City activates Ceres
- Ceres and City work in concert to collect and haul debris
 - Ceres will assign a PM
 - Designate Priorities
 - Determine Zones/Sectors
 - Develop a Schedule
 - Respond to Hot Spots



Debris Best Management Practices

7

What role does each department play?

Public Works

- Debris lead
- Oversee ops

Emergency Management

- Coordinates across City depts.
- Coordinates with FEMA/State

PAO

- Publishes Info on process, schedule, status, etc
- Coordinates public information

Finance/Purchasing

- Allocates funds
- Contract Mgt
- Processes invoices
- Contracts

Landfill

- Access control
- Reduction
- Disposal
- Recycle

Fire/EMS/Police

- Critical Routes
- Safety
- Looting/Trespassing

Water
Sewer
Power
Solid Waste
Streets, Etc



Force Account Vs. Contractors

- Catalog what equipment is available to Public Works
- Have a plan to thoroughly document force account
- Understand the tipping point to call in contractor
- Safety
- Documentation





Debris Management Plan

10

- Debris management
 - Route clearance
 - Priorities
 - Resources available
 - Documentation
 - Safety
 - Disposal Plan
- PPDR?
- Force Account V. Contractors
 - Overtime
 - Normal duties
 - Wear and Tear on personnel and equipment
 - Victims
- Debris monitoring
- Health, safety and environmental considerations
- Public information
 - PSA's
 - Schedule



Debris Best Management Practices

11

Let's dive into debris collection strategies

- Strategies in zoning out locality
- When do we start? – Timing is critical to efficiency and cost savings.
- What are our priorities?
- Where do we start? – Residents authorized back into affected areas, political hotspots, etc.
- Do we open citizen drop off locations?



Debris BMP–DMS/TDMS/Reduction/Disposal

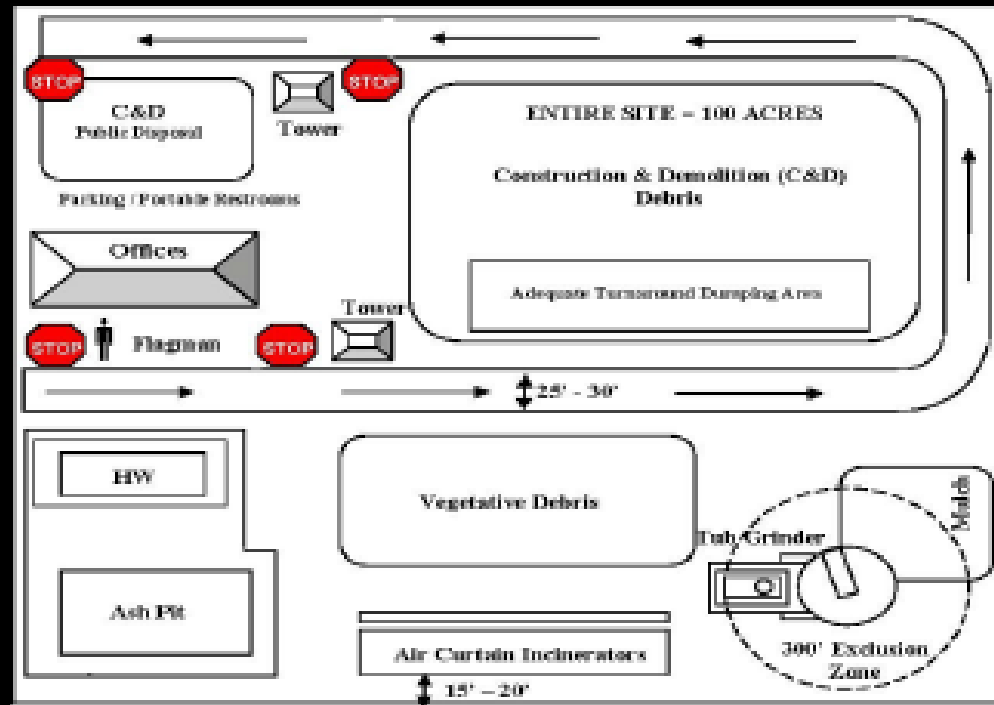
12

- How many DMS'?
- Create TDRS'?
- Citizen Drop Offs?
- E-Waste
- White Goods
- Landfill disposal
- Reduction of material at the landfill
- HHW collection
- Haul Off of material



Typical DMS Layout

13



Debris Hauling Contractor-Ceres

14

- **Personnel Resources**
 - 250+ personnel, 60+ professional and managerial staff with **disaster experience**
- **Equipment Resources**
 - **1400+ pieces of equipment** and daily reduction capacity of **90,000 CY per day!**
- **Subcontractor Resources**
 - Ceres maintains over 5,000 in its database!
- **Financial Resources**
 - **\$500 mil per project** in bonding capacity!



Debris Hauling Contractor-Ceres

15

Debris Hauling Contractor - Ceres

- **In Business Everyday**
 - Civil works and large-scale **mulching** operations
- **Depth of Experience**
 - 46 years responding to disasters
 - 350+ federal responses
 - USACE ACI Contractor for 4 regions covering 26 states
 - In the last 18 months, Ceres has hauled over **15 mil CYs!**



Debris Monitoring Firm- Tetra Tech

16

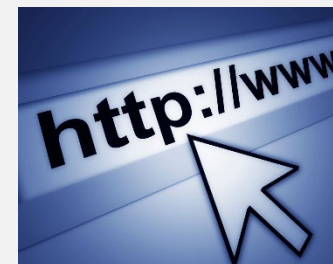


Communities rely on Tetra Tech's broad capabilities in disaster response programs, federal grant management, environmental services, and engineering to navigate the path to long-term recovery.



Communicating debris removal guidelines

- Think about your population – language, high traffic areas, etc.
- Develop sample PSAs
- Content – segregation, removal pass schedule, questions from public
- Determine best distribution methods – One Message, Multiple Messengers
- Timeline on when to distribute information



Separando Sus Escombros

Los escombros deberían ser puestos al final de la acera, sin bloquear la carretera o alcantarilla.

ZONA QUE NO SERA RECOGIDA
Cualquier escombros colocado desde la acera hacia su propiedad no serán recogida.

SEPARACIÓN DE ESCOMBROS

Separe los escombros en las 6 categorías mencionadas abajo.

NO APILE O RECUESTE
Colocación de escombros cerca de o en árboles, postes, u otras estructuras dificulta el removerlos. Esto incluye hidrantes y metros.

¿INSEGURO DE DONDE PONER LOS ESCOMBROS?
Si no tienes una acera, zanja o línea de servicio público frente a su casa, coloque los escombros en el borde de su propiedad antes de la acera.

Basura Doméstica Normal

Basura doméstica y bolsas de basura de cualquier tipo no serán recogidas como parte de este programa. Debe seguir su programa normal de retiro de basura.

ESCOMBROS VEGETATIVOS

- Hojas (no las ponga en bolsas)
- Troncos
- Plantas
- Ramas de árboles

ESCOMBROS DE CONSTRUCCION Y DEMOLICION

- Materiales de construcción
- Alfombra
- Paneles de Yeso
- Muebles
- Madera
- Colchones
- Artículos de plomería

ENSERES Y ELECTRODOMESTICOS

- Aire acondicionados
- Lavadoras de platos
- Congeladores
- Refrigeradores
- Fogón/Estufa
- Lavadora, secadora
- Calentador de agua

ELECTRONICA

- Computadoras
- Radios
- Equipos de sonido
- Televisores
- Otros artículos con cordones eléctricos

DESPERDICIOS PELIGROSOS DEL HOGAR

- Materiales de limpieza
- Baterías
- Químicos del patio
- Aceites
- Pinturas de aceite
- Pesticidas

Para más información comuníquese con su gobierno local.



Proven. Responsive. *Ready.*

CERES
ENVIRONMENTAL

Actions

- What prep can we do now
- Mitigation
- Document status'
- Pumps
- Generators
- Parts
- Maintenance





Proven. Responsive. *Ready.*

CERES
ENVIRONMENTAL

- Hurricane (Notice event)
- During work week/not during work week
- Mitigation actions
- Preparatory actions
- On call personnel
- Roster call/status
- Immediate actions
- Damage Mitigation
- Assessment/estimate
- Plan for debris

Responding in “Stormy Skies” Exercise

23

Rapidly Mobilize in “Stormy Skies”

Action No.	Pre/Post Event		Action Discussion	Responsible Party	Equip. Qty
	Days	Hours			
05	0	0	IMPACT!	City/Ceres	
06	+0	+12	NTP given Emergency debris clearance operations begin Safety briefings	City/Ceres	4-5 crews
07	+1	+0	Preliminary Debris Assessments Establish sectoring principles	City/Ceres	
08	+2	+0	Baseline testing for DMS	Ceres	
09	+3	+0	DMS construction	Ceres	
10	+4	+0	End of emergency debris clearance	Ceres	
11	+5	+0	Begin debris collection Safety briefings, AHAs	City/Ceres	6-8 Haul 3-4 Tree 1 Grinders 1 Loaders 2 Support
12	+7	+0	Need for additional DMS locations	Ceres	
13	+14	+0	Kick-off meeting/Applicant’s Briefing with FEMA	Cities	
14	+30	+0	Complete 1 st pass/Start 2 nd pass	Ceres	4-6 haul
15	+45	+0	Complete 2 nd pass/Start 3 rd pass	Ceres	1-3 haul
16	+60	+0	Close out DMS/demobilize	Ceres	



- Tornado (No Notice event)
- During work week/not during work week
- Roster call/status
- Immediate actions
- Mitigation
- Assessment/estimate
- Plan for debris



©2017 Julie Derman sky

Responding in “Stormy Skies” Exercise

26

Example Exercise By The Numbers

Hurricane

- Debris Figures
 - Cat 1: 48,800
 - Cat 2: 195,200
 - Cat 3: 634,402



Tornado

- Debris Figures
 - EF2: 23,877
 - EF3: 402,734
 - EF4: 1,864,473



Ice storm

- Debris Figures
 - 1" Accum: 46,371
 - 1.5" Accum: 108,199
 - 2: Accum: 170,027



Questions?

Annual Disaster Preparedness & Recovery Training



Introduction

Tommy Webster, Deputy Director of Operations

- 20 years of disaster debris experience
- Unique understanding of debris hauling
- Mission operations manager through multiple statewide activations including Irma & Hurricane Ian
- General Contractor for FEMA's 1st Hazard Mitigation Elevation Program in the U.S.
- Project oversight/management on FEMA reimbursable projects totaling over \$1 Billion

Debris Expertise

25 YEARS OF
DISASTER
RESPONSE
EXPERIENCE

90 MAJOR
DISASTERS
IN 23 STATES & 2 TERRITORIES

\$8B IN POST-
DISASTER
GRANTS MANAGED

160 MILLION CY
OF DEBRIS
MONITORED...
28 PROJECTS OVER 1 MILLION CY

2.35M 
HAZARDOUS TREES
& LIMBS REMOVED

 **10,000+**
PROJECT WORKSHEETS (PWs)

... PLUS **6.8M**
CYs OF PPDR DEBRIS

 **30,000+**
PPDR PARCELS SERVICED

650
TOTAL DEBRIS REMOVAL
PROJECTS MANAGED

#1 MOST PREFERRED ADMS TECHNOLOGY

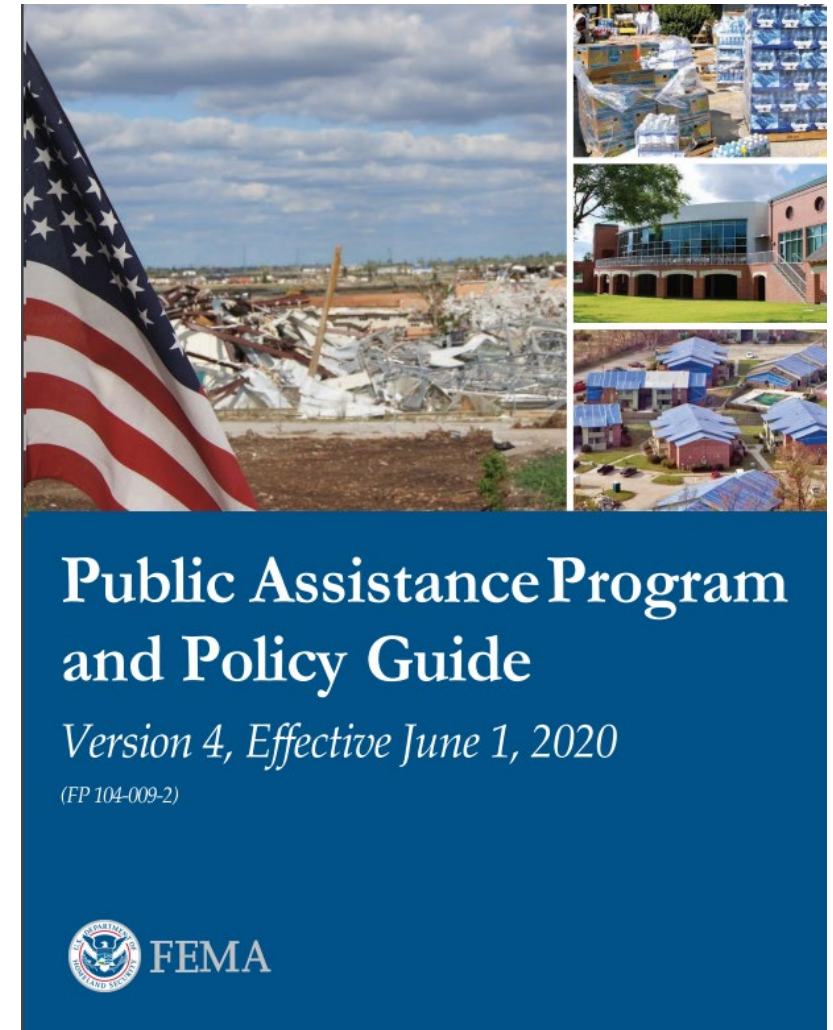
2021 Debris Events

- Surfside Condo Collapse (FL)
- Hurricane Ida (LA)
- Dixie Wild fire (CA)
- Midwest Flooding & Tornadoes (KY)
- Winter Storms (VA)

What is Public Assistance?

The FEMA Public Assistance (PA) Program provides grants to help communities quickly respond to and recover from major disasters or emergencies. The PA program funds the repair, restoration, reconstruction, or replacement of a facility or infrastructure that is damaged or destroyed by disaster.

The PA program also encourages protection of these damaged facilities and infrastructure from future events by providing assistance for hazard mitigation measures during the recovery process.



Public Assistance Eligibility

The four components of eligibility are **applicant**, **facility**, **work**, and **cost**.



Applicant must be a state, territory, tribe, local government or private nonprofit organization.



Facility must be a building, public works system, equipment or natural feature



Work is categorized as either "emergency" or "permanent" and must be required as a result of a declared incident within the disaster area



Cost is the funding tied directly to eligible work, and must be adequately documented, authorized, necessary and reasonable.

Presidential Declaration



Federal Disaster Declaration Thresholds: State = \$1.77 County = \$4.44

State of VA - population ~ 8,631,393 = \$15,277,566

Prince William County – population ~ 482,204 = \$2,104,986

**Based on 2020 Census and 2023 FEMA threshold multiplier*



FEMA

Disaster Declaration Process – Seven Steps

1. Incident Occurs
2. Local officials collect initial damage estimates
3. State requests Joint Preliminary Damage Assessments (PDA's)
4. Joint local/state/federal PDA's are conducted
5. Governor submits disaster declaration request to president through FEMA Regional Office
6. FEMA reviews request, sends recommendation to president for decision
7. President makes determination

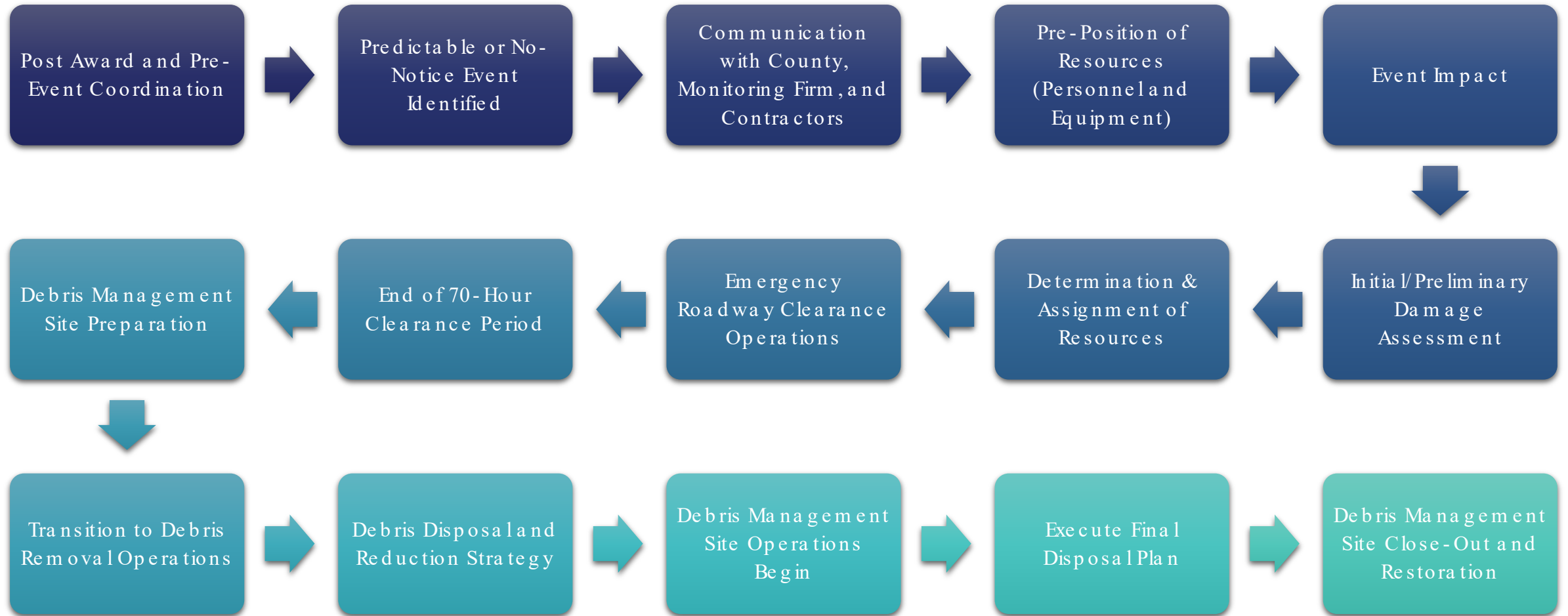
Role of a Debris Monitoring Contractor

Having a disaster debris monitoring program is necessary if applying for federal grants. It's important to have an experienced debris monitoring contractor to ensure that FEMA PA eligibility requirements are met. Documentation is critical, and audits are inevitable.

Key Tasks of a Debris Monitoring Contractor

- DMS Permitting
- Truck Certification
- ROW Monitoring
- Ha z. Tree Monitoring
- DMS Monitoring
- Data Management
- Invoice Reconciliation
- FEMA Reimbursement Support

Project Operational Chart



Emergency Response

- Emergency Push
- Contracting - Time and materials
- Windshield assessments
- Aerial assessments
- Estimated quantity of debris
- Acceptable duration of pick-up
- Estimate volume of trucks



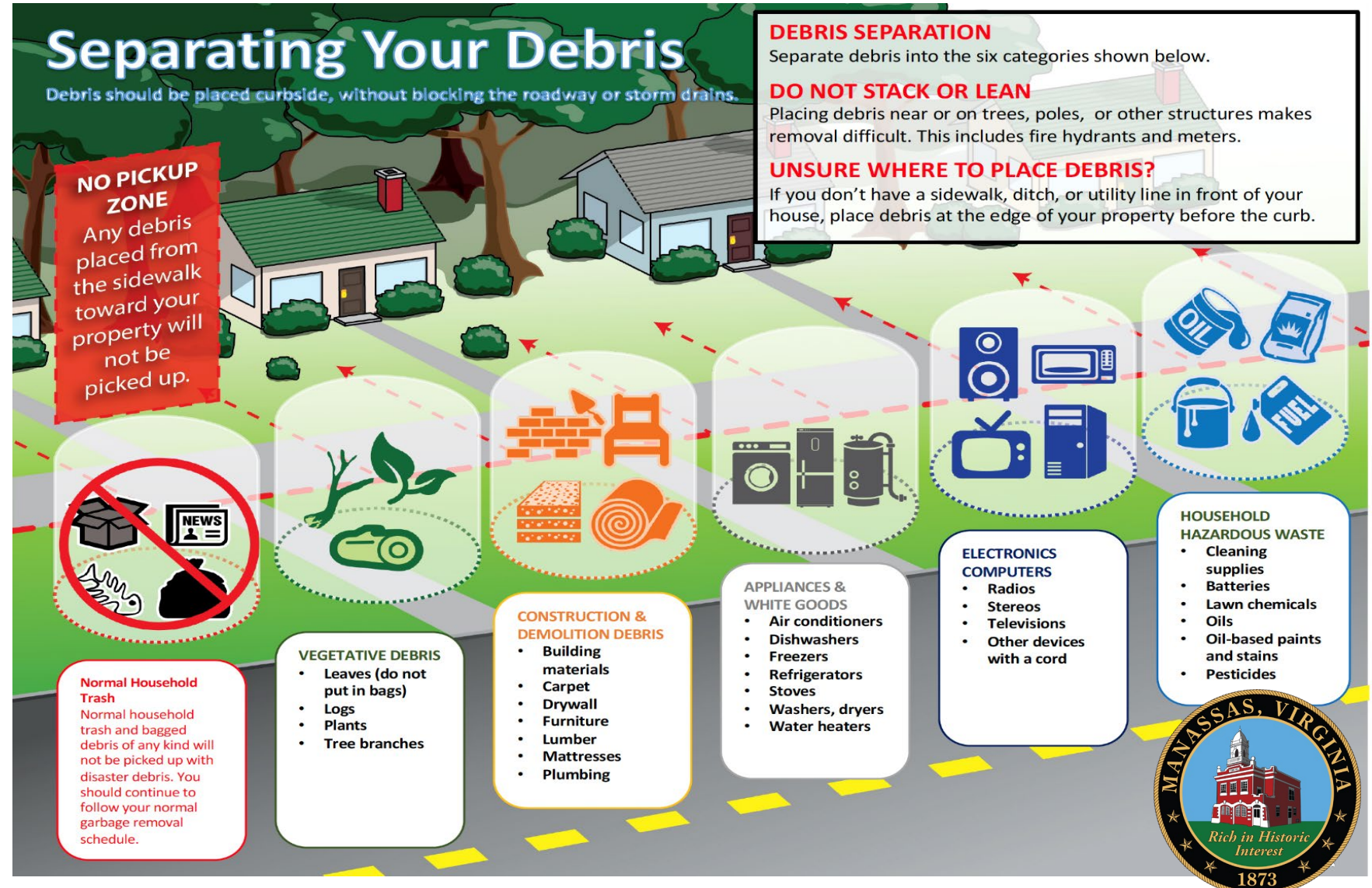
TIME AND MATERIALS LABOR AND EQUIPMENT LOG									
PROJECT INFORMATION									
DATE AND WORK SITE INFORMATION									
WORK DESCRIPTION									
LINE NO.	DATE	TIME	LOCATION	DESCRIPTION	START TIME	END TIME	QUANTITY	UNIT	REMARKS
1									
2									
3									
4									
5									
6									
7									
8									
9									
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Debris Separation

Alert the public as to the type of debris to be removed, how to segregate it, and when the debris passes will occur.

Utilize your website, local news outlets, radio, social media, etc., to get messaging such as this out to the public.

Assign a single PIO to coordinate with the Debris Monitor and the Debris Hauler to consolidate messaging.



Collection Monitoring Operations

The key information elements that are needed to verify the contractor's scope of work are ...

- ▶ Type of debris collected
- ▶ Amount of debris collected
- ▶ Original collection location
- ▶ Tracking to final disposal



Right of Way Debris Removal

Truck Placard

DISASTER DEBRIS HAULER					
Truck #:					
8	1	3	3	7	3
Eight One Three Three Seven Three					
Capacity:					
0	7	8	CYD		
Zero		Seven		Eight	
Prime Contractor: Crowder Gulf			Disaster: DR 439A		
Sub-Contractor: Gulf Services			Applicant: Bay County PDR		



- Truck certification is the first step in debris removal operations.
- Truck certification can include both city-owned assets and contract hauler vehicles.
- All vehicles used in debris removal have to be certified!



Right of Way Debris Removal

RecoveryTrac Truck Certification Report

9/22/2019

HARRIS COUNTY TX TROPICAL STORM IMELDA ROW COLLECTION - Truck Certification Summary

	<u>Tot Trucks Certified</u>	<u>Tot Certified Capacity</u>	<u>Avg Certified Capacity</u>
Contractor: CERES	52	3709	71.33
Totals:	52	3709	71.33

HARRIS COUNTY TX TROPICAL STORM IMELDA ROW COLLECTION - Truck Certification Details

Contractor: CERES

Sub-Contractor 1: CREEL BROTHERS

<u>Sub-Contractor 2</u>	<u>Truck No.</u>	<u>Capacity</u>	<u>Cert Date</u>	<u>Status</u>	<u>Vehicle Tag</u>	<u>Vehicle Type</u>	<u>Vehicle Features</u>
N/A	810959	55	09/22/2019 11:41 AM	ACTIVE	P244760 (LA)	SELF-LOADING TRUCK	





Primary Box (L x W x H): 212x100x96 = 2035200.0 (+)
Type: Box (L x W x H): 56x100x74 = 414400.0 (+)
Type: Box (L x W x H): 67x100x17 = 113900.0 (+)
Type: Box (L x W x H): 4x100x21 = 8400.0 (+)
Total Volume: 2571900.0 Cu Inches (/46656)= 55.12 CuYds

Driver/Placard View

Side View

Back-Interior View

Front View



Truck Certification Report

Right of Way Debris Removal

FEMA required information

- Capacity of hauling bed (CY)
- License plate number
- Unique truck identification number assigned by the monitor
- Brief physical description of the truck
- Photographs

Truck Certification Badge

RecoveryTrac		
78		813373
Truck Certification		
General Information		
Certification Date/Time: 07/12/2020 05:45 PM Applicant: BAY COUNTY Disaster: FL - HURRICANE MICHAEL Program: ROE PPDR Contractor: CROWDER GULF - Gulf Services Driver: Jason Conrad Saucier Driver Phone: 2286970927 Vehicle Tag: 1157144 AL 06-30-2022 Type: Self-Loading Truck Features: Other		
Measurements		
Primary: (230x101x109):2,532,070 (+) Type A - Box Shape: (77x101x34):264,418 (+) Type A - Box Shape: (96x101x87):843,552 (+) Total Volume (Cubic In): 3640040.0 Total Volume (Cubic Yds): 78.0 Certified Volume (Cubic Yds): 78		
Certification Team		
Measured By: DAVID SIMS (B231145) Contractor Rep: LEW NAJOR Applicant Rep: KRISTEN COVEY (B232542)		
Copyright 2014, Tetra Tech, All Rights Reserved		
78		813373

Right of Way Debris Removal

RecoveryTrac	7336944
Load Ticket	
Ticket Information	
Ticket Date/Time: 06/18/2020 6:15 PM Applicant: CITY OF SPRINGFIELD Disaster: FL - HURRICANE MICHAEL Contractor: ASHBRIIT Truck No: 813299 Capacity: 79.00 Driver: TOMMY ORT	
Collection	
GPS(Lat,Lng): 30.194087,-85.609327 Address: 2521 NAPLES AVENUE Debris Type: CONSTRUCTION&DEMOLITION Loading Date/Time: 06/18/2020 5:51 PM Monitor Name (Id): JONAH GARZA (564733)	
Disposal	
Ticket Date/Time: 06/18/2020 6:15 PM GPS(Lat,Lng): 30.220613,-85.594184 Disposal Site: 231 DMS Load Call: 80% Disposal Date/Time: 06/18/2020 6:15 PM Scale Ticket No.: N/A Weight(Tons): N/A Monitor Name (Id): DAVID SIMS (572106) Notes:	
Copyright 2020, Tetra Tech Inc., All Rights Reserved	

A debris load ticket must contain specific information that FEMA requires:

- GPS Coordinates
- Address
- Debris Type
- Disposal location
- Load Call
- Dates and Times
- Truck # / Driver Name
- Applicant

Disposal Operations

- DMS capacity analysis
- Fraud controls
- Load calls
- It is critical that plans and contingencies for final disposal of vegetative and mixed debris are established.
- Final disposal sites must be properly permitted.
- Debris must be properly disposed/applied at final disposal site.



Specialized Debris Removal Monitoring



Special Debris Removal Common Activities

Hanging limb and
leaning tree
removal (leaners
and hangers)

Private property
debris removal
(PPDR)

Public parks

Stump removal

Vessel and vehicle
recovery

Animal carcass
collection

White goods

Hazardous waste

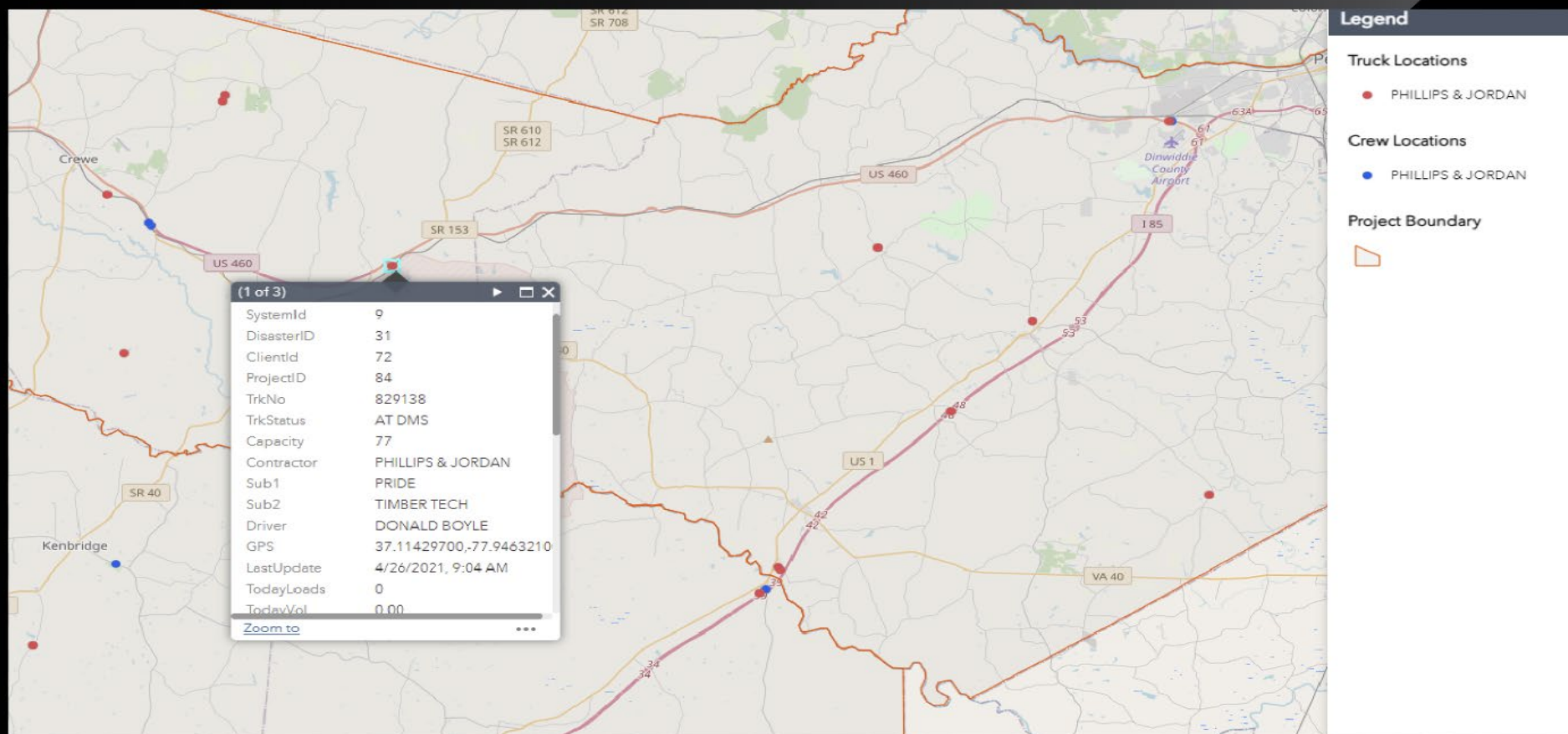
RecoveryTrac Improvements

Numerous technological improvements to our ADMS have been made since 2017

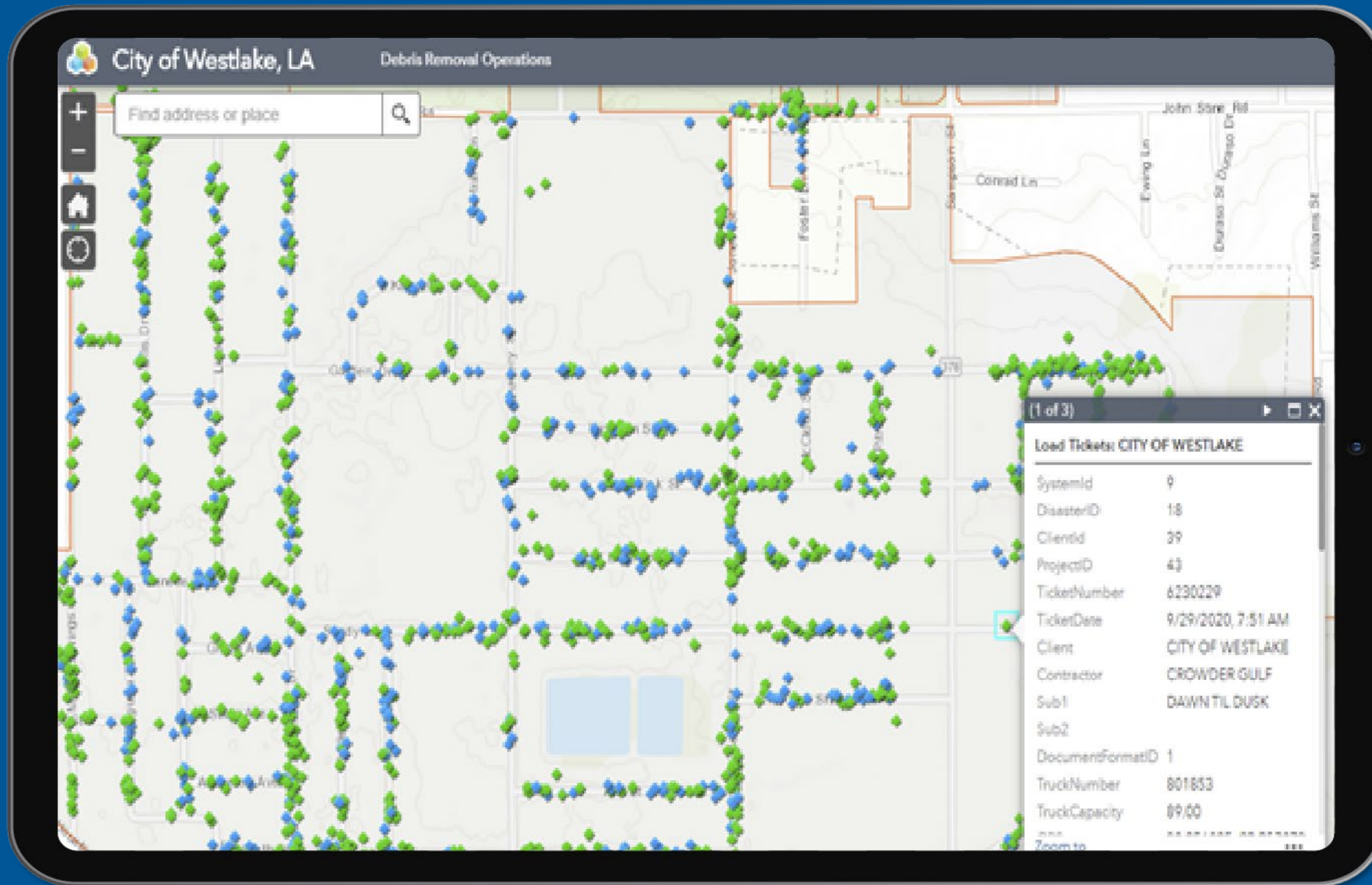
- More customized reporting
- Improved mobile app technology
- Thousands of additional mobile units available
- Improvements to data system security
- Still the most trusted ADMS in the industry



Truck Locations



Unit Rate Ticket Map



Cumulative Summary for Period Selected (Figures are rounded to the nearest whole number)

750,572 **14,970** **114** **63** **50**
Total Cubic Yards Collected Loads Unique Hauling Units Average Load Call % Average Load CY

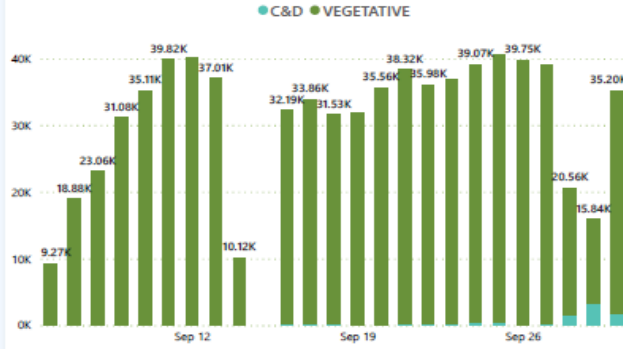
Latest production for selected period was on **09/30/21** as follows (Figures rounded to the nearest whole number)

35,198 **687** **93** **65** **51**
Total Cubic Yards Collected Loads Unique Hauling Units Average Load Call % Average Load CY

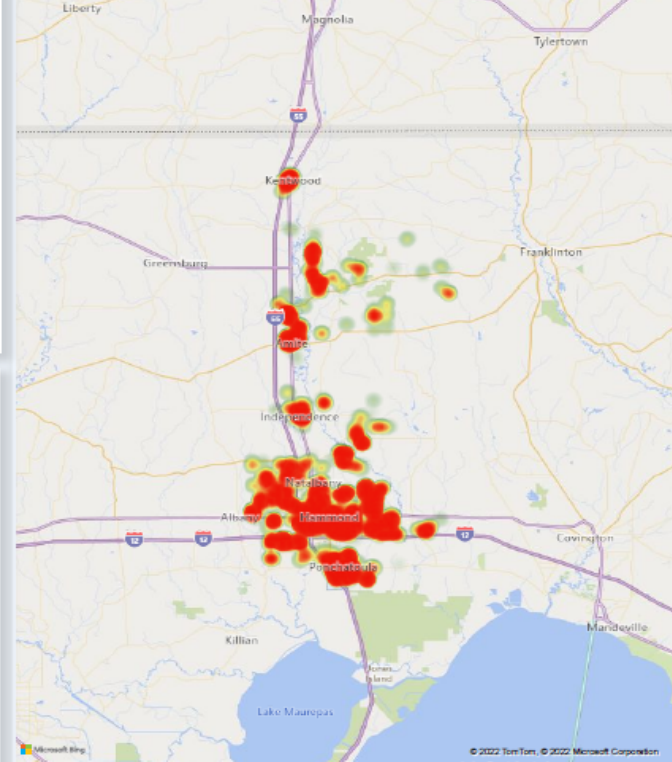


Customized Reporting

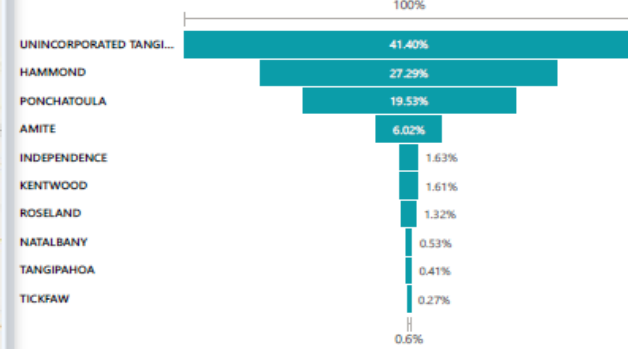
Debris Volume In Cubic Yards By Day By Debris Type



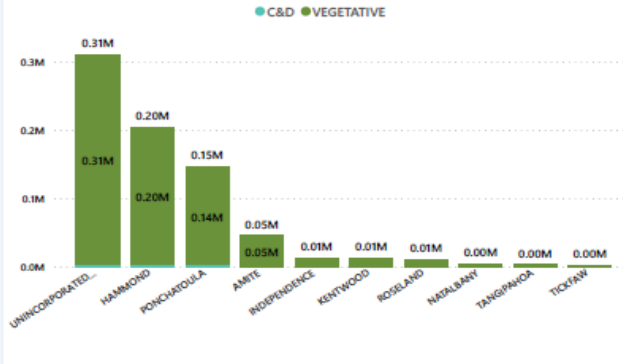
Debris Collected By Location



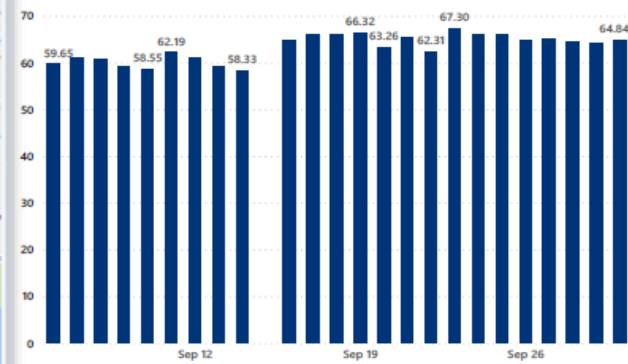
Percent Of Total Debris Volume Received By Applicant



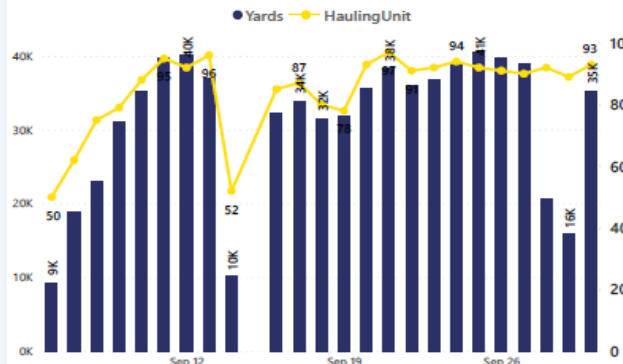
Debris Volume In Cubic Yards By Applicant By Debris Type



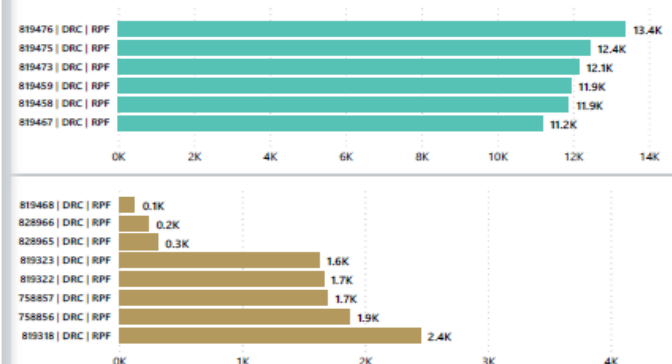
Average Load Call % By Day



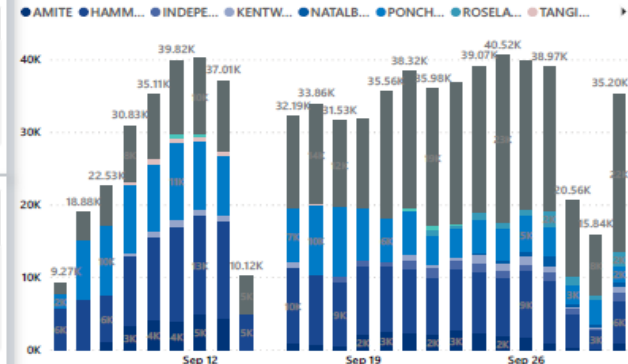
Hauling Units & Debris Volume In Cubic Yards By Day



Truck Productivity in Cubic Yards (Top and Bottom 20%)



Cubic Yards By Applicant By Day



Cumulative Summary for Period Selected (Figures are rounded to the nearest whole number)

1,012

Leaner Trees Removed

823

Hanger Trees Removed

878

Tree Stumps Removed

15

Unique Crew Count

Production On 07/17/2021 (Figures are rounded to the nearest whole number)

0

Leaner Trees Removed

0

Hanger Trees Removed

1

Tree Stumps Removed

1

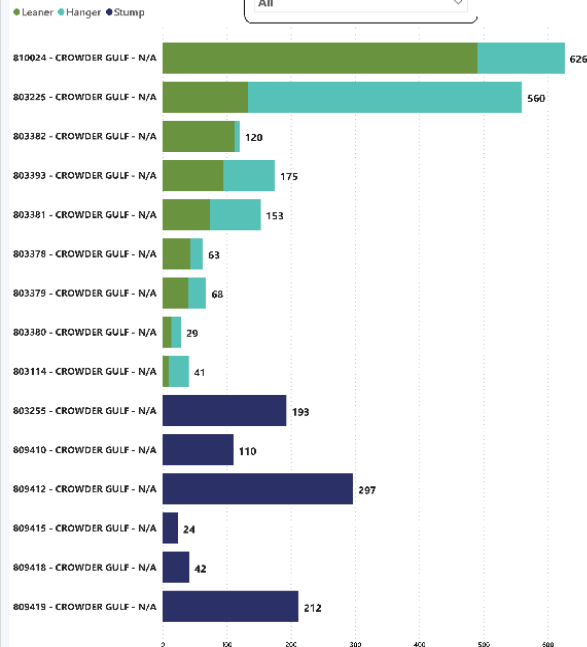
Unique Crew Count



TTD Percentage Contribution of Leaner Hanger Stump removal by Service Codes

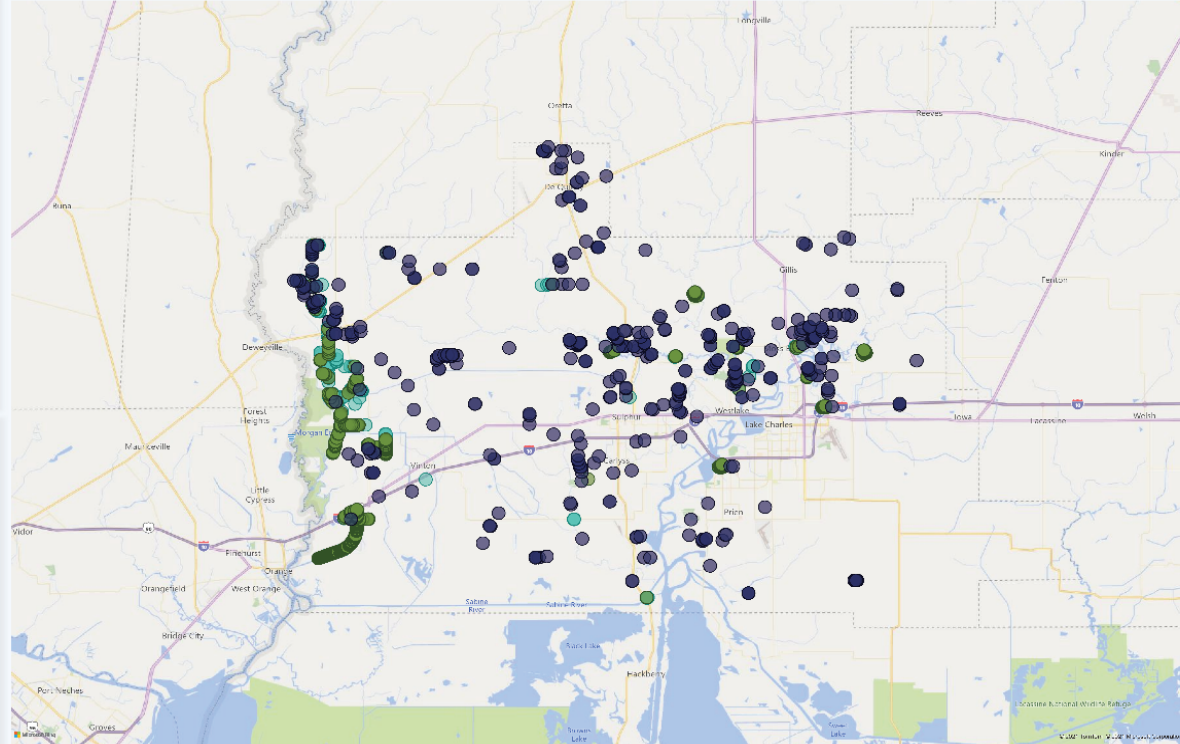


Comparison of Productivity

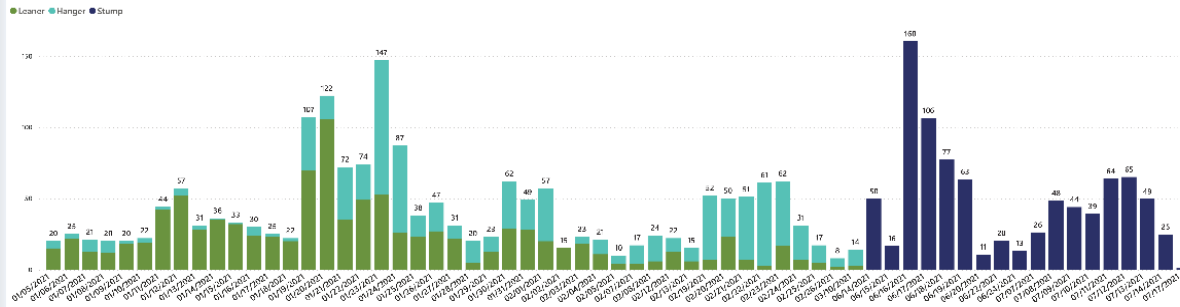


Click here to switch to heat map

Debris Collected By Location



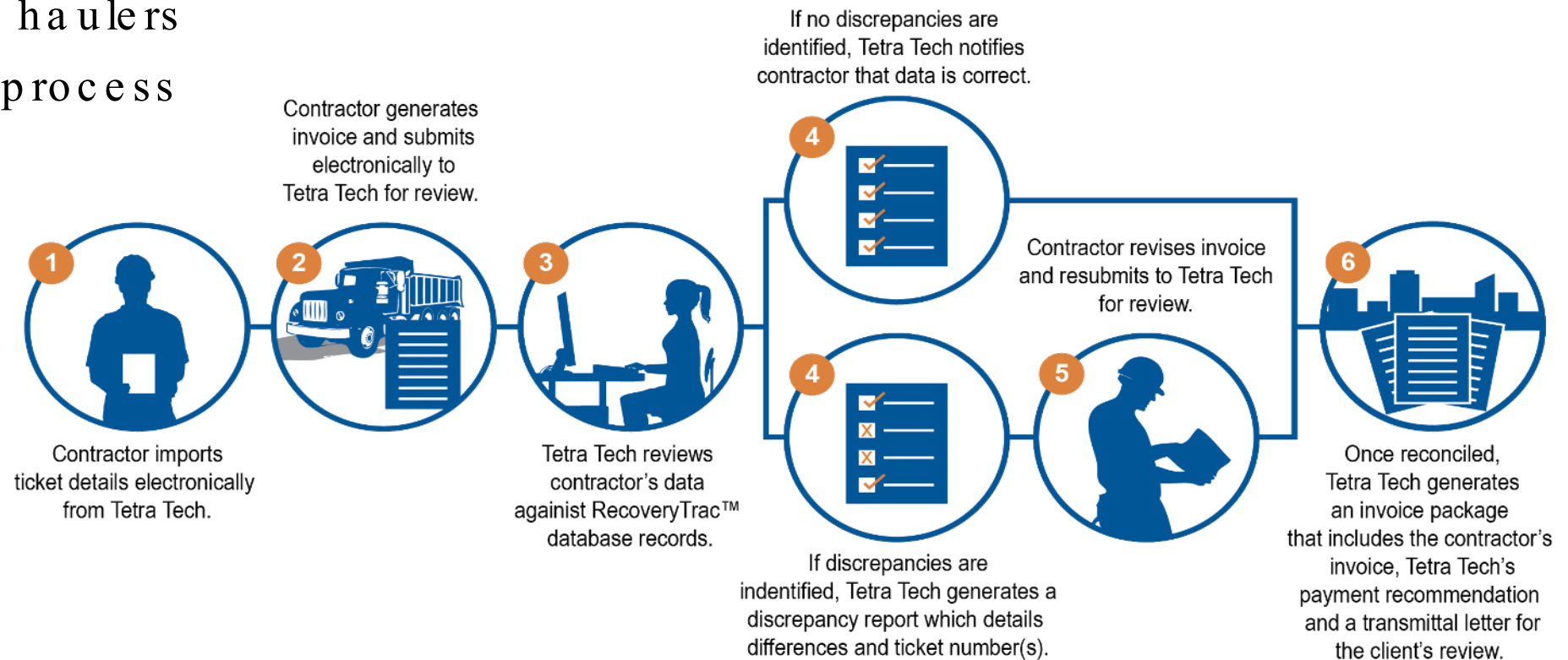
Project To Date Totals By Hazard Type & Measurement Class



Geospatial Project Tracking driven by PowerBI

Invoicing and Reconciliation

- Invoicing kickoff meeting
- Data standards
- Electronic haulers
- Invoicing process



Policy, Procedures & Guidance Update

NHPA- Sec 106 Compliance Changes

Key Actions for Success

- Document all DDMS Site reviews and approvals prior to operating the DDMS (VA DEQ & VA DHR).
- For sites pre-authorized with DEQ, obtain a copy of the state's historical coordination (VA DHR) prior to operating the DMS.
- For any new DMS that is not pre-authorized annually, obtain approval from both the VA DEQ and VA DHR prior to using the site for debris operations.
- Sites which have been previously approved, or developed, and minimize new ground disturbance, are good examples to minimize historical review concerns.



Hazardous Tree Removal Program Changes

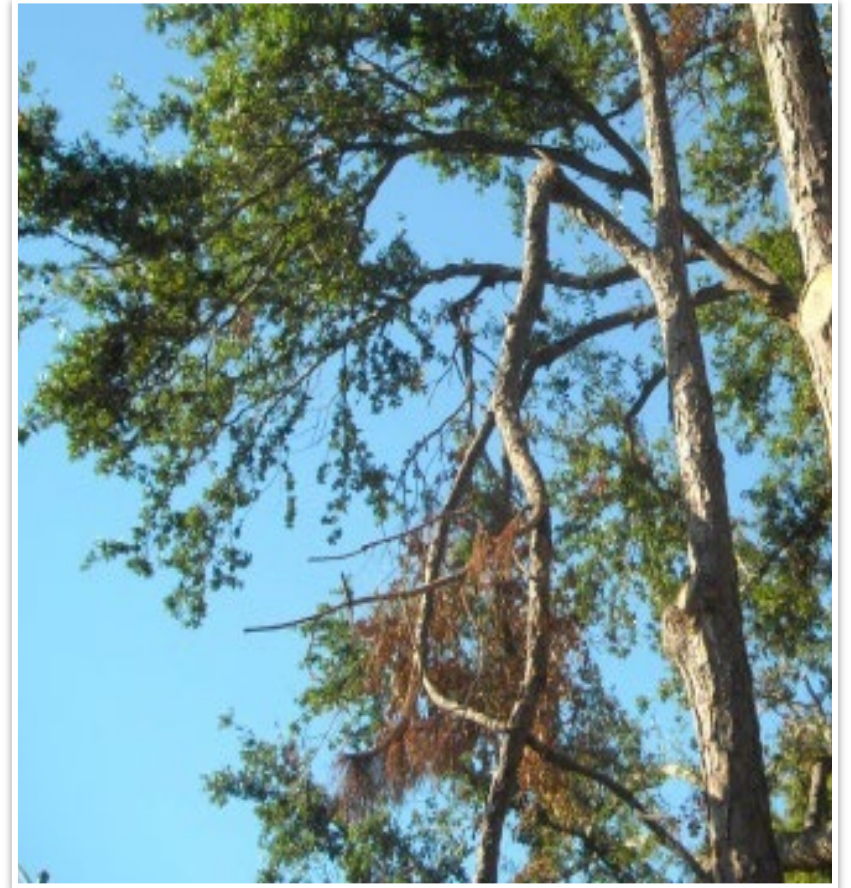
Although FEMA has removed minimum size requirements for Hazardous Trees, Limbs & Stumps, they have increased scrutiny on documentation of hazardous item removal

- Multiple photographs are required from specific angles
- Photos must show a particular hazards relation to the public ROW
- Must document the specific threat that the hazard poses

Our team has already begun taking additional photos in anticipation of possible changes. Tetra Tech will continue to photograph and document the removal of hazardous trees/limbs in accordance with the latest guidance.



FEMA



Private Property Debris Removal

Private Property Debris Removal for Gated Communities

Based on the severity of the impact of an incident and the potential threat to public health and safety or economic recovery, private property debris removal may be deemed eligible under the Federal Emergency Management Agency (FEMA) Public Assistance (PA) Program for gated communities.



FEMA

© Brian D. Luster

Private Property Debris Removal Gated Communities

Gated communities do not typically allow unrestricted public access to private roads, and do not immediately meet FEMA PA criteria for public interest. However, it is possible to provide further documentation to establish that debris removal in gated communities is in the public interest.

The basis for the determination that removing the debris from the private property is in the public interest. This includes The initial public interest determination must be made by the State, Territorial, Tribal, county, or municipal government's public health authority or other public entity with legal authority to make a determination that disaster-generated debris on private property constitutes an immediate threat to life, public health, or safety, or to the economic recovery of the community at large.

Once public interest has been demonstrated, FEMA evaluates the submission to verify if the case of private property removal is in the public interest. FEMA will provide a written response specifying properties for which it approves funding for debris removal. Though not required, Tetra Tech recommends that gated communities obtain approval from FEMA prior to beginning debris removal and disposal.



FEMA

Private Property Debris Removal Private Roads

With exception of debris removal from commercial property, the Applicant does not need to wait for FEMA approval to start work. However, for the Applicant to receive PA funding, FEMA must determine that the PPDR work at each property is eligible. *Private roads are those that are not owned or operated by or otherwise the legal responsibility of a Federal or SLTT entity (including orphan roads, roads in gated communities, homeowners' association roads, etc.).*

When determining if debris removal is in the public interest, FEMA considers:

- Volume of debris
- Height of debris
- Number of houses/blocks with large volumes of debris
- Amount of public population affected

If the public has unrestricted access (no locks, gates, or guards) and frequently uses the private road, then removal and disposal of the debris, including debris placed at the curbside by residents, is in the public interest and the Applicant is not required to submit documentation demonstrating the debris removal is in the public interest.



FEMA

In Conclusion

Preparation is key

- Proper Procurement
- Understanding FEMA PA
- Permitted DMS locations and capacity
- Proper Documentation

New Areas of Emphasis

- Hazardous trees
- Section 106 Compliance
- PPDR
- VA DEQ & VA DHR Consideration

Tetra Tech is prepared and ready to respond.

Thank you!

Questions?



(828) 644-3222



Tommy.webster@tetratech.com



tetratech.com/disasterrecovery

Force Account Labor Management Guidelines

Please follow best management practices when tracking labor and equipment hours for use during a debris generating event. Please be aware that **ALL** documentation is required for FEMA submission and reimbursement.

Best Management Practices

Be "audit ready"

- **Always** use the assigned event Cost Code when tracking time for staff, force account staff and equipment.
- Document timesheets, equipment logs, maps of crew assignments and daily progress, pay policies for reimbursement.
- When deploying crews in the field, it is important that detailed records are kept including start time, end time, and the location where the work was performed.
- Utilize maps to document work progress of individual crews on a daily basis.
- Eligible Labor – Only the overtime for force account employees performing debris removal activities will be eligible for reimbursement. However all labor hours must be accounted for in order to maximize equipment reimbursement.
- When documenting equipment for reimbursement, you must be able to tie the operator's name and their labor hours to the specific piece of equipment. If you have multiple operators on a single piece of equipment, those operators must tie back to the equipment hours.
- All hours for equipment will be eligible for reimbursement if performing debris removal operations on rights of way where the City is legally responsible.
- Equipment Rate Schedules – The City may utilize the current FEMA Equipment rate schedule.
- Always use photographs/videos to document debris. Capture a representative sample of debris throughout the City and create an electronic file for those photographs.
- The work performed by force account staff must occur on public rights-of-way or public properties that are maintained by the City. This **DOES NOT INCLUDE** private roads or state maintained roads.
- All debris removal by crew must be a direct result of the current event (land clearing, pre-existing damage, or general maintenance is not covered nor is damage from an unrelated event at the time of the disaster).

Appendix H:
Sample Debris Removal and
Disposal Monitoring Plan

Debris Removal and Disposal Monitoring Plan (Sample)

GENERAL

The Insert name of contracting agency and jurisdiction has entered into a contract with Insert name of Contractor for the purposes of:

- Removing debris from city rights-of-way to temporary debris staging sites, and hauling vegetative and recyclable C&D and mixed debris to a debris volume reduction site.
- Setting up and operating Insert appropriate number of TDSR sites debris volume reduction site(s) located at Insert address(es) of TDSR site(s).
- Hauling chips/mulch from the debris volume reduction site to Insert name of landfill Landfill or a location of the Debris Manager's choosing.
- Hauling recycled concrete, metal and other recycle C&D and mixed debris to Insert name of approved C&D landfill Landfill or a location of the Debris Manager's choosing or, if permitted under the terms of the contract, to a location of the Contractor's choosing for profit.

Insert name of agency, department, or division responsible for monitoring Contractor activities will be responsible for monitoring the Contractor's debris removal and disposal activities using Insert appropriate agency, department, or division personnel to prepare Debris Load Tickets and contract oversight.

PURPOSE

The purpose of this plan is to outline the monitoring responsibilities of the Insert jurisdiction name's Contract Oversight Team personnel. This plan is subject to revision based on changing conditions.

MONITORING OPERATIONS

Insert jurisdiction name has been divided into Insert number of debris management zones primary debris management zones Add verbage here if debris zones are modeled after snow zones, etc.. The Contractor will be responsible for removing all eligible vegetative, C&D and mixed debris from city street rights-of-way and hauling limbs, branches, and yard wastes to designated TDSR sites at Insert locations of debris management sites.

Tree trunks greater than 2 feet in diameter and root balls will be hauled directly to the Insert names of TDSR sites as appropriate TDSR site.

Monitoring activities will be controlled by the Debris Manager from the DMC located at Insert address of DMC. Phone number for the Debris Manager is Insert Debris Manager's phone number. Day to day operations and contracting problems/questions should be directed to Insert name, title and phone number of appropriate person.

Debris Contract Oversight Team monitor's work day is expected to be from _____ a.m. until _____ p.m. with _____ hour for lunch or maximum of _____ hours/day _____ days per week.

Monitors will be responsible for initiating Debris Load Tickets at Contractor debris loading sites and estimating and recording the type and quantity of debris, in cubic yards, of Contractor vehicles entering the temporary TDSR sites on Debris Load Tickets.

DEBRIS LOADING SITES MONITORS

The debris loading site monitors will complete Section 1 of the load ticket. The monitor will keep one copy and give the remaining copies to the truck driver. The monitor's copy will be turned into the Debris Manager or designated representative on a daily basis. Load ticket information will be entered into a database by Insert appropriate agency, department, or division personnel.

Transportation will be provided by Insert appropriate agency, department, or division from Insert appropriate location address and returning to Insert appropriate location address or to/from a mutual meeting point.

TDSR SITE MONITORS

The temporary TDSR site monitors will record the estimated quantity, in cubic yards, on Section 2 of the load ticket. The monitor will keep one copy and give the remaining copies to the truck driver. The monitor's copy will be turned into the Debris Manager or designated representative on a daily basis. Load ticket information will be entered into a database by Insert appropriate agency, department, or division personnel.

Monitors will be located at the entrance to the TDSR site where the inspection tower is located. They will be responsible for estimating and recording the cubic yards of debris in Section 2 of the Load Ticket for all incoming Contractor's debris hauling vehicles. A copy of the Debris Load Ticket is shown on the following page.

Transportation will be provided by Insert appropriate agency, department, or division from Insert appropriate location address and returning to Insert appropriate location address or to/from a mutual meeting point.

CITY OF MANASSAS LOAD TICKET		Ticket No. 000001
Section 1		
Prime Contractor:		Date:
Subcontractor (Hauler):		Departure Time:
Driver:		Truck Plate No.:
Measured Bed Capacity (cu. yds.):		
Debris Pickup Site Location: (must be a street address)		
Debris Type: <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> </div> <div style="text-align: center;"> Vegetation Mixed </div> <div style="text-align: center;"> <input type="checkbox"/> <input type="checkbox"/> </div> <div style="text-align: center;"> Construction & Demolition Other: </div> </div>		
Loading Site Monitor:		
Print Name:		
Signature:		
Remarks:		
Section 2		
Debris Disposal Site Location:		
Estimate Debris Quantity: cu. yds.		Arrival Time:
Disposal Site Monitor:		
Print Name:		
Signature:		
Remarks:		
Copies: White – Load Site Monitor Green – Disposal Site Monitor Canary, Pink, Gold – Onsite Contractor's Representative or Driver		

COMPLETING THE LOAD TICKET

- The disposal site monitor will be stationed in the inspection tower and make an estimate of the quantity of debris contained in the truck or trailer in cubic yards. Each truck or trailer will have the measured hauling capacity in cubic yards recorded on the side of the truck or trailer. That number should be validated with the quantity stated in Section 1.
- The disposal site monitor will indicate the name and the arrival time of the truck and indicate the type of debris in the truck.
- The disposal site monitor will record the estimated volume, in cubic yards, on the load ticket in the Estimated Debris Quantity block of material contained within the bed of the truck or trailer.
- Examples of a Truck / Trailer Estimating Table and Truck Capacity Table are shown on the following page.
- The monitor will print and sign his/her name in the designated block.
- The disposal site monitor will retain one copy of the load ticket and give the remaining copies to the truck driver. The disposal site monitor's copy will be turned into the District Debris Manager or his representative at the end of each day. These are controlled forms and cannot be lost since they will be used to verify the amount of money paid to the Debris reduction site Contractor and to the debris hauling Contractor.

EXAMPLE TRUCK / TRAILER ESTIMATING TABLE

Truck/Trailer Size CY	100% CY	90% CY	85% CY	80% CY	75% CY
32	32	29	27	25	24
46	46	41	39	37	35
47	47	42	40	38	35
Note: Truck/Trailer without tailgate is rated at 85% of capacity					

EXAMPLE TRUCK CAPACITY TABLE

Truck Number	Driver	Model	License #	Capacity in CY
101	Joe Blow	Self-loader	39X2520 GA	32CY
102	Kim Driver	Self-loader	39X2522 TX	32CY
103	Steve Loader	Trailer	63N362 MD	47CY
104	David Dump	Self-loader	63X5542 LA	46CY
105	Chip Grinder	Trailer	W5008 FL	47CY

List Vehicle Numbers, Drivers Name, Model, License Number and Measured Capacity of Truck / Trailer Bed In Cubic Yards.

NOTE: Debris Contract Oversight Team members must measure and photograph every truck and trailer used by the contractor to move debris. This should be done jointly with the contractor's representative before debris removal operations begin.

MONITORING STAFF ASSIGNMENTS

Monitoring assignments and personnel names should be recorded in a table similar to the following:

Example Monitoring Staff Tracking Table

Date	Monitor's Name	Monitor's Title	Disposal Site Name	Disposal Site Address	Hours Worked
10/01/15	Jim Driver	Inspector	Mulching Park	123 Main Street	7 am – 6 pm
10/01/15	Lou Trek	Tow Truck Operator	Tree Central	99 South Street	7 am – 7 pm

TRAINING

All assigned monitors will attend an hour training session starting at a.m. p.m. on Insert date at Insert location. Alternate training date is Insert alternate date, same time and location.

NOTICE TO PROCEED

INSERT DATE

Gail Hanscom, Contracts Administrator
Ceres Environmental Services, Inc.
6968 Professional Parkway East
Sarasota, Florida 34240

Re: Debris Removal Services Contract Activation

Dear Ms. Hanscom:

Pursuant to the terms of the Debris Removal Services Contract dated May 1, 2015, Ceres Environmental is hereby given notice that Pinellas County is activating the contract for removal of debris resulting from (brief description of disaster causing activation). As per the contract, Ceres Environmental is required to respond to this Notice To Proceed within 24 hours of receipt of this Notice. Please respond by contacting _____ directly at _____ upon receipt of this Notice to make necessary arrangements for beginning work under this activation notice. Please sign and date this original and return it to my attention by facsimile at (enter fax number).

Per the contract, Ceres Environmental is required to execute a payment and performance bond equal to 100% of the estimated cost of the debris removal services upon receipt of this Notice To Proceed. The estimated cost of debris removal for this activation is _____. Please have this executed bond forwarded to my attention as required under the contract. No work shall be performed prior to receipt of this bond without the specific approval of Pinellas County.

The estimated cost of debris removal presented above also represents the not-to-exceed amount for this activation. Should Ceres Environmental's operations begin to approach this amount, the designated Project Manager shall notify Pinellas County in writing.

Ceres Environmental shall have 180 days from the date of this NOTICE TO PROCEED to complete the debris removal services required under the contract. Additionally, all requirements set out in the contract and the Bid Specifications made a part thereof shall be complied with at all times throughout the project.

Pinellas County's point of contact for this debris removal project is _____ (name of person) with the (name of county office or department). He/she may be contacted at (telephone number and email address). _____ is duly authorized to administer this contract for and in the name of Pinellas County. Any questions related to this activation should be directed to him/her.

Sincerely,

Joe Smith
County Manager, Pinellas County

Ceres Environmental Services, Inc.

Received by _____

Date _____

City of Manassas

Department of Public Works
8500 Public Works Drive
Manassas, VA 20110

Task Order

Task Order Summary					
Contractor:	Ceres Environmental Services, Inc.		Task Order No.:		
Contract No.:			Date:		
Project Title:					
Project Schedule					
Start Date:		End Date:		No. of Days:	
Summary Description of Work to Be Performed					
<u>Instructions:</u> Indicate project location and description of work performed. Cover any conflicts in plans, specifications or instructions.					
Work Performed by Contractor					
Line Item No.	Line Item Description			Unit	Contract Price
Ceiling Price (Not-To-Exceed) if Applicable					
Ceiling Price:					
Signatory					
Authorized User Signature:			Contractor Signature:		
Name:			Name:		
Date:			Date:		

Appendix I: Debris Clearing, Removal and Disposal Guidelines

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Right of Entry / Hold Harmless Agreement

(Right of Entry / Hold Harmless Agreement is strictly a sample and must be reviewed by local legal staff before use)

I/We Insert Owners' Legal Names, the owner(s) of the property commonly identified as Insert Street Address, City of Manassas, State of Virginia, do hereby grant and give freely and without coercion, the right of access and entry to City of Manassas, its agencies, contractors, and subcontractors, for the purpose of removing and clearing any or all storm-generated debris of whatever nature from the above described property.

It is fully understood that this permit is not an obligation to perform debris clearance. The undersigned agrees and warrants to hold harmless the City of Manassas, State of Virginia, its agencies, contractors, and subcontractors, for damage of any type whatsoever either to the above described property or persons situated thereon and hereby release, discharge, and waive any action, either legal or equitable, that might arise out of any activities on the above described property. The property owner(s) will mark any storm damaged sewer lines, water lines, and other utility lines located on the described property.

I/We (☐have, ☐have not) (☐will, ☐will not) receive(d) any compensation for debris removal from any other source, including the Small Business Association (SBA), Agricultural Stabilization and Conservation Service (ASCS), private insurance, individual and family grant program or any other public assistance program. I will report for this property any insurance settlements to me or my family for debris removal that has been performed at government expense. For the considerations and purposes set forth herein, I set my hand this Insert Numerical Day day of Insert Month, 20Insert last two digits of year.

Witness

Owner

Owner

Telephone Number and Address

TDSR Site Setup and Closeout Guidelines

TDSR Site Setup

The topography and soil/substrate conditions should be evaluated to determine best site layout. When planning site preparation, think of ways to make restoration easier. For example, if the local soils are very thin, the topsoil can be scraped to bedrock and stockpiled in perimeter berms. Upon site closeout, the uncontaminated soil can be spread to preserve the integrity of the tillable soils.

The following site baseline data checklist should be used to evaluate a site before a contractor begins operations and used during and after to ensure that site conditions are properly documented.

TDSR Site Baseline Data Checklist

Before Activities Begin

- ☐ Take ground or aerial photographs and/or video.
- ☐ Note important features, such as structures, fences, culverts, and landscaping.
- ☐ Take random soil samples.
- ☐ Take random groundwater samples.
- ☐ Take water samples from existing wells.
- ☐ Check the site for volatile organic compounds.

After Activities Begin

- ☐ Establish groundwater-monitoring wells.
- ☐ Take groundwater samples.
- ☐ Take spot soil samples at household hazardous waste, ash, and fuel storage areas.

Progressive Updates

- ☐ Update videos/photographs.
- ☐ Update maps/sketches of site layout.
- ☐ Update quality assurance reports, fuel spill reports, etc.

TDSR Site Operations

Lined temporary storage areas should be established for ash, household hazardous waste, fuels, and other materials that may contaminate soils and groundwater. Plastic liners should be placed under stationary equipment such as generators and mobile lighting plants. These actions should be included as a requirement in the contract scope of work. If the site is also an equipment storage area, fueling and equipment repair should be monitored to prevent and mitigate spills of petroleum products and hydraulic fluids. Be aware of and lessen the effects of operations that might irritate occupants of neighboring areas. Establishment of a buffer zone can abate concerns over smoke, dust, noise, and traffic.

Consider on-site traffic patterns and segregate materials based on planned volume reduction methods. Operations that modify the landscape, such as substrate compaction and over excavation of soils when loading debris for final disposal, will adversely affect landscape restoration.

Debris removal/disposal should be viewed as a multi-staged operation with continuous volume reduction. There should be no significant accumulation of debris at temporary storage sites. Instead, debris should be constantly flowing to burners and grinders, or recycled with the residue and mixed construction and demolition materials going to a landfill.

TDSR Site Closeout

Each TDSR site will eventually be emptied of all material and be restored to its previous condition and use. The Contractor is required to remove and dispose of all mixed debris, construction and demolition debris, and debris residue to approved landfills. Appropriate **Insert Jurisdiction** inspectors will monitor all closeout activities to ensure that the Contractor complies with the Debris Removal and Disposal Contract. Additional measures may be necessary to meet local, State, and Federal environmental requirements because of the nature of the TDSR site operation(s).

TDSR Site Closeout Planning

The Contractor must assure the Debris Manager that all TDSR sites are properly remediated. There will be significant costs associated with this operation as well as close scrutiny by the local press and environmental groups. Site remediation will go smoothly if baseline data collection and site operation procedures are followed. Closeout or re-approval of a temporary TDSR site should be accomplished within 30 days of receiving the last load of debris.

TDSR Site Closeout Steps

- Contractor is responsible for removing all debris from the site.
- Contractor conducts an environmental assessment with the Debris Manager and landowner.
- Contractor develops a remediation plan.
- Remediation plan reviewed by the Debris Manager, landowner, and appropriate environmental agency.
- Remediation plan approved by the appropriate environmental agency.
- Contractor executes the plan.
- Contractor obtains acceptance from the Debris Manager, appropriate environmental agency, and the landowner.

TDSR Site Closeout Coordination

The Contractor will coordinate the following closeout requirements through the DCOT staff:

- Coordinate with local and State officials responsible for construction, real estate, contracting, project management, and legal counsel regarding requirements and support for implementation of a site remediation plan.
- Establish an independent testing and monitoring program. The Contractor is responsible for environmental restoration of both public and leased sites. The Contractor will also remove all debris from sites for final disposal at landfills prior to closure.
- Refer to appropriate and applicable environmental regulations.
- Prioritize site closures.
- Schedule closeout activities.
- Determine separate protocols for ash, soil and water testing.
- Develop decision criteria for certifying satisfactory closure based on limited baseline information.
- Develop administrative procedures and contractual arrangements for closure phase.
- Inform local and State environmental agencies regarding acceptability of program and established requirements.
- Designate approving authority to review and evaluate Contractor closure activities and progress.
- Retain staff during closure phase to develop site-specific remediation for sites, as needed, based on information obtained from the closure checklist shown below.

Material Removal

- All processed and unprocessed vegetative material and inter debris shall be removed to a properly approved solid waste management site.
- Tires must be disposed of at a scrap tire collection/processing facility; white goods and other scrap metal should be separated for recycling.
- Burn residues shall be removed to a properly approved solid waste management site or land applied in accordance with these guidelines.
- All other materials, unrecoverable metals, insulation, wallboard, plastics, roofing material, painted wood, and other material from demolished buildings that is not inert debris (see #1 above) as well as inter debris that is mixed with such materials shall be removed to a properly permitted C&D recycling facility, C&D landfill, or municipal solid waste landfill.

TDSR Site Remediation

During the debris removal process and after the material has been removed from each of the TDSR sites, environmental monitoring will be needed to close each of the sites. This is to ensure that no long-term environmental contamination is left on the site. The monitoring should be done on three different media: ash, soil, and groundwater.

Ash. The monitoring of the ash should consist of chemical testing to determine the suitability of the material for either agricultural use or as a landfill cover material.

Soil. Monitoring of the soils should be by portable inspection methods to determine if any of the soils are contaminated by volatile hydrocarbons. The Contractors may do this if it is determined that hazardous material, such as oil or diesel fuel was spilled on the site. This phase of the monitoring should be done after the stockpiles are removed from the site.

Ground Water. The monitoring of the groundwater should be done to determine the probable effects of rainfall leaching through either the ash areas or the stockpile areas.

TDSR Site Closure Checklist

- ☐ Site number and location
- ☐ Date closure complete
- ☐ Household hazardous waste removed
- ☐ Contractor equipment and temporary structures removed
- ☐ Contractor petroleum spills remediated
- ☐ Ash piles removed
- ☐ Comparison of baseline information to conditions after the contractor has vacated the temporary site

Site Re-approval

Sites that were approved as temporary TDSR sites will require re-approval for long-term storage, continuing reduction processing, and permanent disposal if site is not closed out in accordance with guidelines stated here. Sites shall be managed and monitored in accordance with the Health Department requirements and to prevent threats to the environment or public health.

Temporary Construction and Demolition Staging / Transfer Site Guidelines

General

The following guidelines should be considered when establishing staging/transfer sites for Construction & Demolition (C&D) and C&D recycling treatment and processing facilities.

These guidelines apply only to sites for staging/transferring C&D storm debris (roof shingles/roofing materials, carpet, insulation, wallboard, treated and painted lumber, etc.). Arrangements should be made to screen out unsuitable materials, such as household garbage, white goods, asbestos containing materials (ACM's), and household hazardous waste.

Selecting Temporary Staging / Transferring Sites

Locating sites for staging/transferring C&D waste can be accomplished by evaluating potential sites and by revisiting sites used in the past to see if site conditions have changed or if the surrounding areas have changed significantly to alter the use of the site. The following guidelines are presented in locating a site for "staging/transferring" and are considered "minimum standards" for selecting a site for use:

Sites should be located outside of identifiable or known floodplain and flood prone areas; consult the Flood Insurance Rate Map for the location in your county to verify these areas. Due to heavy rains associated with hurricanes and saturated conditions that result, flooding may occur more frequently than normally expected.

Unloading areas for incoming C&D debris material should be at a minimum 100 feet from all surface waters of the state. "Waters of the state" includes but is not limited to small creeks, streams, watercourses, ditches that maintain seasonal groundwater levels, ponds, wetlands, etc.

Storage areas for incoming C&D debris shall be at least 100 feet from the site property boundaries, on-site buildings, structures, and septic tanks with leach fields or at least 250 feet from off-site residential dwellings, commercial or public structures, and potable water supply wells, whichever is greater.

Materials separated from incoming C&D debris (white goods, scrap metal, etc.) shall be at least 50 feet from site property lines. Other non-transferable C&D wastes (household garbage, larger containers of liquid, household hazardous waste shall be placed in containers and transported to the appropriate facilities as soon as possible.

Sites that have identified wetlands should be avoided, if possible. If wetlands exist or wetland features appear at a potential site, verification by the local Corps of Engineers office will be necessary to delineate areas of concern. Once areas are delineated, the areas shall be flagged and a 100-foot buffer shall be maintained for all activities on-going at the site.

Sites bisected by overhead power transmission lines need careful consideration due to large dump body trucks/trailers used to haul debris, and underground utilities need to be identified due to the potential for site disturbance by truck/equipment traffic and possible site grading.

Sites shall have an attendant(s) during operating hours to minimize the acceptance of unapproved materials and to provide directions to haulers and private citizens bringing in debris.

Sites should be secure after operating hours to prevent unauthorized access to the site. Temporary measures to limit access to the site could be the use of trucks or equipment to block entry. Gates, cables, or swing pipes should be installed as soon as possible for permanent access control, if a site is to be used longer than two weeks.

When possible, signs should be installed to inform haulers and the general public on types of waste accepted, hours of operation, and who to contact in case of afterhours emergency.

Final written approval is required to consider any TDSR site to be closed. Closeout of processing/recycling sites shall be within one (1) year of receiving waste. If site operations will be necessary beyond this time frame, permitting of the site by the State may be required. If conditions at the site become injurious to public health and the environment, then the site shall be closed until conditions are corrected or permanently closed. Closeout of sites shall be in accordance with the closeout and restoration of temporary TDSR sites guidelines.

C&D Treatment & Processing/Recycling Sites

Management of C&D debris and source separated materials to be recycled shall be in accordance with the following additional conditions:

Contact the Prince William County Health Department for information on managing asbestos containing materials (ACM's) or materials that are considered regulated asbestos containing materials.

Sites should be located outside of identifiable or known floodplain and flood prone areas; consult the Flood Insurance Rate Map for the location in your county to verify these areas. Due to heavy rains associated with hurricanes and saturated conditions that result, flooding may occur more frequently than normally expected.

Storage areas for incoming debris should be at a minimum 100 feet from all surface waters of the state. "Waters of the state" includes but is not limited to small creeks, streams, watercourses, ditches that maintain seasonal groundwater levels, ponds, wetlands, etc.

Storage areas for incoming debris shall be located at least 100 feet from property boundaries and on-site buildings/structures.

Sites that have identified wetlands should be avoided, if possible. If wetlands exist or wetland features appear at a potential site verification by the local Corps of Engineers office or will be necessary to delineate areas of concern. Once areas are delineated, the areas shall be flagged and a 100-foot buffer shall be maintained for all activities on-going at the site.

Storage areas for incoming C&D debris shall be at least 100 feet from the site property boundaries, on-site buildings, structures, and septic tanks with leach fields or at least 250 feet from off-site residential dwellings, commercial or public structures, and potable water supply wells, whichever is greater.

Sites bisected by overhead power transmission lines need careful consideration due to large dump body trucks / trailers used to haul debris and the intense heat generated by the air curtain burner (ACB) device. Underground utilities need to be identified prior to digging pits for using the ACB device.

Provisions should be made to prevent unauthorized access to facilities when not open for use. As a temporary measure, access can be secured by blocking drives or entrances with trucks or other equipment when the facilities are closed. Gates, cables, or other more standard types of access control should be installed as soon as possible.

When possible, post signs with operating hours and information about what types of clean up waste may be accepted. Also include information as to whether only commercial haulers or the general public may deposit waste.

Final written approval is required to consider any TDSR site to be closed. Closeout of processing / recycling sites shall be within six months of receiving waste. If site operations will be necessary beyond this time frame, permitting of the site by the State may be required. If conditions at the site become injurious to public health and the environment, then the site shall be closed until conditions are corrected or permanently closed.

Temporary Vegetative TDSR Site Guidelines

General

When preparing temporary facilities for handling debris resulting from the cleanup efforts due to hurricane damage, the following guidelines should be considered when establishing Temporary TDSR sites.

These guidelines apply only to sites for staging or burning vegetative storm debris (yard waste, trees, limbs, stumps, branches, and untreated or unpainted wood). Arrangements should be made to screen out unsuitable materials.

The two method (s) of managing vegetative and land clearing storm debris is "chipping/grinding" for use in landscape mulch, compost preparation, and industrial boiler fuel or using an "air curtain burner (ACB)", with the resulting ash being land applied as a liming agent or incorporated into a finished compost product as needed.

Chipping and Grinding Sites

Locating sites for chipping/grinding of vegetative and land clearing debris will require a detailed evaluation of potential sites and possible revisits at future dates to see if site conditions have changed or if the surrounding areas have changed significantly to alter the use of the site.

The following guidelines are presented in locating a site for "chipping/grinding" and are considered "minimum standards" for selecting a site for use:

Sites should be located outside of identifiable or known floodplain and flood prone areas; consult the Flood Insurance Rate Map for the location in your county to verify these areas. Due to heavy rains associated with hurricanes and saturated conditions that result, flooding may occur more frequently than normally expected.

Storage areas for incoming debris and processed material should be at a minimum 100 feet from all surface waters of the state. "Waters of the state" includes but is not limited to small creeks, streams, watercourses, ditches that maintain seasonal groundwater levels, ponds, wetlands, etc.

Storage areas for incoming debris and processed material shall be at least 100 feet from the site property boundaries and on-site buildings/structures. Management of processed material shall be in accordance with the guidelines for reducing the potential for spontaneous combustion in compost/mulch piles.

Storage areas for incoming debris shall be located at least 100 feet from residential dwellings, commercial or public structures, potable water supply wells, and septic tanks with leach fields.

Sites that have identified wetlands should be avoided, if possible. If wetlands exist or wetland features appear at a potential site, verification by the local Corps of Engineers office will be necessary to delineate areas of concern. Once areas are delineated, the areas shall be flagged and a 100-foot buffer shall be maintained for all activities on-going at the site.

Sites bisected by overhead power transmission lines need careful consideration due to large dump body trucks/trailers used to haul debris, and underground utilities need to be identified due to the potential for site disturbance by truck/equipment traffic and possible site grading.

Sites shall have an attendant(s) during operating hours to minimize the acceptance of unapproved materials and to provide directions to haulers and private citizens bringing in debris.

Sites should be secure after operating hours to prevent unauthorized access to the site. Temporary measures to limit access to the site could be the use of trucks or equipment to block entry. Gates, cables, or swing pipes should be installed as soon as possible for permanent access control, if a site is to be used longer than two weeks. Sites should have adequate access that prohibits traffic from backing onto public rights-of-way or blocking primary and/or secondary roads to the site.

When possible, signs should be installed to inform haulers and the general public on types of waste accepted, hours of operation, and who to contact in case of an afterhours emergency.

Grinding of clean wood waste such as pallets and segregated non-painted/non-treated dimensional lumber is allowed.

Final written approval is required to consider any TDSR site to be closed. Closeout of staging and processing sites shall be within six months of receiving waste. If site operations will be necessary beyond this time frame, permitting of the site may be required. If conditions at the site become injurious to public health and the environment, then the site shall be closed until conditions are corrected or permanently closed. Closeout of sites shall be in accordance with the closeout and restoration guidelines for temporary TDSR sites.

Air Curtain Burner Site Location and Operations

Locating sites that are intended for air curtain burning (ACB) operations is a coordinated effort between Insert Appropriate Local Authority and Insert Appropriate State Agency for evaluating the surrounding areas and to reevaluate potential sites used in the past.

The following guidelines are presented for selecting an ACB site and operational requirements once a site is in use:

Contact the local fire marshal or fire department for input into site selection in order to minimize the potential for fire hazards, other potential problems related to fire fighting that could be presented by the location of the site, and to ensure that adequate fire protection resources are available in the event of an emergency.

The requirements for ACB device(s), in accordance with Air Quality rules require the following buffers: a minimum of 500 feet from the ACB device to homes, dwellings and other structures and 250 feet from roadways. Contact Insert Appropriate Local and/or State Agency for updates or changes to their requirements.

Sites should be located outside of identifiable or known floodplain and flood prone areas; consult the Flood Insurance Rate Map for the location in your county to verify these areas. Due to heavy rains associated with hurricanes and saturated conditions that result, flooding may occur more frequently than normally expected. If ACB pit devices are utilized, a minimum two-foot separation to the seasonal high water table is recommended. A larger buffer to the seasonal high water table may be necessary due to on-site soil conditions and topography.

Storage areas for incoming debris should be at a minimum 100 feet from all surface waters of the state. "Waters of the state" includes but is not limited to small creeks, streams, watercourses, ditches that maintain seasonal groundwater levels, ponds, wetlands, etc.

Storage areas for incoming debris shall be located at least 100 feet from property boundaries and on-site buildings/structures.

Air Curtain Burners in use should be located at least 200 feet from on-site storage areas for incoming debris, on-site dwellings and other structures, potable water supply wells, and septic tanks and leaching fields.

Wood ash stored on-site shall be located at least 200 feet from storage areas for incoming debris, processed mulch or tub grinders (if a grinding site and ACB site is located on the same property). Wood ash shall be wetted prior to removal from the ACB device or earth pit and placed in storage. If the wood ash is to be stored prior to removal from the site, then rewetting may be necessary to minimize airborne emissions.

Wood ash to be land applied on site or off site shall be managed in accordance with the guidelines for the land application of wood ash from storm debris burn sites. The ash shall be incorporated into the soil by the end of the operational day or sooner if the wood ash becomes dry and airborne.

Sites that have identified wetlands should be avoided, if possible. If wetlands exist or wetland features appear at a potential site, verification by the local Corps of Engineers office will be necessary to delineate areas of concern. Once areas are delineated, the areas shall be flagged, and a 100-foot buffer shall be maintained for all activities on-going at the site.

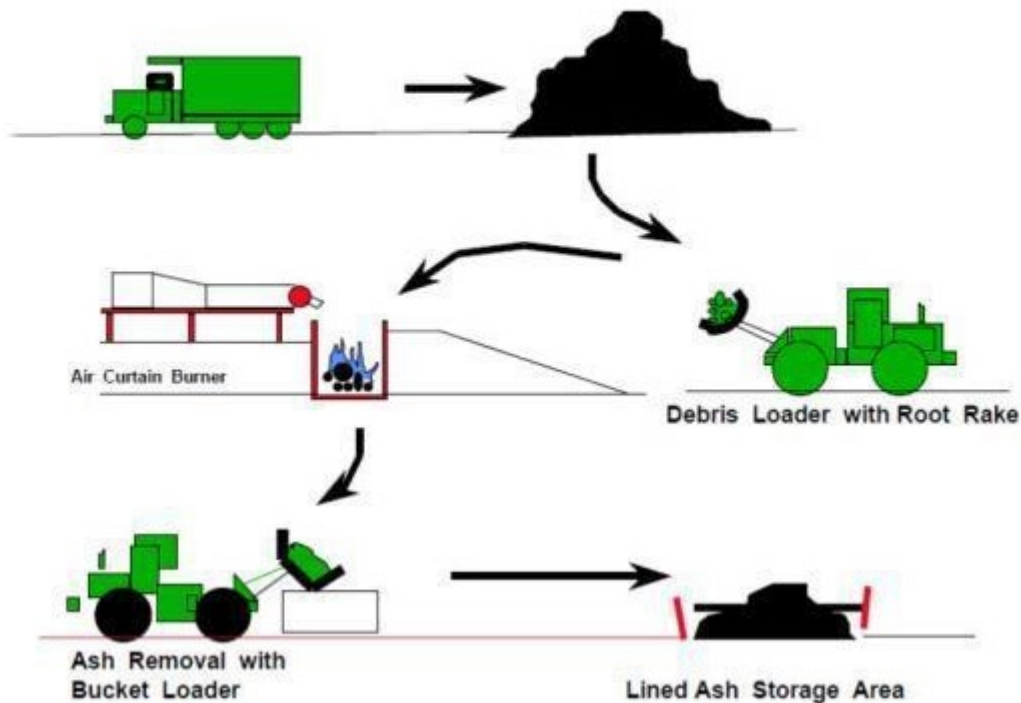
Sites bisected by overhead power transmission lines need careful consideration due to large dump body trucks/trailers used to haul debris and the intense heat generated by the ACB device. Underground utilities need to be identified prior to digging pits for using the ACB device.

Provisions should be made to prevent unauthorized access to facilities when not open for use. As a temporary measure, access can be secured by blocking drives or entrances with trucks or other equipment when the facilities are closed. Gates, cables, or other more standard types of access control should be installed as soon as possible.

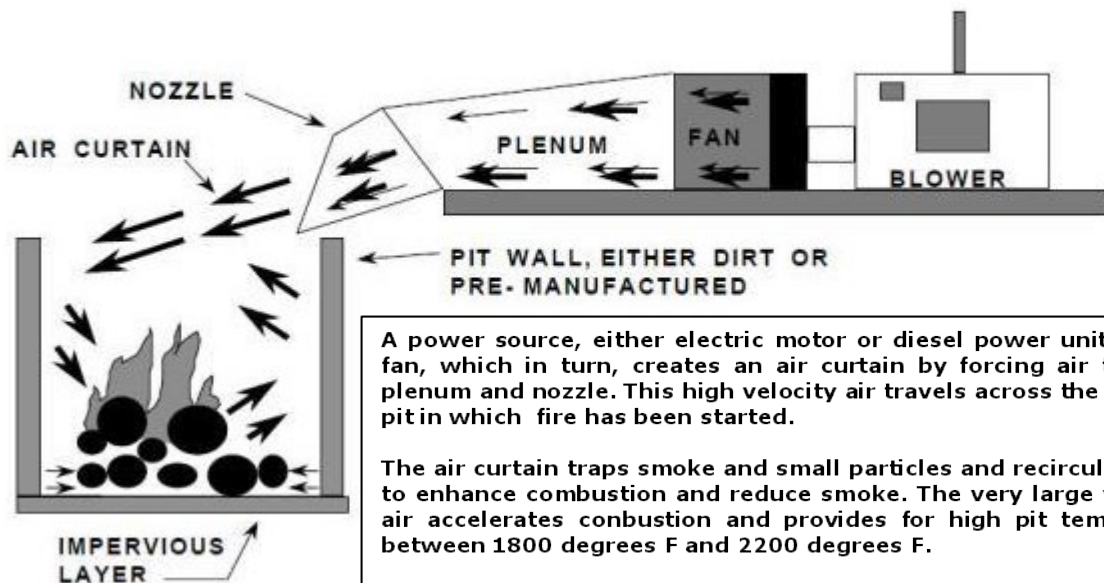
When possible, post signs with operating hours and information about what types of clean up waste may be accepted. Also, include information as to whether only commercial haulers or the general public may deposit waste.

Closeout of air curtain burner sites shall be within six (6) months of receiving waste. If site operations will be necessary beyond this time frame, permitting of the site may be required. If conditions at the site become injurious to public health and the environment, then the site shall be closed until conditions are corrected or permanently closed. TDSR sites

Flow Diagram for a Burning Operation



Overview of an Air Curtain Operation

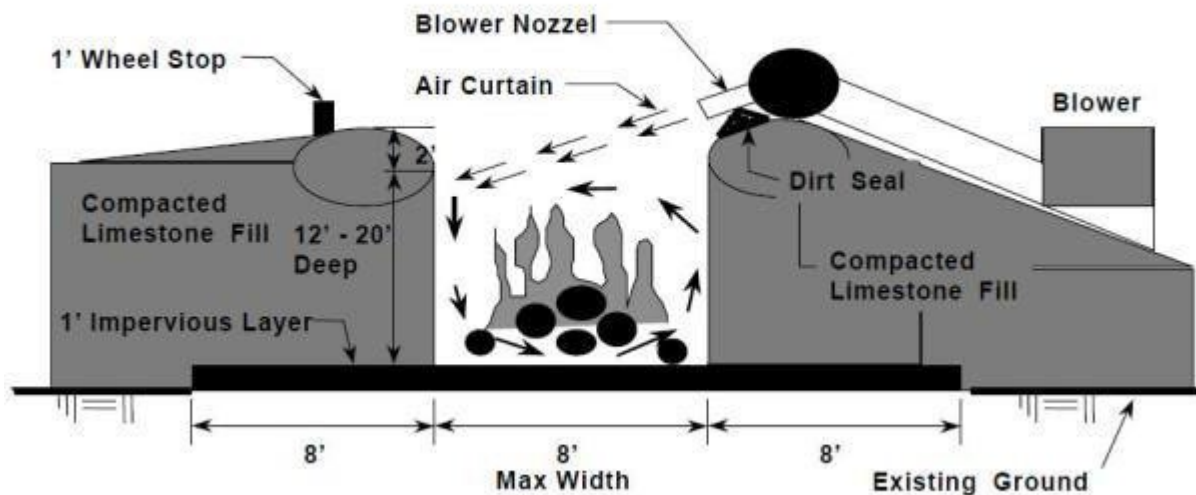


A power source, either electric motor or diesel power unit, drives a fan, which in turn, creates an air curtain by forcing air through a plenum and nozzle. This high velocity air travels across the top of the pit in which fire has been started.

The air curtain traps smoke and small particles and recirculates them to enhance combustion and reduce smoke. The very large volume of air accelerates combustion and provides for high pit temperatures between 1800 degrees F and 2200 degrees F.

The pit provides a safe combustion chamber, which helps prevent heat loss.

Air Curtain Pit Burner



Environmental Checklist for Air Curtain Pit Burners

Incineration site inspections will also include an assessment of the environmental controls being used by the Contractor. Environmental controls are essential for all incineration methods, and the following will be monitored.

A setback of at least 1,000 feet should be maintained between the debris piles and the incineration area. Keep at least 1,000 feet between the incineration area and the nearest building. Contractor should use fencing and warning signs to keep the public away from the incineration area.

The fire should be extinguished approximately two hours before anticipated removal of the ash mound. The ash mound should be removed when it reaches 2 feet below the lip of the incineration pit.

The incineration area should be placed in an aboveground or below ground pit that is no wider than 8 feet and between 9 and 14 feet deep.

Above ground incineration pits should be constructed with limestone and reinforced with earth anchors or wire mesh to support the weight of the loaders. There should be a 1-foot impervious layer of clay or limestone on the bottom of the pit to seal the ash from the aquifer.

The ends of the pits should be sealed with dirt or ash to a height of 4 feet.

A 12-inch dirt seal should be placed on the lip of the incineration pit area to seal the blower nozzle. The nozzle should overlap the pit edge by 3 to 6 inches.

There should be 1-foot high, unburnable warning stops along the edge of the pit's length to prevent the loader from damaging the lip of the incineration pit.

Hazardous or contaminated ignitable material should not be placed in the pit. This is to prevent contained explosions.

The airflow should hit the wall of the pit about 2 feet below the top edge of the pit, and the debris should not break the path of the airflow except during dumping.

The pit should be no longer than the length of the blower system and the pit should be loaded uniformly along its length.

Land Application of Wood Ash from Storm Debris Burn Sites Guidelines

Whenever possible, soil test data and waste analysis of the ash should be available to determine appropriate application rate.

In the absence of test data to indicate agronomic rates, application should be limited to 2 to 4 tons per acre/one-time event. If additional applications are necessary, due to the volume of ash generated and time frame in which the ash is generated, then an ash management plan will be needed.

Ash should be land applied in a similar manner as agricultural limestone.

Ash should not be land applied during periods of high wind to avoid the ash blowing off the application sites.

Ash should not be land applied within 25 feet of surface waters or within 5 feet of drainage ways or ditches on sites that are stabilized with vegetation. These distances should be doubled on sites that are not vegetated and the ash should be promptly incorporated into the soil.

Records should be maintained to indicate where ash is applied and the approximate quantities of ash applied.

As an option to land application, ash may be managed at a permitted municipal solid waste landfill after cooling to prevent possible fire.

Assistance in obtaining soil test data and waste analysis of ash should be available through Insert Appropriate Local or State Agency.

Reducing the Potential for Spontaneous Combustion in Compost or Mulch Piles Guidelines

When ground organic debris is put into piles, microorganisms can very quickly begin to decompose the organic materials. The microorganisms generate heat and volatile gases as a result of the decomposition process. Temperatures in these piles can easily rise to more than 160 degrees Fahrenheit. Spontaneous combustion can occur in these situations.

Spontaneous combustion is more likely to occur in larger piles of debris because of a greater possibility of volatile gases building up in the piles and being ignited by the high temperatures. If wind rows can be maintained 5 feet to 6 feet high and 8 feet to 10 feet wide, volatile gases have a better chance of escaping the piles; and the possibility of spontaneous combustion will be reduced.

Turning piles when temperatures reach 160 degrees can also reduce the potential for spontaneous combustion. Pile turning provides an opportunity for gases to escape and for the contents of the pile to cool. Adding moisture during turning will increase cooling. Controlling the amount of nitrogen-bearing (green) wastes in piles will also help to reduce the risk of fire. The less nitrogen in the piles the slower the decomposition process and consequently the less heat generated and gases released.

Large piles should be kept away from wooded areas and structures and should be accessible to fire-fighting equipment, if a fire were to occur. Efforts should be made to avoid driving or operating heavy equipment on large piles because the compaction will increase the amount of heat build-up, which could increase the possibility of spontaneous combustion.

Appendix J: Health and Safety Strategy

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Purpose

The purpose of this health and safety strategy is to supplement existing City of Manassas safety guidelines with regard to debris removal activities. These are recommended baseline safety provisions. Ultimately, health and safety is the responsibility of the contracted parties involved in debris removal activities. This document will outline some of the general steps necessary to provide a safe work environment for the employees of the monitoring firm and debris removal contractors. In addition, this document will identify some representative work hazards as well as appropriate measures to reduce risk of injury.

1. Dissemination of Information

The monitoring firm and debris removal contractors' project managers will be provided with this Document and will be expected to disseminate the information and guidelines to their respective personnel. A copy of the document should be available for consultation. In addition, elements of the document will be reviewed periodically throughout the project to increase worker awareness.

2. Compliance

The monitoring firm and debris removal contractors' project managers are responsible for the health and safety compliance of their respective personnel and subcontractors. Any crews or individuals that are not compliant shall be suspended from debris removal activities until the situation is remedied. Frequent offenders of safety policies and procedures will be dismissed from the project entirely.

3. Job Hazard Assessment

Though debris removal activities are fairly similar among events, assessing the particular hazards of each disaster is an important part of maintaining health and safety for the debris removal workers. At a minimum, the following areas of focus should be considered as part of a job hazard assessment:

- **Disaster Debris** – Disasters that result in property damage typically generate large quantities of debris which must be collected and transported for disposal. The type of debris varies depending on the characteristics of the region (e.g., terrain, climate, dwelling and building types, population) and the debris generating event (e.g. type, event strength, duration). In addition, the disaster debris produces a host of uneven surfaces which must be carefully negotiated.
- **Debris Removal** – Often the removal of disaster debris involves working with splintered or sharp edges of vegetative or construction material debris. Many disasters involve heavy rains or flooding. Consequently, disaster debris is damp and heavier than usual. As weights increase, so does the risk of injury.

- Removal Equipment – In most disasters, debris must be removed from the public right-of-way (ROW) to provide access for emergency vehicles and subsequent recovery efforts. Debris collection and removal requires the use of heavy equipment and power tools to trim, separate and clear disaster debris.
- Traffic Safety – The ROW is located primarily on publicly maintained roads.
- As a result, much of the debris removal process takes place in traffic of varying levels of congestion. In addition, disasters often damage road signs, challenging safety on the road.
- Wildlife Awareness – Disasters are traumatic events for people as well as wildlife. Displaced animals, reptiles and insects pose a hazard to debris removal workers.
- Debris Disposal – After disaster debris is collected it is often transported to a Debris Management Site (DMS). Upon entry to a DMS, the monitoring firm will assess the volume of disaster debris being transported. The collection vehicle will then dispose of the disaster debris, at which time the debris will be reduced either through a grinding operation or incineration. The DMS is a common area for injury. Response and recovery workers in this environment are more likely to be exposed to falling debris, heavy construction traffic, noise levels, dust and airborne particles from the reduction process.
- Climate – Debris-generating disasters often occur in areas or seasons with extreme weather conditions. The effects of temperature and humidity on physical labor must be monitored, and proper work-rest intervals must be assessed.

4. Administrative and Engineering Controls

The use of administrative and engineering controls can greatly reduce the threats to public health and safety in debris removal activities. The following are some of the common administrative and engineering controls used in the debris removal process:

Collection Operations

- Conduct debris removal operations during daylight hours only.
- Limit cleanup operations to one side of the road at a time.
- Limit collection work under overhead lines.
- Inspect piles before using heavy equipment to remove them in order to ensure that there are no hazardous obstructions.
- Make sure that all collection vehicles have properly functioning lights, horns and backup alarms.
- Load collection vehicles properly to guard against overloading or unbalancing.
- Cover and secure loads, if necessary.
- When monitoring the collection process, stay alert in traffic and use safe driving techniques.

Power Tools

- Inspect all power tools before use.
- Do not use damaged or defective equipment.
- Use power tools for their intended purpose.
- Avoid using power tools in wet areas.

Debris Reducing Machinery (e.g., Grinders/Wood Chippers)

- Do not wear loose-fitting clothing.
- Follow the manufacturer's guidelines and safety instructions.
- Guard the feed and discharge ports.
- Do not open access doors while equipment is running.
- Always chock the trailer wheels to restrict rolling.
- Maintain safe distances.
- Never reach into operating equipment.
- Use lock out/tag out protocol when maintaining equipment.

Debris Management Site/Disposal Operations

- Use jersey barriers and cones to properly mark traffic patterns.
- Use proper flagging techniques for directing traffic.
- Monitor towers must not exit into traffic and should have hand and guard rails to reduce trips and falls.
- Monitor towers must have properly constructed access stairways with proper treads and risers and proper ascent angle (4:1 height/width ratio).
- Monitor towers must be surrounded by jersey barriers which protect the tower and monitors from being struck by inbound or outbound collection vehicles.
- Monitor towers should be located upwind from dust- and particulate- generating activities.
- A water truck should spray the site daily to control airborne dust and debris.

5. Personal Protective Equipment

Personal Protective Equipment (PPE) is the last resort in providing a safe working environment for employees. PPE does not eliminate or even reduce hazards as administrative and engineering controls do. PPE works to reduce the risk of injury by creating a protective barrier between individuals and workplace hazards.

PPE should only be used for its intended purpose. For example, using the wrong type of respirator might expose the worker to carcinogenic particulates. Properly fitting the equipment to the user may require examination by a medical professional. PPE that does not fit well will not provide maximum protection and will decrease the likelihood of the individual continuing to use the equipment. Furthermore, improper use may result in serious injury or death. The proper use of the equipment is outlined in detail in the manufacturer's instructions.

The following PPE may be applicable in standard ROW, right-of-entry, and vegetative, and construction and demolition debris removal activities:

- **Head Protection** – This includes equipment designed to provide protection for an individual's head against hazards such as falling objects or the possibility of striking

one's head against low hanging objects. PPE used to protect the head must comply with ANSI Z89.1-1986, "American National Standard for Personnel Protection – Protective Headwear for Industrial Workers – Requirements."

- **Foot Protection** – This includes equipment designed to provide protection for an individual's feet and toes against hazards such as falling or rolling objects, objects that may pierce the sole or upper section of the foot, etc. PPE used to protect the feet and toes must comply with ANSI Z-41-1991, "American National Standard for Personal Protection – Protective Footwear."
- **Hand Protection** – This includes equipment designed to provide protection for an individual's hands against hazards such as sharp or abrasive surfaces. The proper hand protection necessary is dependent upon the situation and characteristics of the gloves. For instance, specific gloves would be used for protection against electrical hazards, while the same gloves may not be appropriate in dealing with sharp or abrasive surfaces.
- **Vision/Face Protection** – This includes equipment designed to provide protection for an individual's eyes or face against hazards such as flying objects. PPE used to protect eyes and face must comply with ANSI Z87.1- 1989, "American National Standard Practice for Occupational and Educational Eye and Face Protection." Again, the type of eye/face protection necessary is dependent upon the situation and characteristics of the equipment. For instance, eye and face protection used by individuals who are welding may not be appropriate for individuals operating a wood chipper.
- **Hearing Protection** – This includes equipment designed to provide protection for an individual's hearing against prolonged exposure to high noise levels. According to the Occupational Safety and Health Administration (OSHA), the permissible level of sound is an average of 90 decibels over the course of an eight hour work day. For anything above the permissible sound exposure level, hearing protection is required. PPE used to protect hearing must comply with ANSI S3.19-1974, "American National Standard Practice for Personal Protection – Hearing Protection."

Respiratory Protection – This includes equipment designed to provide protection for an individual's respiratory system against breathing air contaminated with hazardous gases, vapors, airborne particles, etc. PPE used to protect the respiratory system must comply with ANSI Z88.2-1992. In addition, the use of respiratory protection requires a qualitative fit test and in some cases a pulmonary fit test by a licensed medical professional.

6. Personal Protective Equipment Debris Removal Activity

PPE requirements are made based upon the results of the job hazards assessment. The following list of PPE is organized by debris removal activity and is meant to be a representative list. Specific PPE requirements vary from location to location. In general, individuals involved in the debris removal process should personally monitor water consumption to avoid dehydration and use appropriate skin protection (e.g., breathable clothes, light colors, sunscreen). Ultimately, the selection of PPE is the responsibility of the monitoring firm and debris removal contractors' project managers.

Debris Collection Monitoring

The hazards of disaster debris collection monitoring include, but are not limited to, being struck by vehicles; falls or trips on uneven surfaces; cuts, abrasions or punctures from vegetative or C&D sharps. PPE requirements include the following:

- Reflective vest
- Foot protection (e.g., rugged shoes or boots; steel toe and shank, if required)
- Long pants

Debris Disposal Monitoring

The hazards of disaster debris disposal monitoring include, but are not limited to, being struck by or caught in/between vehicles; falls or trips on stairs or uneven surfaces; cuts, abrasions or punctures from vegetative or C&D sharps; and being struck by falling disaster debris. Monitor towers must be equipped with a first aid kit. PPE requirements include the following:

- Reflective vest
- Foot protection (e.g., rugged shoes or boots; steel toe, if required)
- Long pants
- Hard hat

Debris Removal

The hazards of disaster debris removal include, but are not limited to, being struck by vehicles; falls or trips on uneven surfaces; cuts, abrasions or punctures from vegetative or C&D sharps; and airborne debris. In addition, PPE requirements include the following:

- Reflective vest
- Vision and hearing protection
- Foot protection (e.g., rugged shoes or boots; steel toe and shank, if required)
- Long pants
- Hand protection (Note: Leather gloves required for persons handling debris)

Debris Disposal and Reduction

The hazards of disaster debris disposal and reduction include, but are not limited to, being struck by or caught in between vehicles; falls or trips on uneven surfaces; cuts, abrasions or punctures from vegetative or C&D sharps; being struck by falling disaster debris; and airborne particles. PPE requirements include the following:

- Reflective vest
- Foot protection (e.g., rugged shoes or boots; steel toe, if required)
- Vision and hearing protection
- Long pants
- Hard hat

Debris Cutting and Trim Work

The hazards of disaster debris cutting and trimming work include, but are not limited to being struck by or caught in between vehicles; falls or trips on uneven surfaces; cuts, abrasions or punctures from power tools, vegetative or C&D sharps; being struck by falling disaster debris; and airborne particles. PPE requirements include the following:

- Reflective vest
- Hand and foot protection (e.g., rugged shoes or boots; steel toe, if required)
- Vision and hearing protection
- Long pants
- Gloves
- Hard hat

For additional information regarding health and safety requirements, please contact OSHA.

Health and Safety Contact Information

Occupational Safety and Health Administration 1-800-321-6742



CITY OF MANASSAS VIRGINIA

DAMAGE ASSESSMENT PLAN

EMERGENCY OPERATIONS FOR INCIDENTS & DISASTERS

A SUPPORT ANNEX TO THE CITY OF MANASSAS
EMERGENCY OPERATIONS PLAN

JUNE 2024

CITY OF MANASSAS OFFICE OF EMERGENCY MANAGEMENT
9608 Grant Avenue
Manassas, Virginia 20110

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SECTION

1

INTRODUCTION

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PROMULGATION DOCUMENT

The City of Manassas Damage Assessment Plan has been developed to support damage assessment requirements of the City's Emergency Operations Plan (EOP). The EOP assigns overall responsibility for Damage Assessment to Public Works, Engineering, and Community Development. City departments and agencies having responsibility to support damage assessment as identified in this plan are responsible for developing their own agency-specific procedures as well as conducting or participating in training and exercises that support the plan.

This strategic document is continually evaluated, updated, and refined to meet the jurisdiction's changing needs. While many departments have contributed to this plan, Emergency Management will coordinate any updates on an annual basis or following exercises and real-world events. All department directors within the City of Manassas agree to ensure efficient and effective incident management by designating lead, and back-up, emergency responders to perform their assigned responsibilities during emergency events.

Implementation of this Damage Assessment Plan requires extensive communication, collaboration, coordination, and cooperation between all departments, employees, and local agencies and businesses. When necessary, collaboration and coordination with local, state and federal agencies will also be employed. This communication and coordination will be facilitated by the Emergency Operations Center (EOC.) The size and scope of the disaster or emergency will determine the level of support required from federal, state, and local partners. All City of Manassas departments, divisions and agencies are expected to cooperate and collaborate, following the National Incident Management System (NIMS) framework to manage events that would adversely affect the City of Manassas.

When to Activate the Damage Assessment Plan

This plan is activated in emergency situations that cause damage to public, private, residential, commercial buildings or infrastructure. The authority designated to implement this Damage Assessment Plan into action, in part or in whole, rests with the Director of Emergency Management, or designee. Activation will occur following a local disaster or incident affecting the health and safety of employees, business owners, or residents of this jurisdiction where there is damage to private or public facilities or infrastructure.

RECORD OF CHANGES

Version #	Revision Date	Description of Change (Section and Brief Explanation)	Page #	Initials



SECTION

2

BASIC PLAN

2.1 PLANNING COMPONENTS

2.1.1 Purpose

The City of Manassas Damage Assessment Plan (DA Plan) describes the roles and responsibilities required to accomplish the damage assessment mission identified in the City of Manassas Emergency Operations Plan (EOP).

This plan provides guidance and direction to designated City of Manassas departments, divisions and agencies on identifying, assessing, and reporting damage as a result of an emergency incident of minor or significant impact. The DA Plan also facilitates the process of assessing damage and determines whether there is need to request state and federal assistance.

In addition, the plan:

- ▶ Assigns responsibilities and identifies actions for organizations and individuals conducting damage assessment
- ▶ Identifies triggers for activation
- ▶ Coordinates damage assessment activities
- ▶ Describes the coordination between designated emergency field personnel and the Emergency Operations Center

2.1.2 Scope

The DA Plan is applicable to all-hazards resulting in structural damage. The DA Plan covers operational activities for collecting, assessing and reporting damage to residential, commercial, and industrial buildings (public or private).

This plan applies to all primary and support authorities, and any partner organization(s) with damage assessment responsibilities, identified in the EOP.

2.1.3 Background

Description

The City of Manassas is a densely populated 10-square mile urban area located less than 30 miles from Washington DC. The City contains approximately 13,500 residential dwelling units including single family homes, multifamily apartments and townhomes, and three manufactured home parks. The City has approximately 1,500 businesses ranging from locations in mixed-use multistory downtown buildings to large campus-style office and manufacturing complexes. The City has a total of 254 lane miles of roadway and 63 traffic signals, and includes multiple major roadway corridors including Route 28, Liberia Avenue, Sudley Road, and Godwin Drive. City facilities include City Hall, the Public Safety Facility, two fire and rescue stations, eight school facilities, an airport, and 24 parks and cultural facilities.

The Manassas public water system provides safe drinking water for the City of Manassas, Manassas Park and western Prince William County residents. The primary source of water is Lake Manassas, an 880-acre reservoir located in Gainesville, Virginia (approximately 12 miles west of the City of Manassas). The lake is fed by two main sources, Broad Run and North Branch, as well as several other small tributaries. Water is withdrawn from the high side of the Manassas Lake Dam through three inlets. The south end of the lake contains three (3) water intake locations for the WTP. The dam, a 710-foot long construction, has a concrete spillway with an elevation of 290'. The intakes are at elevation 280', 268' and 254', and have individual screens at the end of each intake pipe that feeds a single pipe to the Water Treatment Plant, which is located on the low side of the dam. The T. Nelson Elliott Dam was originally constructed in the early 1970s to create a potable water supply reservoir. In 1997 oversight of the dam operations was assumed by the Virginia Department of Conservation and Recreation, Division of Dam Safety.

The Plant is located in Prince William County, Virginia. The property is approximately 17 acres in size. It slopes towards Broad Run to the east and is bordered by Lake Manassas to the north. The surrounding area is wooded and farmland. The Water Treatment Plant consists of several buildings and structures, including a compressor building, a chemical storage building, filter buildings, a water pumping station, a waste thickener, a clear well, a backwash surge tank, clarifiers and a storm water detention pond. The plant pulls its water from Lake Manassas. Backwash water, as well as storm water runoff discharges into Broad Run.

The plant pumps water to the City through a single 24-inch or 36" diameter pipeline using two (2) of four (4) available pumps at the plant. Two (2) pumps are available to operate on demand. The process is controlled by a Supervisory Control and Data Acquisition (SCADA) system. The SCADA system (maintained by the City of Manassas Electric Department) controls six (6) electric substations, three (3) generation facilities, water treatment and distribution, and sewer.

The City distribution system includes 173 miles of watermains ranging in size from 3"-36", two (2) elevated storage tanks and two (2) ground tank. One (1) pump station (at Dean Drive with the ground tanks), and 12,000 service connection Eight (8) interconnect and meter vaults are included in the system for operational and emergencies as needed.

Tank	Type	Location	Size
Quarry Road	Elevated	8151 Quarry Road	1,000,000 gallons
Prince William Street	Elevated	9160 Prince William Street	300,000 gallons
Dean Drive	Ground	9723 Dean Drive	5,000,000 gallons

2.1.3 Planning Assumptions

The City of Manassas is potentially vulnerable to a variety of impacts resulting from a significant incident. As part of the National Capital Region (NCR), this jurisdiction is also susceptible to indirect impacts resulting from an incident in any of our neighboring jurisdictions.

- ▶ City of Manassas will train personnel to assess, collect, and report damage
- ▶ Emergency Management will activate the EOC prior to activation of the DA Plan
- ▶ Damages from an incident may impact a large area within the City of Manassas
- ▶ Emergency Incident may result in a Presidential Disaster Declaration
- ▶ Transportation and communication systems may be severely disrupted or inoperable
- ▶ First responders will provide basic location information (e.g., address and structure type) in the Rapid Assessment Phase
- ▶ Virginia Department of Emergency Management (VDEM) has an expectation that an Initial Damage Assessment (IDA) will be performed and reported within 72 hours of the event
- ▶ Resource assistance from unaffected jurisdictions may be necessary to accomplish the Damage Assessment Plan mission
- ▶ Residents will share information via social media, Gogov and other methods regarding reports of damage
- ▶ City of Manassas Damage Assessment Teams (DAT) will assess residential, commercial, and industrial structures
- ▶ Crisis Track software will be the primary tool used to collect and report Damage Assessment data and will be available on devices for designated field personnel
- ▶ Not all damage will be captured within the initial 72-hour reporting deadline; therefore, Damage Assessment operations may exceed that timeframe
- ▶ Critical facilities (i.e., hospitals, nursing homes) may be contacted directly to gather additional damage assessment data

2.1.4 Policies and Procedures

This section describes the comprehensive policies and procedures as they apply to The City of Manassas' Damage Assessment process.

- ▶ Existing methods such as phone call or email will be used as the primary DAT notification process. The DA Coordinator, with assistance from OEM if needed, will initiate notification to each Damage Assessment Management Team member upon activation

- ▶ Teams will deploy and begin Damage Assessment operations when conditions have been deemed safe by the Damage Assessment Coordinator in coordination with the EOC Manager and Emergency Management Coordinator. All Damage Assessment field activities will be conducted during daylight hours
- ▶ Damage Assessment Teams will utilize City vehicles to transport to and from identified locations; vehicles will utilize decals to enable easy identification by the public
- ▶ Teams will utilize city-authorized devices to operate Crisis Track software to collect, assess, and record damages
- ▶ All data from Damage Assessment Teams must be compiled and submitted to the EOC as soon as reasonably possible
- ▶ Teams are required to wear assigned personal protective equipment (PPE) and will be provided with necessary safety equipment. (See Appendix G: Damage Assessment Team Supplies and Equipment)
- ▶ Teams are required to identify themselves to residents and business owners and provide authorized documentation
- ▶ Teams will refer all media inquiries to the PIO in the EOC. If contact is made with the media, please let the PIO know.
- ▶ A federal/state-supported Preliminary Damage Assessment (PDA) will be conducted in coordination with the Damage Assessment Management Team to verify IDA results. This data will be used to determine whether or not the threshold for a Presidential Disaster declaration has been met
- ▶ Long-term Damage Assessment operations will continue until the local emergency declaration is terminated or otherwise directed by the EOC Manager after consultation with the Director of Emergency Management
- ▶ Upon review and authorization of the EOC Manager, Damage Assessment information will be shared with VDEM

2.1.5 Plan Maintenance

The DA Plan is a living document and will be reviewed and updated bi-annually or at the instruction of the Director of Emergency Management. Emergency Management and the Department of Planning and Development are responsible for maintaining this plan. Emergency Management is the custodian of this plan and is responsible for distribution and facilitating updates and revisions. The City of Manassas departments, divisions, and other agencies identified in the plan are responsible for reviewing and submitting revisions.

Identified City departments, divisions, and other agencies are responsible for training personnel and ensuring they have the knowledge, skills, equipment, and facilities needed to perform tasks identified in the plan.

2.1.6 References

Federal:

- ▶ Damage Assessment Operations Manual, A Guide to Assessment Damage and Impact, April 2016
- ▶ Emergency Management Accreditation Program Standards, 2016
- ▶ National Incident Management System (NIMS), October 2017

- ▶ Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended, 2013

State:

- ▶ The Code of Virginia, 44-146.13 Emergency Services and Disaster Law

Local:

- ▶ City of Manassas Emergency Operations Plan, February 2021
- ▶ City of Manassas Solid Waste Management Plan, March 22, 2021

2.2 CONCEPT OF OPERATIONS

The Concept of Operations describes how The City of Manassas will manage and coordinate an efficient and effective damage assessment operation.

2.2.1 Sequence of Events

Assessment and Authorization

Subsequent to a Rapid Assessment and/or reports from the public, Emergency Management will determine whether or not an Initial Damage Assessment (IDA) is indicated. The Emergency Management Coordinator will brief the Director of Emergency Management and recommend executing the DA Plan. If the recommendation is authorized and the EOC has not been activated, Emergency Management will initiate an EOC Activation in accordance with current policy and procedure. The EOC will notify the DA Coordinator and provide an overview of the situation. An initial task within the EOC will be for Operations Section representatives to obtain information to determine extent of damage, such as:

- ▶ Location(s) of damage;
- ▶ Noticeable damage to residential and commercial structures;
- ▶ Immediate reports of damage to critical infrastructure;
- ▶ Environmental hazards; and
- ▶ Transportation access.

Coordination

The EOC will coordinate notification of the Damage Assessment Management Team with the DA Coordinator. The EOC will initiate that notification.

The Damage Assessment Management Team is comprised of representatives from the following departments, agencies, or offices:

- ▶ Department of Community Development
- ▶ Public Works Department
- ▶ Engineering Department
- ▶ Electric Department
- ▶ Water & Sewer Department
- ▶ Office of Emergency Management
- ▶ City of Manassas Public Schools Facilities Division
- ▶ Office of Communications

The notification will include the time and call-in number for the Damage Assessment Conference Call/Meeting (or in-person if EOC is already activated) conducted by the EOC Manager and DA Coordinator.

A Damage Assessment Conference Call may be used to conduct the meeting which will encompass the following topics:

- ▶ Situational Awareness Briefing
- ▶ Damage Assessment Zones in the City impacted by the incident
- ▶ Estimated number of structures impacted by the incident
- ▶ Timeline for Damage Assessment operations
- ▶ Information disseminated to the public
- ▶ EOC Staffing
- ▶ Safety concerns for field staff
- ▶ State and federal integration.

For notice-events, the DA Coordinator and Emergency Management may organize and convene the Damage Assessment Conference Call or meeting pre-event to assign teams to specific zones based on historical data and vulnerability of specific areas.

Mobilization

The Public Information Officer (PIO) will immediately initiate the public messaging plan.

In coordination with the DA Coordinator, the Damage Assessment Management Team will mobilize the Damage Assessment Teams. The DA Supervisors will provide deployment requirements, locations, position assignments, and review necessary forms and data collection with team members.

Teams will be comprised of two personnel when staffing allows. Table 1 below categorizes the structures each agency is responsible for assessing.

Table 1: Structure Assignment for each Agency

Responsible Agency	Structure(s)
Department of Community Development/Engineering	Residential, Commercial Stormwater Management Facilities
Public Works Department	City Owned Facilities & Public Infrastructure
Electric Department Water & Sewer Department	City Owned Water, Sewer and Electric Facilities and Infrastructure
City of Manassas Public Schools	Public School Facilities

The EOC Manager will ensure that all potentially affected agencies are aware of the Damage Assessment mission. These agencies include, but are not limited to:

- ▶ City of Manassas Fire and Rescue
- ▶ Department of Information Technology
- ▶ Public Works
- ▶ Engineering
- ▶ Electric
- ▶ Water & Sewer
- ▶ City of Manassas Police Department

- ▶ Appropriate City Agencies

The DA Supervisors are responsible for Damage Assessment Team deployment and will deploy teams based on damage reports within each assessment zone of the City. Zones are shown on the attached map.

All Teams will adhere to the PPE requirements of the incident as determined by DA Coordinator. All team members must display proper credentials (i.e., City identification).

The Emergency Operations Center (EOC) will establish a reliable communications link with Damage Assessment Teams through the DA Coordinator. Agency representatives will report the names of staff members who have been activated. A Team roster will be documented and shared with the EOC Manager.

Operation

The DA Coordinator is responsible for the overall damage assessment operation, which is broken down into a number of functions:

Operations Functions:

- ▶ Rapid Damage Assessment
- ▶ Initial Damage Assessment
- ▶ Preliminary Damage Assessment
- ▶ Recovery Assessment

Each phase is staffed by supervisory and support staff. Staff will operate in a manner consistent with the policies and procedures found throughout this plan.

Demobilization

The Damage Assessment Demobilization Plan will be developed during Damage Assessment operations. The DA Coordinator is responsible for creating the Damage Assessment Demobilization Plan which will be based on criteria including:

- ▶ Remaining facilities to be assessed
- ▶ Access to infrastructure
- ▶ Public reports of damage as they return to their residence

The DA Coordinator will ensure that all documents are collected and turned over to the EOC.

2.3 ORGANIZATION AND RESPONSIBILITIES

2.3.1 Organization

The organizational structure of the City's Damage Assessment Operations will be organized and managed using the principles of ICS, as identified in Figure 1 below.

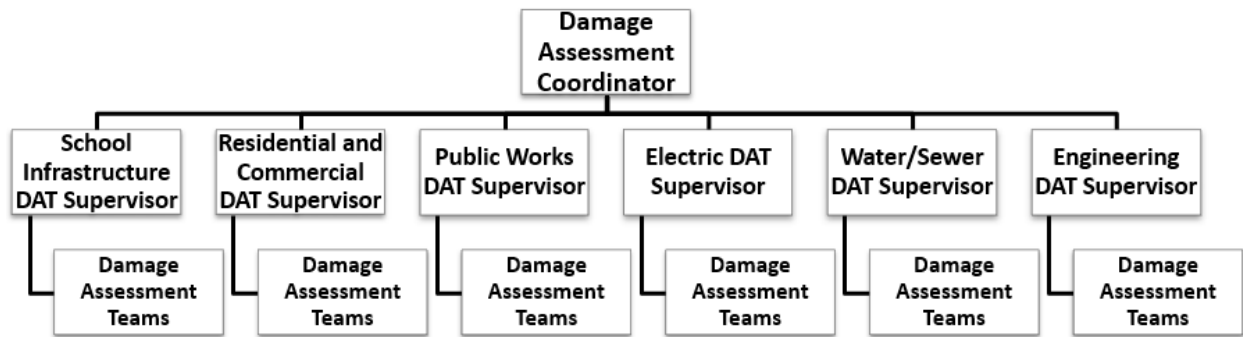


Figure 1: Damage Assessment Organizational Structure

The City of Manassas' Damage Assessment Organizational Structure Chart illustrates the Management and Operations Staff positions that may be activated during a Damage Assessment operation.

2.3.2 Assignment of Responsibilities

For a Damage Assessment Operation to achieve success, a number of disparate organizations must collaborate to fill integral positions and functions.

Each position listed includes a number in parenthesis. This number is the optimum number of

personnel needed to staff the position for a single operational period, recognizing that Damage Assessments may only be conducted during daylight hours. Staffing numbers will be adjusted based on the needs of Damage Assessment Operations. It is possible that staffing resources will be allocated from other sources.

Overarching Agency Damage Assessment Responsibilities

The following responsibilities are common to each agency performing Damage Assessment Operations. The responsibilities each agency will perform is described below:

- ▶ Identify DA Team members to conduct the City's Damage Assessment processes
- ▶ Maintain and utilize Crisis Track software to collect Damage Assessment data
- ▶ Coordinate Information-Sharing among key partners.

- ▶ Attach safety placards to buildings deemed unsafe; Community Development will make the final decision on habitability
- ▶ Document department resources expended and recovery costs
- ▶ Participate in the Damage Assessment After-Action review process

City of Manassas Community Development (CD)

The City of Manassas EOP designates Community Development as one of the agencies with primary responsibility for coordinating Damage Assessment Operations. They will provide personnel for the following functions and positions:

Damage Assessment Management Team:

- ▶ Actively develops, maintains, trains, and exercises the *City of Manassas DA Plan* in collaboration with Emergency Management and other Damage Assessment Management Team representatives
- ▶ Participates in all Damage Assessment Conference Calls and/or meetings.

Damage Assessment Operations:

- ▶ Leadership Positions:
 - ▶ Damage Assessment Team Supervisor (1)
- ▶ Staff Positions:
 - ▶ Damage Assessment Team Inspector (2)

Total Staff Required = 3

Community Development is responsible for performing the following agency-specific Damage Assessment functions:

- ▶ Coordinate the activation and mobilization of DA Teams and equipment
- ▶ Ensure that inspected damaged buildings are properly labeled as unsafe when required
- ▶ Manage the overall Damage Assessment reporting and information collection process
- ▶ Coordinate with the EOC regarding the creation and dissemination of Damage Assessment information

City of Manassas Electric Department

The City of Manassas Electric Department is responsible for conducting Damage Assessment on City-owned electric facilities and infrastructure. They will provide personnel for the following functions and positions:

Damage Assessment Management Team:

- ▶ Participate in the maintenance, training, and exercising of the City of Manassas DA Plan in collaboration with Emergency Management and other Damage Assessment Management Team representatives
- ▶ Participate in all Damage Assessment Conference Calls and/or meetings.

Damage Assessment Operations:

- ▶ Leadership Positions:
 - ▶ Damage Assessment Team Supervisor (1)
- ▶ Staff Positions:
 - ▶ Damage Assessment Team Inspector (2)

Total Staff Required = 3

City of Manassas Water & Sewer Department

The City of Manassas Water & Sewer Department is responsible for conducting Damage Assessment on City-owned water and sewer facilities and infrastructure. They will provide personnel for the following functions and positions:

Damage Assessment Management Team:

- ▶ Participate in the maintenance, training, and exercising of the City of Manassas DA Plan in collaboration with Emergency Management and other Damage Assessment Management Team representatives
- ▶ Participate in all Damage Assessment Conference Calls and/or meetings.

Damage Assessment Operations:

- ▶ Leadership Positions:
 - ▶ Damage Assessment Team Supervisor (1)
- ▶ Staff Positions:
 - ▶ Damage Assessment Team Inspector (2)

Total Staff Required = 6

City of Manassas Department of Engineering

Engineering is responsible for supporting Community Development with staffing the Damage Assessment Coordinator positions as well as assessing damage to commercial and residential facilities. They are also responsible for assessing damage to storm drainage facilities such as culvert and major floodway crossings as well as stormwater management facilities. They will provide personnel for the following functions and positions:

Damage Assessment Management Team:

- ▶ Participate in the maintenance, training, and exercising of the City of Manassas DA Plan in collaboration with Emergency Management and other Damage Assessment Management Team representatives
- ▶ Participate in all Damage Assessment Conference Calls and/or meetings.

Damage Assessment Operations:

- ▶ Leadership Positions:
 - ▶ Damage Assessment Team Supervisor (Stormwater Facilities) (1)
- ▶ Staff Positions:
 - ▶ Damage Assessment Team Inspector (2) – Inspectors Will Report to Comm. Dev. Supervisor as Assigned for Res./Comm. Inspections

Total Staff Required = 3

City of Manassas Department of Public Works

Public Works is responsible for conducting Damage Assessment on City-owned facilities and infrastructure (except for public school infrastructure). Public Works will provide personnel for the following functions and positions:

Damage Assessment Management Team:

- ▶ Participate in the maintenance, training, and exercising of the City of Manassas DA Plan in collaboration with Emergency Management and other Damage Assessment Management Team representatives
- ▶ Participate in all Damage Assessment Conference Calls and/or meetings.

Damage Assessment Operations:

- ▶ Leadership Positions:
 - ▶ Damage Assessment Team Supervisor (2)
- ▶ Staff Positions:
 - ▶ Damage Assessment Team Inspector (3)

Total Staff Required= 5

City of Manassas Office of Emergency Management (OEM)

Emergency Management's primary mission is to foster a collaborative Damage Assessment process and provide the necessary operational assistance needed. Emergency Management will provide personnel for the following functions and positions:

Damage Assessment Management Team:

- ▶ Participate in the maintenance, training, and exercising of the City of Manassas DA Plan in collaboration with other Damage Assessment Management Team representatives
- ▶ Organizes and participates in all Damage Assessment Conference Calls and/or meetings.

Total Staff Required= 1

Emergency Management is responsible for performing following agency-specific Damage Assessment functions:

- ▶ Activate and manage the EOC and ensure the DA Coordinator position is staffed
- ▶ Manage and assist the DA Coordinator with DA Management Team notification
- ▶ Provide damage assessment data to the EOC Manager to aid in determining a local declaration
- ▶ Facilitate briefings between the Damage Assessment Management Team and the EOC Manager at each phase of the damage assessment process
- ▶ Coordinate Damage Assessment activities among City Damage Assessment groups.
- ▶ Produce and disseminate the Damage Assessment Overview within the Situation Report (SitRep)
- ▶ Work with GIS to prepare an initial Situation Map illustrating the footprint of the affected area to aid in deploying Damage Assessment Teams
- ▶ Complete and submit an IDA Report to the VDEM post-incident

City of Manassas Public School Facilities Services Division (MCPS-FSD)

MCPS is responsible for conducting Damage Assessment Operations at all City-owned school facilities. MCPS-FSD will provide personnel for the following functions and positions:

Damage Assessment Management Team:

- ▶ Participate in the maintenance, training, and exercising of the City of Manassas DA Plan in collaboration with Emergency Management and other Damage Assessment Management Team representatives
- ▶ Participate in all Damage Assessment Conference Calls and/or meetings

Damage Assessment Operations:

- ▶ Leadership Positions:
 - ▶ Damage Assessment Team Supervisor (1)
- ▶ Staff Positions:
 - ▶ Damage Assessment Team Inspector (2)

Total Staff Required= 3

Office of Communications (City)

Communications provides accurate, coordinated, and timely Damage Assessment related information to affected audiences during an incident. They are also responsible for interfacing with the public, media, or with other agencies and organizations involved in Damage Assessment information activities or requests. Communications will provide personnel for the following functions and positions:

Damage Assessment Management Team:

- ▶ Participate in the maintenance, training, and exercising of the City of Manassas DA Plan in collaboration with OEM and other Damage Assessment Management Team representatives
- ▶ Participate in all Damage Assessment Conference Calls and/or meetings.

EOC Public Information Officer: (1)

Total Staff Required= 1

Communications is responsible for performing the following agency-specific Damage Assessment functions:

- ▶ Develop information for public dissemination regarding the City's Damage Assessment process with information provided by the DA Coordinator.
- ▶ Monitor social media and other public information outlets to collect Damage Assessment data and information from the public to share with the EOC and the DA Coordinator

- ▶ Provide the public and media with information about the Damage Assessment process and provide an avenue for reporting issues such as habitability of homes, insured and non-insured losses and loss of employment
- ▶ Serve as point-of-contact for media inquiries, to include coordinating with stakeholders and subject matter experts to develop responses.
- ▶ Coordinate with FEMA/State to develop and disseminate public messaging materials informing home and business owners of the PDA process



SECTION
3

FUNCTIONS AND POSITIONS

3.1 DAMAGE ASSESSMENT FUNCTIONS

3.1.1 Management and Control

The Management and Control function is executed by the Damage Assessment Coordinator in the Emergency Operations Center (EOC) which coordinates and works with the Damage Assessment Supervisors and Teams (DAT Teams).

3.1.2 Operations

Damage Assessment functions are staffed by supervisory and support staff applying the principles of the Incident Command System (ICS). Staff will operate Damage Assessment (DA) in a manner consistent with the policies and procedures found throughout the DA Plan.

Function

Rapid Damage Assessment.....
Initial Damage Assessment.....
Preliminary Damage Assessment.....

Recovery Assessment.....

Primary Agency

Office of Emergency Management
Community Development and/or Engineering
Emergency Management, Community
Development; Public Works; Engineering;
Electric; Water & Sewer; Manassas Public
School Facilities Services Division; Virginia
Department of Emergency Management;
Federal Emergency Management Agency
(FEMA); other federal agencies as needed
Community Development; Economic
Development

3.1.2.1 Rapid Damage Assessment

Purpose:

The purpose of the Rapid Damage Assessment provides an initial description of damage, geographical area(s) impacted, and extent of damage following an incident. The focus is on quickly gaining situational awareness of damage, and to coordinate and prioritize assignments for DA Teams during the next phase of the Damage Assessment process.

Planning Assumptions:

- ▶ Public safety personnel will report information to the Emergency Operations Center (EOC)
- ▶ The Public Information Officer (PIO) will monitor and disseminate information to traditional and social media to aid in situational awareness

Responsibilities:

- ▶ The Planning Section Chief (PSC) will gather situational awareness from public safety field reports, Crisis Track, and WebEOC Boards
- ▶ The PSC will create a Damage Assessment Overview (DAO) including geographic boundaries of damage, first responder photos, information received by the ECC, social media reports etc.
- ▶ City personnel will evaluate and report an initial status of their respective facilities through their representative upon Emergency Operations Center (EOC) activation

Policies and Procedures:

- ▶ Public safety field personnel are encouraged to report damage observed while in the field.
- ▶ The PIO will disseminate public messaging regarding self-reporting of damage.
- ▶ The EOC Planning Section will develop a Damage Assessment Overview and continue to develop this product each operational period until DA Teams are mobilized or there is high-level of confidence and sufficient data captured in Crisis Track

3.1.2.2 Initial Damage Assessment

Purpose:

The purpose of the Initial Damage Assessment (IDA) is to provide a Preliminary Detailed Inspection and Assessment of residential, commercial, City-owned facilities, and critical infrastructure identified during the Rapid Damage Assessment. The information collected will aid in deciding if the Governor will request a Preliminary Damage Assessment (PDA) to determine whether Federal assistance should be requested.

Planning Assumptions:

- ▶ IDA information will be submitted to Virginia Department of Emergency Management (VDEM) within 72 hours of the incident
- ▶ Information submitted will be verified to determine if impacts are beyond local and state capabilities and aid in deciding if the Governor will request a PDA to determine whether Federal assistance should be requested
- ▶ Determination for a PDA will be made within 10 days of the incident

Responsibilities:

- ▶ DA Teams will mobilize to inspect and document damage when safe to do so and during daylight hours
- ▶ DA Teams will perform emergency permitting and safety inspections
- ▶ The DA Coordinator will compile Damage Assessment information from Crisis Track, and WebEOC, submit it to the EOC Manager for review

Policies and Procedures:

- ▶ The DA Coordinator, with assistance from the EOC Operations Section, will provide input on a safe and efficient route for Damage Assessment Supervisors to provide to their Damage Assessment Teams in order to conduct their assigned assessments as quickly as possible
- ▶ Teams will utilize current state and federal guidelines when conducting assessments (See Appendix C: Assessment Reporting and Evaluation Guidelines)
- ▶ DA Teams will also perform emergency permitting and safety inspections aligned with Applied Technological Council (ATC-45) Rapid Evaluation Procedure to evaluate and notify owners of structural integrity or compromise
- ▶ All facilities and infrastructure assessed as Unsafe during the IDA will be further evaluated through an engineering assessment; The DA Coordinator will determine the timeline and staffing for technical assessments
- ▶ DA Teams will use current policies and procedures to post structures deemed Unsafe for entry
- ▶ DA Teams will assess and collect Damage Assessment data using the information requirements provided in Crisis Track
- ▶ All data and information collected by DA Teams must be compiled and submitted to the EOC as soon as reasonably possible
- ▶ The DA Supervisors are responsible for DA Team deployment and will deploy teams based on damage reports within each assessment zone in the City (See Appendix A: DA Deployment Map)
- ▶ The DA Coordinator will prioritize assessments based on critical infrastructure and those facilities which may expedite the recovery process (See Appendix B: Damage Assessment Facility Prioritization)

3.1.2.3 Preliminary Damage Assessment

Purpose:

The purpose of the Preliminary Damage Assessment (PDA) is to document and verify the impact and magnitude of damage, and the needs of individuals, families, businesses, public properties and infrastructure. The PDA process is a coordinated effort between the City of Manassas, VDEM, Federal Emergency Management Agency (FEMA) and other federal agencies to agree on the final dollar amount that encompasses damages and costs to repair or rebuild facilities and eligible equipment.

Planning Assumptions:

- ▶ VDEM and FEMA will determine the number of teams conducting field assessments
- ▶ Separate PDAs will occur for Individual Assistance (IA) and Public Assistance (PA) but may occur simultaneously
- ▶ If there is not sufficiently documented damage to support a Presidential Disaster Declaration, or if it is denied, Damage Assessment information can still be used to request

reimbursement from the State, and other federal programs (See Appendix F: Federal Damage Assistance Recovery Programs for more information.)

Responsibilities:

- ▶ PDA Teams will drive through impacted areas and record observations, while stopping periodically to conduct interviews for establishing benchmarks for insurance coverage, determine the degree of overall damage, and assess the socioeconomic profile
- ▶ DA Coordinator will export all Damage Assessment information submitted into Crisis Track (including photographs) and WebEOC for PDA Teams to review during the assessment
- ▶ PIO will coordinate with FEMA/State to develop and disseminate public messaging materials informing home and business owners of the PDA process
- ▶ The Planning Section Chief will coordinate with CD Long-Range Planning, Economic Development and GIS to create an overview of basic socio-economic data for the impacted area; Information gathered should include major local or regional employers impacted, and the cascading effects on the economy and local workforce

Policies and Procedures:

- ▶ PDA Teams will consist of a minimum of two team members, however the DA Coordinator and/or EOC Manager can approve single person teams in certain situations.
- ▶ PDA Teams will not enter flooded areas neither by foot or boat
- ▶ Declaration requests may be developed for one or both FEMA Recovery programs (PA and IA), as well as FEMA's Hazard Mitigation Grant Program (HMGP). (See Appendix H for more information)
- ▶ During the PDA, City representatives will identify, discuss, and document possible opportunities to incorporate mitigation strategies during the repair or reconstruction process
- ▶ Damage Assessment Management Team representatives, along with external partners impacted by the incident will coordinate, compile, and produce damage cost estimates and scope of work documenting equipment, labor, and materials that are backed up by bid documentation, engineering reports, and invoices for damage-related projects
 - If work to repair or rebuild has not started, then projects do not need to be fully scoped
 - If work to repair or rebuild has started or completed, then documentation detailing the cost must be provided during the PDA; City of Manassas does not need to show proof of payment

3.1.2.4 Recovery Assessment

Purpose:

The purpose of the Recovery Assessment is to determine short- and long-term recovery needs and to outline the priorities for restoration.

Planning Assumptions:

- ▶ Rebuilding and restoration efforts require several critical activities that have long-term social, economic and physical recovery implications.
- ▶ Specific recovery considerations will be disaster-specific and identified through the post-disaster Damage Assessment process.

Responsibilities:

- ▶ Community Development will continue to inspect damaged buildings upon request of owners and issue permits for occupancy or demolition.
- ▶ City-owned infrastructure assessments will continue to be completed by Public Works, Water & Sewer, Electric, and Engineering.
- ▶ OEM will work with state and federal liaisons to complete and document approved recovery projects.

Policies and Procedures:

- ▶ CD (Building Official) will make the final determination whether public or private property will need to be demolished.
- ▶ Approved recovery projects must evaluate and incorporate mitigation measures where possible; FEMA will advise on recommended measures to consider.

3.2 DAMAGE ASSESSMENT POSITIONS

The Damage Assessment operations positions include the Damage Assessment Coordinator, Damage Assessment Supervisor, and the Damage Assessment Inspector. See figure 2 below for an organizational breakdown.

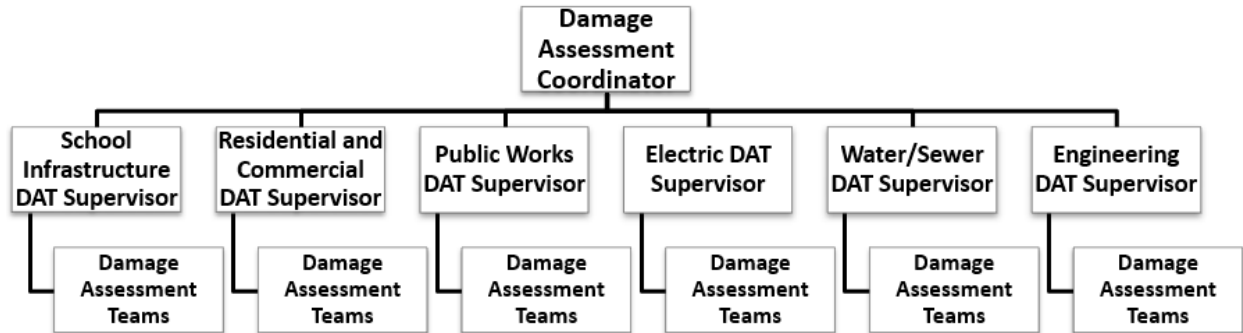


Figure 2: Damage Assessment Positions

3.2.1 Damage Assessment Coordinator

Responsibilities:

- ▶ Responsible for the overall safe, efficient, and effective management of Damage Assessment Operations
- ▶ Participate and take an active role in leading Damage Assessment Exercises
- ▶ Notify, organize, and brief, Damage Assessment Supervisors
- ▶ Maintain a current DA Supervisor notification/recall roster
- ▶ Provide an overview of the incident and guide PDA team members to damaged sites for loss verification

Reports to:

- ▶ EOC Manager

Supervises:

Damage Assessment Supervisor(s)

Activation Phase:

- ▶ Plot all damage locations in Crisis Track using information obtained during the Rapid Damage Assessment phase
- ▶ Conduct pre-deployment briefing with Supervisors to ensure uniformity and understanding of Damage Assessment process including:
 - Overview of the current situation
 - Damage Categories (i.e., Destroyed, Major, Minor, Affected)
 - Use of and functionality of Crisis Track
 - Media and public contact procedures
 - Routine communications check-in
 - Safety requirements
 - Debriefing time and location for the current operational period

Operational Phase:

- ▶ Track and monitor each DA Team's location, and activities, throughout the assigned operational period
- ▶ Maintain a list of structures and facilities deemed unsafe and prioritize which facilities require emergency permitting or an engineering assessment
- ▶ Initiate requests for technical engineers to inspect structures deemed Unsafe
- ▶ Collect, compile, and maintain damage assessment records within Crisis Track.
- ▶ Provide updated Damage Assessment information to the EOC Manager
- ▶ Coordinate with Public Information Officer for relevant Damage Assessment information needed for media reports and public messaging
- ▶ Coordinate and synchronize Damage Assessment activities with key private-sector organizations
- ▶ Ensure that all Team members' time records and equipment expenditures are reported to the Finance Chief at the end of each operational period

Demobilization Phase:

- ▶ Conduct a damage assessment team debriefing.
- ▶ Demobilize DA Team members and resources.
- ▶ Inventory lost or damaged equipment.
- ▶ Prepare and provide final documentation of costs expenditures for personnel, equipment, and materials associated with damage assessment operations.
- ▶ Be prepared to provide input into the After-Action Report process and develop a continuous improvement plan based off lesson learned.

3.2.2 Damage Assessment Team Supervisor

Responsibilities:

- ▶ Attend Damage Assessment training and exercises.
- ▶ Know and understand the City's Damage Assessment policies and processes.
- ▶ Identify and train Damage Assessment Team (DAT) members ensuring personnel understand the City's Damage Assessment processes
- ▶ Maintain a current DAT notification/recall roster
- ▶ Notify, organize, equip, brief, and assign Damage Assessment Teams to affected areas
- ▶ Manage Damage Assessment Team Inspectors ensuring all Damage Assessment policies and procedures are adhered to.

Reports to:

- ▶ Damage Assessment Coordinator

Supervises:

- ▶ Damage Assessment Team Inspector

Activation Phase:

- ▶ Provide the DA Team pre-deployment briefing
- ▶ Assign Teams to specific structures within an affected City DA deployment zone giving special consideration to the prioritization of affected facilities (See Appendix B: Damage Assessment Facility Prioritization for details)
- ▶ Provide training for all Team members prior to deployment if needed

Operational Phase:

- ▶ Direct Teams to:
- ▶ Perform building safety inspections using ATC-45 guidelines and post placards on the building entrances deemed as Unsafe
- ▶ Document and record information using Crisis Track
- ▶ Rate each structure using FEMA's 4-point System (i.e., Destroyed, Major, Minor, Affected). **Note: If there is uncertainty when categorizing damage, use the level up (e.g. select major versus minor) when rating a structure**
- ▶ Provide a brief description, and document the direct and indirect consequences that damaged and destroyed infrastructure has on the community
- ▶ Take photographs to verify assigned damage level (e.g., close-ups of waterlines on residence, as opposed to landscape taken from the street)
- ▶ If applicable, conduct interviews with owners to document insurance coverage, occupancy type (owner or renter), primary or secondary residence
- ▶ Enter buildings only when the structure cannot be observed sufficiently from the outside or when a large amount of interior damage is suspected; **Note: Do not enter an unsafe structure or one that has been designated a crime scene; Get owner consent for entry if possible**
- ▶ For multi-family, such as apartment complexes, record general damage impacts to the facility and then assess and input information for each unit affected into Crisis Track
- ▶ Provide periodic status reports and any Unsafe conditions to the DA Coordinator
- ▶ Document lost or damaged equipment and accidents to personnel or equipment and report to the DA Coordinator
- ▶ Provide impacted residents with informational flyers describing the need and process teams will implement in assessing their property
- ▶ Refer all media contacts to the Public Information Officer

Demobilization Phase:

- ▶ Attend the damage assessment team debriefing
- ▶ Provide any final Damage Assessment related documentation (e.g., damaged equipment) to the DA Coordinator
- ▶ Be prepared to provide input into the After-Action Report process

3.2.3 Damage Assessment Team Inspector

Responsibilities:

- ▶ Know and understand the City's Damage Assessment policies and processes
- ▶ Attend Damage Assessment training and exercise
- ▶ Conduct Damage Assessment operations upon notification

Reports to:

- ▶ Damage Assessment Team Supervisor

Activation Phase:

- ▶ Participate in the DA Team pre-deployment briefing
- ▶ Obtain assessment equipment

- ▶ Review assigned structures in Crisis Track and assist the Damage Assessment Supervisor in the development of an Assessment Route based off assigned zone and prioritization of facilities (i.e., level 1, 2, or 3 facility)

Operational Phase:

- ▶ Perform Building Safety inspections using ATC-45 guidelines and post placards on the building entrances deemed as Unsafe
- ▶ Document and record information using Crisis Track.
- ▶ Rate each structure using FEMA's 4-point System (i.e., Destroyed, Major, Minor, Affected); **Note: If there is uncertainty when categorizing damage, use the level up (e.g. select major versus minor) when rating a structure**
- ▶ Provide a brief description, and document the direct and indirect consequences that damaged and destroyed infrastructure has on the community
- ▶ Take photographs to verify assigned damage level (e.g., close-ups of waterlines on residence, as opposed to landscape taken from the street)
- ▶ Enter buildings only when the structure cannot be observed sufficiently from the outside or when a large amount of interior damage is suspected; **Note: Do not enter an unsafe structure or one that has been designated a crime scene; Get owner consent for entry, if possible**
- ▶ Provide impacted residents with an informational flyer describing the need and process teams will implement in assessing their property
- ▶ Refer all media contacts to the Public Information Officer

Demobilization Phase

- ▶ Attend the damage assessment team debriefing
- ▶ Provide any final Damage Assessment related documentation (e.g., damaged equipment) to the DA Coordinator
- ▶ Be prepared to provide input into the After-Action Report process



SECTION

4

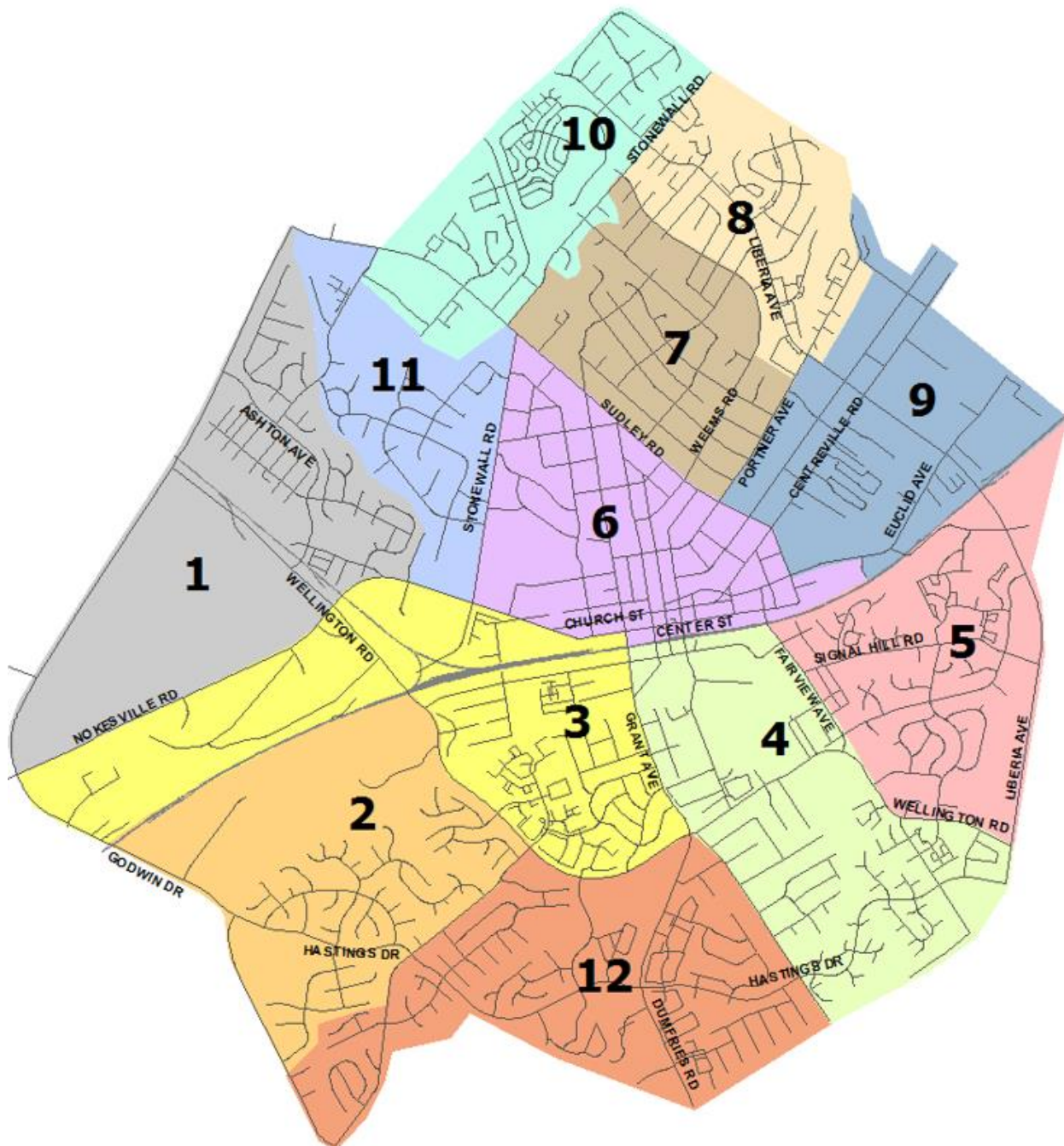
APPENDICES

DAMAGE ASSESSMENT APPENDICES

- ▶ Appendix A: Damage Assessment Deployment Map
- ▶ Appendix B: Damage Assessment Facility Prioritization
- ▶ Appendix C: Damage Assessment Reporting and Evaluation Guidelines
- ▶ Appendix D: Crisis Track Incident Setup
- ▶ Appendix E: Initial Damage Assessment Information Flow and Communication
- ▶ Appendix F: Federal Damage Assistance Recovery Programs
- ▶ Appendix G: Damage Assessment Team Supplies and Equipment
- ▶ Appendix H: Damage Assessment Reporting Form
- ▶ Appendix I: Damage Assessment Management Team Meeting Template
- ▶ Appendix J: Acronyms

APPENDIX A: DAMAGE ASSESSMENT DEPLOYMENT MAP

- ▶ These areas are general outlines, meant to be flexible and work areas will overlap.



APPENDIX B: ASSESSMENT FACILITY/INFRASTRUCTURE PRIORITIZATION

Damage Assessment Teams will be assigned facilities based on critical infrastructure and those facilities which may expedite the recovery process, including facilities critical to life-safety, essential for continued delivery of key government services, and those which have the potential to significantly impact the public's ability to recover following incident. Priorities-levels are described and categorized below:

Level 1: Critical to response and recovery activities used by law, fire/rescue, and public works.

Level 2: Related to life-safety and lifeline services, high occupancy structures/locations, at-risk populations, and schools which may need to be used as a shelter. Locations with high density or at-risk populations are included in priority-level 2 due to residential access and functional needs possibilities, and a high number of residents. Commercial businesses that provides supplies promoting self-sustainability are also included to facilitate and support community recovery efforts as soon as possible post-incident.

Level 3: Includes all areas not previously assessed within the damaged area, including residential and commercial structures, or private non-profit facilities requesting assistance.

Priority-Level	Facility/Infrastructure
Level 1:	<ul style="list-style-type: none">▪ Emergency Communications Centers▪ Fire/Rescue and Public Safety Buildings▪ City Government Administration Buildings▪ Public Works/Utilities Facilities▪ Hospitals▪ City Fueling Stations▪ Emergency Shelter▪ Animal Shelter
Level 2	<ul style="list-style-type: none">▪ City Public Schools▪ Institutional Facilities (With residential occupancy e.g. nursing homes)▪ Grocery Stores, Pharmacies, and Gas Stations▪ Airport
Level 3	<ul style="list-style-type: none">▪ Residential and Commercial Facilities not previously addressed▪ Institutional Facilities not previously addressed (e.g. faith based facilities, non-profits)▪ Government Buildings (Libraries, Parks and Recreation)

APPENDIX C: DAMAGE ASSESSMENT REPORTING & EVALUATION GUIDELINES

The following guidelines will assist teams in executing and documenting the damage assessment information. *Crisis Track* software will be the primary system used in collecting, assessing, and reporting Damage Assessment data.

- ▶ Log into Crisis Track before deployment, select assigned tasks and hit the start button.
Note: This will download all assessment information should connectivity become an issue
- ▶ Assess facilities and infrastructure based on assigned priority-level.
- ▶ Document and record information in *Crisis Track*.
- ▶ Rate each structure assessed as:
 - Destroyed: The residence is a total loss, or damaged to such an extent that repair is not feasible.
 - Major: A residence may be categorized as having major damage when it has sustained significant structural damage and requires extensive repairs.
 - Minor: Encompasses a wide range of damage that does not affect the structural integrity of the residence.
 - Affected Habitable: Residences with minimal damage to the exterior and/or contents of the home
 - Inaccessible: Unable to access structures to be assessed
- ▶ Take photographs to verify assigned damage level.
- ▶ Provide a brief description document with the direct and indirect consequences that damaged and destroyed infrastructure has on the community.
- ▶ Conduct interviews with owners to document insurance coverage, occupancy type (owner or renter), primary or secondary residence.
- ▶ Post placards on the building entrances deemed as Unsafe.
- ▶ If possible, explain the significance of “Unsafe” postings to any building occupants present at the site. Advise occupants to leave the building immediately and ask that they notify other occupants of the closure of the building.
- ▶ If teams encounter conditions that will make it unsafe to perform their assigned damage assessments, the Supervisor will report conditions to the DA Coordinator and await instructions on how to proceed.
- ▶ Periodically communicate the status of damage assessment completion to the DA Coordinator.
- ▶ Repeat this procedure until the route and all the reporting requirements are completed
- ▶ Once you've completed assessing all tasks in Crisis Track, close out of the entries list and click Stop to clock out.
- ▶ For multi-family units such as apartment complexes record general damage impacts to the facility and then assess and input information for each unit affected into Crisis Track.

See pages 35 and 36 below for a detailed description of categorizing impact on manufactured vs. non-manufactured housing and flooding vs. non-flooding related-damage.

Below is screenshot providing an overview of the functionality of Crisis Track on an iPad device for residential assessments. The screen options will look similar on a mobile device.

[Cancel](#)

Location

Locate	<input type="button" value="Locate"/>	Find Structure
Owner	<input type="text"/>	
Address	<input type="text"/>	
City	<input type="text" value="MANASSAS"/>	
State	<input type="text" value="VA"/>	
Zip Code	<input type="text" value="20110"/>	
Building Value	<input type="text"/>	<input type="button" value="-"/> <input type="button" value="+"/>

Building Description

Residence Type	<input type="button" value="Single Family"/>		<input type="button" value="Multi Family"/>	
Primary	<input type="button" value="Yes"/>	<input type="button" value="No"/>	<input type="button" value="Unknown"/>	
Rental	<input type="button" value="Yes"/>	<input type="button" value="No"/>	<input type="button" value="Unknown"/>	
Homeowners Insurance *	<input type="button" value="Yes"/>	<input type="button" value="No"/>	<input type="button" value="Underinsured"/>	<input type="button" value="Unknown"/>
Flood Insurance *	<input type="button" value="Yes"/>	<input type="button" value="No"/>	<input type="button" value="Underinsured"/>	<input type="button" value="Unknown"/>
Construction *	<input type="button" value="Conventional"/>	<input type="button" value="Manufactured"/>	<input type="button" value="Mobile Home"/>	<input type="button" value="Non-Standard"/>
FEMA Flood Zone	<input type="text" value="X"/>			
Year Built	<input type="text" value="UNKNOWN"/>			

Contact

Contact Name	<input type="text"/>
Phone Number	<input type="text"/>
Email	<input type="text"/>

Assessment

Inaccessible	<input type="checkbox"/> Yes <input type="checkbox"/> No				
Flooded	<input type="checkbox"/> Yes <input type="checkbox"/> No				
Damage *	<input type="checkbox"/> None <input type="checkbox"/> Affected <input type="checkbox"/> Minor <input type="checkbox"/> Major <input type="checkbox"/> Destroyed				
Estimated Damage	<input type="text" value="0"/>		<input type="button" value="-"/> <input type="button" value="+"/>		
Damage Description	<input type="text"/>				
Primary Cause	<input type="text"/>				
Secondary Cause	<input type="text"/>				
Tertiary Cause	<input type="text"/>				

Building Occupancy Status

Safe for Habitation	Yes	No	
Electric Outage	Yes	No	Unknown
Water/Sewer Outage	Yes	No	Unknown
Inspection Required	Yes	No	
Occupants Evacuated	Yes	No	

Other Damage

Vehicles	Yes	No
Outbuildings	Yes	No
Personal Property	Yes	No
Fences, Privacy Screens, Decks/Patio	Yes	No
Driveways/Roadway Access	Yes	No



Form



Map



Photos



Save

Residential and Commercial Damage Assessment Level Guidelines

Damage	Definition	Flood Examples	Non-Flood Examples
Affected	<ul style="list-style-type: none"> Residences with minimal damage to the exterior and/or contents of the home. 	<ul style="list-style-type: none"> Any water line in the crawl space or basement when essential living space or mechanical components are not damaged or submerged 	<ul style="list-style-type: none"> Partial missing shingles or siding. Cosmetic damage such as paint discoloration or loose siding. Broken screens. Gutter damage and debris. Damage to an attached structure such as a porch, carport, garage, or outbuilding not for commercial use. Damage to landscaping, retaining walls, or downed trees that do not affect access to the residence.
Minor	<ul style="list-style-type: none"> Encompasses a wide range of damage that does not affect the structural integrity of the residence. 	<ul style="list-style-type: none"> Water line up to 18 inches in an essential living space. Damage to mechanical components (e.g. furnace, boiler, water heater, HVAC, etc.). 	<ul style="list-style-type: none"> Nonstructural damage to roof components over essential living space to include shingles e.g. roof covering, fascia board, soffit, flashing, and skylight. Nonstructural damage to the interior wall components to include drywall, insulation Nonstructural damage to exterior components. Multiple small vertical cracks in the foundation. Damage to the chimney to include, tilting, fallen, cracks, or separated from the residence. Damage to mechanical components (e.g. furnace, boiler, water heater, HVAC, etc.). Damage or disaster-related contamination to a private well or septic system.
Major	<ul style="list-style-type: none"> When a structure has sustained significant structural damage and requires extensive repairs. 	<ul style="list-style-type: none"> Water line above 18 inches in an essential living space Water line above the electrical outlets Waterline on the first floor of a residence when the basement is completely full. 	<ul style="list-style-type: none"> Failure or partial failure to structural elements of the roof over required rooms to include rafters, ceiling joists, ridge boards, etc. Failure or partial failure to structural elements of the walls to include framing, sheathing, etc. Failure or partial failure to the foundation to include crumbling, bulging, collapsing, horizontal cracks of more than two inches, and shifting of the residence on the foundation of more than six inches.
Destroyed	<ul style="list-style-type: none"> The residence is a total loss, or damaged to such an extent that repair is not feasible. 	<ul style="list-style-type: none"> Complete failure of two or more major structural components (e.g., collapse of basement walls, foundation, walls, or roof). 	<ul style="list-style-type: none"> Only foundation remains. A residence that will require immediate demolition or removal because of disaster-related damage or confirmed imminent danger (e.g., impending landslides, mudslides, or sinkholes).

Manufactured Home Assessment Guidelines

Damage	Definition	For Flood Damage	For Damage Other Than Flood (e.g., Wind Driven Rain, Earthquake)
Affected	<ul style="list-style-type: none"> ▶ Residences with cosmetic damage only. ▶ Also applies to residences with damage to a porch, carport, garage, and/or an outbuilding not for commercial use, etc. 	<ul style="list-style-type: none"> ▶ No damage affecting habitability; cosmetic damage only. 	<ul style="list-style-type: none"> ▶ The dwelling's frame is not bent, twisted, or otherwise compromised. ▶ <u>No structural components of the dwelling have been damaged</u> (e.g., windows, doors, wall coverings, roof, bottom board insulation, ductwork, and/or utility hook up).
Minor	<ul style="list-style-type: none"> ▶ The residence is damaged and requires minimal repairs. 	<ul style="list-style-type: none"> ▶ Water line is below the floor system. ▶ Skirting or HVAC is impacted. ▶ There is no structural damage to the residence and it has not been displaced from the foundation. 	<ul style="list-style-type: none"> ▶ There is no structural damage to the residence and it has not been displaced from the foundation. ▶ Nonstructural components have sustained damage - e.g. windows, doors, wall coverings, roof, bottom board insulation, ductwork, and/or utility hook up. ▶ Skirting or HVAC is impacted.
Major	<ul style="list-style-type: none"> ▶ The residence has sustained structural or significant damage that requires extensive repairs. 	<ul style="list-style-type: none"> ▶ Water has come into contact with the floor system. ▶ The residence has been displaced from the foundation, block or piers and other structural components have been damaged. 	<ul style="list-style-type: none"> ▶ The residence has been displaced from the foundation, block or piers and other structural components have been damaged.
Destroyed	<ul style="list-style-type: none"> ▶ The residence is a total loss. 	<ul style="list-style-type: none"> ▶ The residence is a total loss. 	<ul style="list-style-type: none"> ▶ The residence's frame is bent, twisted, or otherwise compromised. ▶ The residence is missing the roof covering or the structural ribbing has collapsed for the majority of the roof system.

APPENDIX D: CRISIS TRACK INCIDENT SETUP

The graphic below provides a step-by-step overview on how to set up an incident using Crisis Track. The DA Coordinator will be responsible for incident setup.

1. Create an Incident

2. Create a New Task

3. Create a Task Area

4. Assign Structures

5. Bulk Edit Entries

6. Create/Assign Teams

Incidents organize and store all related data for a given event

- Name of the Incident
- Status of the Incident. (Open will make the incident visible to all users.)
- FEMA's list of incident types. This will pre-select a list of form types.
- Date of the Incident
- Description of the Incident
- Pre-filled population and FEMA impact threshold values
- Allows you to add or delete entry form types available for tasks in the incident
- Creates a single set of default teams and tasks for quicker data entry

Tasks are a group of entry forms that are assigned to a team

- Clicking Save will move you to the Task Map screen described in Steps 3-5
- Name of the Task
- Type Label of the Task. This is a text box
- Status of the Task: Request, Active, Holding, Closed
- Creation Date of the Task
- Description of the Task
- Special instructions pertaining to the Task
- Selects the team assigned to the Task
- Selects time charge category for the Task
- Selects the entry form types available for the task

Tasks can include a defined operational boundary called the Task Area. This boundary is visible to field teams via the Crisis Track mobile app.

- Provides drawing tools to define the task area
- Clears the task area shape

Assigned Structures creates pre-filled entry forms for a selected group local GIS address points.

- Use the Task Area created in Step 3 to select a group of GIS structures
- Provides drawing tools to select a group of GIS structures
- Clears the selected group of GIS structures
- Selects the entry form type. The "default form" the damage assessment form based on the GIS structures ownership type
- Creates a pre-filled entry form for every selected GIS structure

Assigned Structures creates pre-filled entry forms for a selected group local GIS address points.

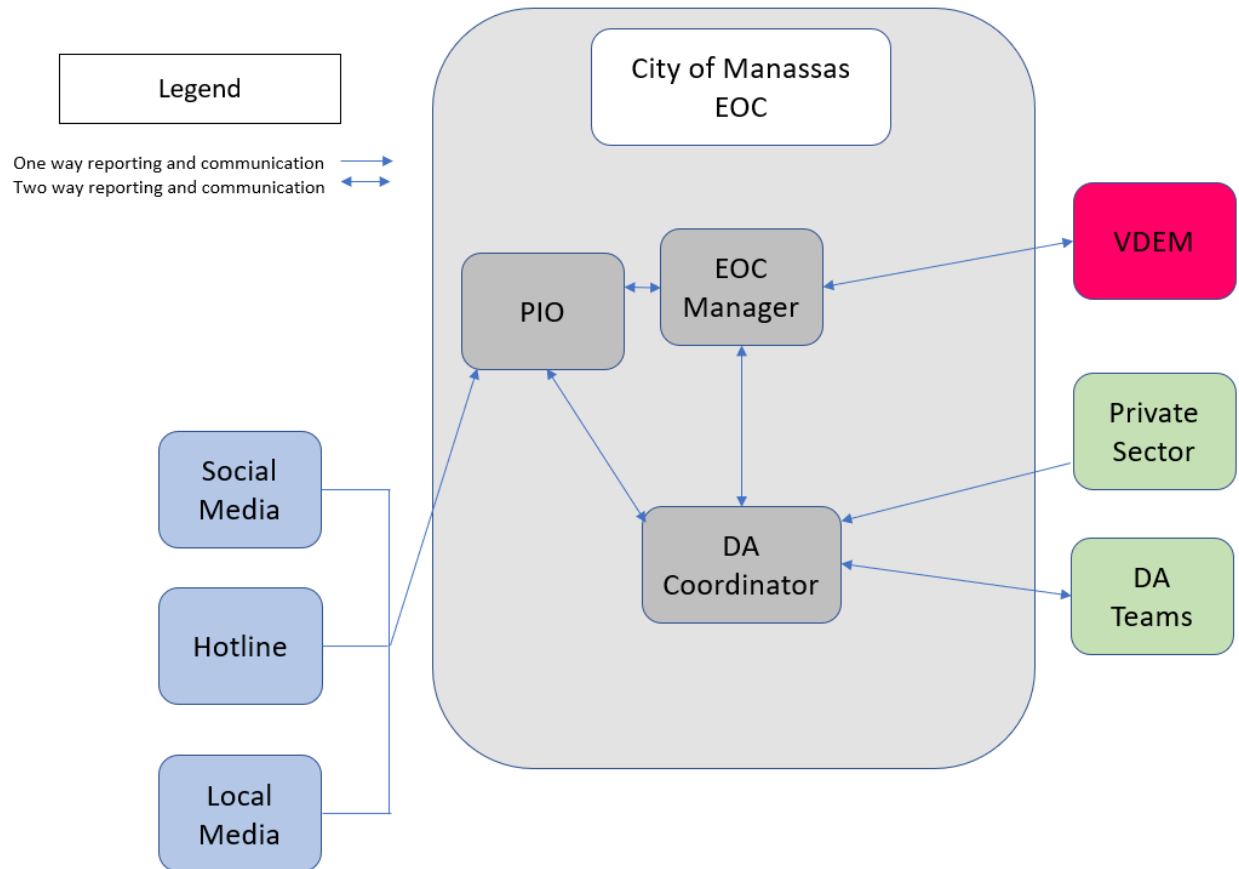
- Provides drawing tools to select a group of Entries
- Selects all entries with the status of "Assigned"
- Clears the selected group of Entries
- Changes the Task for a selected set of Entries.
- Deletes selected group of Entries

A Team is a collection of people and equipment working together. Only one Team can be assigned to a given Task. However, a given Team can be assigned to multiple Tasks.

- Name of the Team
- Notes or descriptions of the Team
- People assigned to the Team from the Employee Inventory (Admin)
- Equipment assigned to the Team from the Equipment inventory (Admin)
- Select the Task for the Team. Must save the Task first before button is available

APPENDIX E: IDA INFORMATION FLOW AND COMMUNICATION

The figure below identifies the information reporting and communications flow between agencies during the Initial Damage Assessment phase.



APPENDIX F: FEDERAL DAMAGE ASSISTANCE RECOVERY PROGRAMS

The table below provides a high-level overview of the most common damage-related recovery assistance programs. City of Manassas's damage assessment process ensures all data collected supports the following disaster assistance programs.

Damage Assistance Program	Description
FEMA Individual Assistance	<ul style="list-style-type: none"> ▪ Aids support recovery efforts to disaster survivors who have uninsured or underinsured expenses or serious needs. ▪ Applies to Residential, Commercial and Agricultural Facilities and eligible equipment. ▪ The program does not require a specific assessed damage threshold.
FEMA Public Assistance	<ul style="list-style-type: none"> ▪ Aids local government, and certain non-profits to restore equipment, buildings, and other infrastructure damaged by the disaster. ▪ Applies to City-owned, town-owned, and private non-profit facilities and infrastructure. ▪ The program requires a damage cost threshold before receiving assistance. Threshold amounts are released annually by FEMA and based on adjustments to the Consumer Price Index (CPI).
FEMA Hazard Mitigation Grant Assistance	<ul style="list-style-type: none"> ▪ Funding for measures designed to reduce future losses to public and private property.
Small Business Administration Physical Disaster Loan Program	<ul style="list-style-type: none"> ▪ Repair or replace disaster-damaged property owned by the business, including real estate, inventories, supplies, machinery and equipment. ▪ Businesses of any size are eligible. Private, non-profit organizations such as charities, churches, private universities may also be eligible.
Small Business Administration Economic Injury Disaster Loan Program	<ul style="list-style-type: none"> ▪ Provides the necessary working capital to help small businesses survive until normal operations resume after a disaster. ▪ Can provide up to \$2 million to help meet financial obligations and operating expenses that could have been met had the disaster not occurred.
United States Department of Agriculture Farm Service Agency (FSA) Disaster Assistance Program	<ul style="list-style-type: none"> ▪ Loans for farmers and ranchers for facilities, equipment, livestock, and crop production losses caused by a disaster.

APPENDIX G: DAMAGE ASSESSMENT TEAM EQUIPMENT & SUPPLIES

Suggested Equipment for Personal Protection

- ▶ Hard hat
- ▶ Long pants, long sleeve shirt
- ▶ Work boots (steel toed)
- ▶ Work gloves
- ▶ Raincoat or poncho
- ▶ Reflective safety vest
- ▶ Flashlight with spare batteries
- ▶ Safety glasses
- ▶ Personal first aid kit
- ▶ Hand sanitizer
- ▶ Official City identification
- ▶ Cell phone with charger
- ▶ Bottled water

Damage Assessment Team-Issued Equipment

- ▶ Mobile Device with Crisis Track Application pre-loaded
- ▶ ATC-45 Safety Placards (Red-Unsafe)
- ▶ Tape measure
- ▶ Paper towels
- ▶ Paper, pencils, clipboards, etc.

CITY OF MANASSAS



PUBLIC ASSISTANCE DAMAGE ASSESSMENT FIELD FORM

INSPECTOR					
DATE					
NUMBER OF PAGES IN FORM					
KEY FOR DAMAGE CATEGORIES (Use appropriate letters in the 'work category' blocks below)					
A. Debris Clearance		D. Water Control Facilities		G. Parks, Recreation Facilities & Other	
B. Emergency Protective Measures		E. Public Buildings & Equipment			
C. Roads & Bridges		F. Public Utility System			
SITE #		WORK CATEGORY		GPS (in decimal degrees)	
NAME OF FACILITY					
LOCATION OF FACILITY					
DAMAGE DESCRIPTION					
EMERGENCY FOLLOW-UP NEEDED?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
TOTAL ESTIMATED DAMAGES		\$			
FLOOD INSURANCE		<input type="checkbox"/> Yes <input type="checkbox"/> No			
PROPERTY INSURANCE		<input type="checkbox"/> Yes <input type="checkbox"/> No			
DATA AVAILABLE		<input type="checkbox"/> Yes <input type="checkbox"/> No			
SITE #		WORK CATEGORY		GPS (in decimal degrees)	
NAME OF FACILITY					
LOCATION OF FACILITY					
DAMAGE DESCRIPTION					
EMERGENCY FOLLOW-UP NEEDED?		<input type="checkbox"/> Yes <input type="checkbox"/> No			
TOTAL ESTIMATED DAMAGES		\$			
FLOOD INSURANCE		<input type="checkbox"/> Yes <input type="checkbox"/> No			
PROPERTY INSURANCE		<input type="checkbox"/> Yes <input type="checkbox"/> No			
DATA AVAILABLE		<input type="checkbox"/> Yes <input type="checkbox"/> No			

City of Manassas Initial Damage Assessment Form													
Incident:	Agency/Contact Phone Number:						Date:				Page Number:		
Damage Assessment Team:	Status		Dwelling Type				Extent of Damage				Insurance/NFIP		
Address/Notes:	Own	Rent	Single Family	Multi-Family	Mobile Home	Business	Destroyed	Major	Minor	Affected	Yes	No	Sr/Special Needs

Note: The form is used to document privately owned residence and business.



CITY OF MANASSAS

INITIAL DAMAGE ASSESSMENT REPORT

DATE & TIME REPORT PREPARED									
PREPARED BY									
CALL BACK NUMBER									
EMAIL ADDRESS									
PART I: PRIVATE PROPERTY CUMULATIVE DAMAGES									
PROPERTY TYPE	# Destroyed	# Major Damage	# Minor Damage	# Affected	Dollar Loss	% Flood Insured	% Property Insured	% Owned	% Secondary
Single Dwelling Houses (including condo units)									
Multi-Family Residences (count each unit)									
Manufactured Residences (Mobile)									
Business/Industry									
Non-profit Organization Buildings									
Agricultural Facilities									
PART II: PUBLIC PROPERTY (INCLUDES ELIGIBLE NON-PROFIT FACILITIES) CUMULATIVE DAMAGES									
PROPERTY TYPE	Estimated Dollar Loss					% Insured			
Category A (Debris Removal)									
Category B (Emergency Protective Measures)									
Category C (Roads and Bridges)									
Category D (Water Control Facilities)									
Category E (Public Buildings and Equipment)									
Category F (Public Utilities)									
Category G (Parks and Recreation Facilities)									
TOTAL									
Comments:									

APPENDIX I: DAMAGE ASSESSMENT MANAGEMENT TEAM MEETING TEMPLATE

Damage Assessment Conference Call Template

Meeting Agenda

Day, Month Date, Year

Time

- ▶ Situational Awareness Briefing of the Current Incident
 - The potential role of state and federal engagement
 - Quadrants of the City impacted by the Incident
 - Estimated number of structures impacted
 - City-owned facility brief out
 - Initial information obtained from the Citizens Reporting Tool page
 - Damage Assessment Quadrants
- ▶ Public Information
 - The message DA Teams should be able to disseminate to the public
 - What public information products will be created and issued to DA Teams
- ▶ Timeline for Damage Assessment Operations
 - DA Team Activation Notification
 - DA Team Initial Briefing Location and Time
 - Operational Period
 - Estimated duration for the entire Damage Assessment Operations process
- ▶ Safety concerns for field staff

APPENDIX J: ACRONYMS

ATC	Applied Technology Council
B&D	Building and Development
DA	Damage Assessment
DAR	Damage Assessment Response
DAO	Damage Assessment Overview
DGS	Department of General Services
ECC	Emergency Communications Center
EMAP	Emergency Management Accreditation Program
EOC	Emergency Operations Center
EOP	Emergency Operations Plan
FEMA	Federal Emergency Management Agency

IA	Individual Assistance
IBD	Infrastructure Branch Director
ICS	Incident Command System
IDA	Initial Damage Assessment
CMSFD	City of Manassas Public Schools Facilities Division
NCR	National Capital Region
NIMS	National Incident Management System
OEM	Office of Emergency Management
OPS	Operations Section
PA	Public Assistance
PAC	Public Affairs and Communications
PDA	Preliminary Damage Assessment
PIO	Public Information Officer
PPE	Personal Protective Equipment
SitRep	Situation Report
SDO	Staff Duty Officer
THIRA	Threat and Hazard Identification and Risk Assessment
VDEM	Virginia Department of Emergency Management
VDOT	Virginia Department of Transportation

City of Manassas, Virginia

Emergency Operations Plan





This document was prepared under a grant from the Federal Emergency Management Agency's Grant Programs Directorate (FEMA/GPD) within the U.S. Department of Homeland Security. Points of view or opinions expressed in this document are those of the authors and do not necessarily represent the official position or policies of FEMA/GPD or the U.S. Department of Homeland Security.

BASE PLAN

Foreword

This plan fulfills the Commonwealth of Virginia's requirement for each political jurisdiction to prepare and keep current plans to respond to disasters or large-scale emergencies. This document is a result of the collaborative efforts among the City of Manassas departments and partner organizations that have assigned emergency roles and responsibilities. The final plan incorporates comments and suggestions received from a variety of stakeholders that provide critical support during times of disaster.

The City of Manassas Emergency Operations Plan (EOP) is a multi-discipline, all hazards plan that establishes a single, comprehensive framework for the management of major emergencies and disasters within the City. The EOP is implemented when it becomes necessary to mobilize the resources identified herein in order to save lives and protect property and infrastructure.

The successful implementation of the EOP is contingent upon a collaborative approach with a wide range of partner agencies and organizations, regional jurisdictions, state, and federal government agencies that provide crucial support during emergency operations. The EOP recognizes the significant coordination that is necessary and defines the functional roles and responsibilities of City departments and establishes the coordination mechanisms for a cohesive response while allowing flexibility in the response organization to respond as necessary to shifting developments and situations.

All City departments and partner organizations with identified roles and responsibilities are expected to understand this plan and to be prepared to execute the actions necessary to implement emergency operations. However, the EOP is not intended as a stand-alone document. Departments and partner organizations should conduct detailed planning to develop policies, plans, and procedures that support this document. All users of this document are encouraged to recommend changes.

Submitted by: Chief Robert Clemons, Emergency Management Coordinator

Questions or comments concerning this document should be directed to:

Fire Chief Rob Clemons,
Emergency Management Coordinator

City of Manassas Fire and Rescue Department
Prevention and Preparedness Division
9324 West Street - Suite 103
Manassas, Virginia 20110
703-257-8458

Promulgation Statement

MOTION: AVENI

**February 13, 2017
Regular Meeting
Res. No. R-2017-21**

SECOND: BASS

RE: CITY OF MANASSAS – EMERGENCY OPERATIONS PLAN

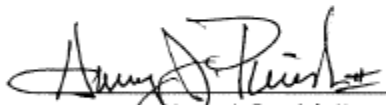
WHEREAS, the City Council of the City of Manassas, Virginia recognizes the need to prepare for, respond to, and recover from natural and man-made disasters; and

WHEREAS, the City of Manassas has a responsibility to provide for the safety and well-being of its citizens and visitors; and

WHEREAS, the City of Manassas has established and appointed a Director, and Coordinator of Emergency Management.

NOW, THEREFORE, BE IT RESOLVED that the Manassas City Council does hereby adopt this Emergency Operations Plan as revised.

BE IT FURTHER RESOLVED that the Director of Emergency Management, or his/her designees, are tasked and authorized to maintain and revise as necessary this document and that a comprehensive review and revision of the emergency operations plan be done every four years to ensure that the plan remains current, and that the revised plan shall be formally adopted by the City Council.


Harry J. Parrish II Mayor
On behalf of the City Council
of Manassas, Virginia

ATTEST:


Andrea P. Madden City Clerk

Votes:

Ayes: Aveni, Bass, Elston, Lovejoy, Sebesky, Wolfe

Nays: None

Absent from Vote: None

Absent from Meeting: None

Plan Maintenance and Distribution

- The City of Manassas Emergency Management Coordinator is responsible for developing, maintaining, and distributing the City of Manassas Emergency Operations Plan (EOP).
- This plan shall be considered a “living plan,” and with each use, either by exercise, incident or planned event, the plan shall be reviewed by the Emergency Management Coordinator.
- At a minimum, the EOP is significantly updated, adopted by the City Council, and promulgated by the City Manager in accordance with Commonwealth of Virginia requirements every four years or upon significant revisions to the document.
- Each department and organization with a role in the implementation of the EOP must be familiar with the EOP to ensure efficient and effective execution of emergency responsibilities. Each must develop and maintain departmental emergency plans, procedures, guidelines, and job aids to effectively meet their assigned emergency responsibilities.
- Primary and support agencies for the Emergency Support Functions (ESFs) are responsible for maintaining and updating their assigned annexes. Annexes should be reviewed annually and proposed updates to the annexes coordinated with all support agencies prior to submission.
- Changes will include additions of new or supplementary material or deletions of outdated information. No proposed change should contradict or override authorities or other plans contained in statute or regulation.
- All requests for changes will be submitted to the Emergency Management Coordinator for coordination, approval, and distribution. Any department, City organization, or partner organization may propose and develop a change to the EOP, and are encouraged to do so. Prior to submitting proposals to the Emergency Management Coordinator, the proposing department will obtain the written approval from the appropriate department head.
- The EOP and approved changes will be distributed as listed in the table below:

Table 1: Distribution**HC = Hard Copy E = Electronic Copy**

Department or Partner Agency	Phone	#	HC	EC
Office of the City Manager	703-257-8212	1	x	
- Communications Coordinator	703-257-8456	2	x	
Office of the Mayor and City Council	703-257-8213	3	x	
Office of the City Clerk	703-257-8280	4	x	
Office of the Treasurer	703-257-8246	5	x	
Office of the City Attorney	703-369-4738	6	x	
Office of the Commissioner of the Revenue	703-257-8220	7	x	
Manassas City Police Department	703-257-8001	8	x	
- Animal Control	703-257-8101	9		x
- Public Safety Communications Center	703-257-8061	10	x	
City of Manassas Fire & Rescue Department	703-257-8465	11	x	
Manassas Volunteer Fire Company	703-898-6074	12		x
Greater Manassas Volunteer Rescue Squad	571-238-9196	13		x
Manassas Regional Airport	703-257-8261	14	x	
Department of Community Development	703-257-8224	15	x	
- Development Services	703-257-8278	16		x
- Neighborhood Services	703-257-8240	17		x
Department of Economic Development	703-257-8881	18		x
Department of Social Services	703-257-2329	19	x	
Department of Finance and Administration	703-257-8234	20	x	
- Accounting	703-257-8269	21		x
- Information Technology	703-257-8295	22		x
- Purchasing	703-257-8368	23		x

Department or Partner Agency	Phone	#	HC	EC
Department of Human Resources	703-257-8248	24	x	
- Risk Management	703-257-8236	25		x
Department of Public Works	703-257-8476	26	x	
- Streets	703-257-8347	27		x
Department of Utilities	703-257-8382	28	x	
- Electric	703-257-8474	29		x
- Water and Sewer	703-257-8391	30		x
Manassas City Public Schools Administrative Office	703-257-8820	31	x	
Prince William County Health Department	703-792-7319	32		x
Prince William County Department of Fire and Rescue	703-792-6500	33		x
American Red Cross – Prince William Chapter	703-368-4511	34		x
Volunteer Prince William	703-369-5292	35		x

Notices of Change

- A notice of change will be prepared and distributed by the Emergency Management Coordinator when changes occur to the EOP. The notice of change will include the effective date, the change number, subject, purpose, and action required by the departments and City organizations. The notice of change will include revised pages for replacement within the EOP if appropriate.
- Upon publication, the change will be considered as part of the EOP. The following table will be used to track the posting of Notices of Change to the City of Manassas Emergency Operations Plan.

Record of Changes

Table 2: Changes

REVISION	REVISION DATE	SUMMARY OF REVISIONS	REVISED BY
1	June 2008	Entire Document	Olson Group, LTD.
2	January 2009	Entire Document	Olson Group, LTD.
3	August 2009	Entire Document	Emergency Management
4	December 2012	Entire Document	Dewberry, Inc.
5	January 2013	Comprehensive update	Emergency Management
6	January 2017	Entire Document	Emergency Management

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Purpose and Scope

Purpose

- The purpose of this EOP is to define the preparedness and emergency management activities necessary for the City of Manassas to effectively respond to emergency situations.
- The EOP establishes a framework for an effective system of comprehensive emergency management, the purpose of which is to:
 - Reduce the vulnerability of individuals, communities and businesses to loss of life, injury, or damage to and loss of property resulting from natural, technological, criminal, or hostile acts and;
 - Prepare for prompt and efficient response and recovery activities to protect lives and property affected by emergencies and;
 - Respond to emergencies using all systems, plans and resources as necessary and;
 - Recover from emergencies by providing for the rapid and orderly implementation of restoration and rehabilitation programs for persons and property affected by emergencies.

Scope and Applicability

The EOP:

- Is applicable to all natural or human-caused hazards that threaten the well-being of the citizens and visitors within the geographic boundary of the City of Manassas.
- Establishes a fundamental concept of operations for the comprehensive management of emergencies scalable to the size and scope of the incident.
- Defines the mechanisms to facilitate the delivery of immediate assistance including the direction and control of local, state, interstate, and federal response and recovery assets.
- Establishes lines of authority and organizational relationships for direction and control of emergency operations and shows how all actions will be coordinated.
- Defines and assigns emergency roles and responsibilities to organizations and key positions for conducting emergency operations and carrying out specific actions that exceed routine responsibilities during an emergency.

- Describes how emergency operations will be conducted within the City and coordinated with neighboring and regional jurisdictions, the Commonwealth of Virginia, and the federal government.
- Applies to all City departments that are tasked with roles and responsibilities within the EOP and recognizes the responsibility of each City department to respond when the size and scope of the incident necessitates.
- Describes how people (including unaccompanied minors, individuals with disabilities, others with access and functional needs, and individuals with limited English proficiency) and property are protected.
- Establishes the framework and general concept of operations for emergency operations but must be supplemented with additional detailed planning efforts and documents. All City departments are required to develop and maintain administrative policies and procedures, preparedness, continuity, mitigation, and recovery plans and job aids and tools necessary to effectively execute the assigned responsibilities.

Authorities

Federal

- The Federal Civil Defense Act of 1950, Public Law 81-920, as amended.
- The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-388, as amended.
- The Disaster Mitigation Act of 2000, Public Law 106-390.
- The Intelligence Reform and Terrorism Protection Act of 2004, Public Law 108-458, Section 7302.
- “Emergency Services and Assistance,” Code of Federal Regulations, Title 44.
- Homeland Security Presidential Directive 5, Management of Domestic Incidents, February 28, 2003.
- National Response Plan (NRP), December 2004 and Notice of Change to the National Response Plan, May 25, 2006 updated and renamed to the National Response Framework (NRF), January 2008.
- National Incident Management System (NIMS), March 2004.
- Homeland Security Presidential Directive 8, National Preparedness, December 17, 2003.

Commonwealth of Virginia

- “Commonwealth of Virginia Emergency Services and Disaster Law of 2000,” Sections 44-146.13 to 44-146.28:2 Code of Virginia, as amended.

- “Virginia Post Disaster Anti-Price Gouging Act,” Sections 59.1-525 to 59.1-529 Code of Virginia.
- Title 32.1, Section 48.05 to 48.017 Code of Virginia.
- Commonwealth of Virginia, Office of the Governor, Executive Order Number Six (2006), Delegation of Governor's Authority to Declare a State of Emergency and to Call the Virginia National Guard to Active Service for Emergencies or Disasters When the Governor is Out of the Commonwealth of Virginia and Cannot Be Reached.
- Commonwealth of Virginia, Office of the Governor, Executive Order Number Sixty-Five (2004), Promulgation of the Commonwealth of Virginia Emergency Operations Plan.
- Commonwealth of Virginia, Office of the Governor, Executive Order Number Sixty-Nine (2004), Virginia Secure Commonwealth Initiative.
- Commonwealth of Virginia, Office of the Governor, Executive Order One Hundred and Two (2005), Adoption of the National Incident Management System and Use of the National Preparedness Goal for Preventing, Responding to and Recovery from Crisis Events in the Commonwealth.

Local

- Resolution R-2005-72 by the City Council adopting the National Incident Management Systems (NIMS), January 24, 2005.
- Resolution R-2012-42 by the City Council adopting the Northern Virginia Regional Hazard Mitigation Plan, April 9, 2012.
- Resolution by the City Council authorizing the execution of the National Capital Region Mutual Aid Agreement, dated December 12, 2005.

References

- City of Manassas Debris Management Plan, Department of Public Works
- City of Manassas Water Emergency Response Plan, Department of Utilities
- Prince William County, City of Manassas and City of Manassas Park Hazardous Materials Emergency Response Plan, 2004
- Regional Emergency Coordination Plan, September 11, 2010
- Unified Regional Snow Emergency Plan for the Metropolitan Washington Area, 2010
- VDEM Statewide Mutual Aid Operations Manual, September 2006
- Emergency Management Accreditation Program (EMAP) Standard, September 2007
- Northern Virginia Regional Hazard Mitigation Plan, as updated
- Northern Virginia Emergency Response System Plan
- Northern Virginia Regional Evacuation Plan
- Regional Emergency Operations Center Guidelines
- Commonwealth of Virginia Emergency Operations Plan, as updated
- Comprehensive Preparedness Guide (CPG) 101 version 2

Situation Overview

Location and Geography

- The City of Manassas is situated in Northern Virginia and is bordered by Prince William County on the west, south, and east and the City of Manassas Park to the north.
- The City is comprised of 10 square miles of which, 9.9 square miles of it is land and 0.04 square miles of it (0.20%) is water.
- The City of Manassas is located in the Piedmont physiographic province of Virginia at an elevation level of 276 feet.

Climate

- The area has a moderate climate. Average temperatures are approximately 50 degrees with an average high temperature of 88 degrees in July and 24 degrees in January.
- Annual rainfall average for the City is 35 inches and annual snowfall accumulation is 16 inches.

Education System

- The City of Manassas Public Schools system is one of few school systems to be accredited in the Commonwealth of Virginia. It consists of 5 elementary schools, 2 middle schools, 1 high school, and 1 alternative education school serving 7,154 students (in 2012).
- There are approximately 12 private independent schools serving nearly 1,200 students.
- There are numerous higher education institutions in nearby jurisdictions, however there are none located within the City boundaries.

Demographics

- The population estimate for 2010, according to the U.S Census Bureau, was 37,821. The estimated 2011 population is 39,300 representing a 3.9% increase. The 2015 U. S. Census Bureau's American Community Survey (ACS) and Population Estimates Program (PEP) population estimate is 41,764. The projected 2020 population is 43,654.
- According to the 2014 U.S. Census Bureau's ACS and PEP there were an estimated 13,232 households with an average of 3.29 persons per household.
- There are more than 13,000 housing units at an average density of 4,219 per square mile. The home ownership rate is approximately 70%.

- The City of Manassas is comprised of a diverse population. The 2010 U.S. Census reports the composition as follows:

Age	Persons under 5 years	8.4%
	Persons under 18 years	28.4%
	Persons 65 years and over	6.9%
Gender	Female persons	49.9%
	Male persons	50.1%
Race	American Indian and Alaska Native persons	.6%
	Native Hawaiian and Other Pacific Islanders	.1%
	Black persons	13.7%
	Hispanic or Latino origin persons	31.4%
	White persons	61.7%
	Persons reporting two or more races	4.3%
	White persons, not Hispanic	47.6%

Table 3: City of Manassas Composition based on United States Census 2010 Reports

Transportation Infrastructure

- The Manassas Regional Airport is owned and operated by the City of Manassas. It serves general aviation and is heavily used by corporate aircraft. For the 12 months ending June 2015 there were more than 78,745 flights, mostly consisting of general aviation, military and air taxi operations.
- Norfolk Southern owns and operates the train tracks that run through the City of Manassas. Amtrak and the Virginia Railway Express provide regular and commuter train service on these tracks as well.
- The major roads into and out of Manassas are VA-28 and VA-234 Business. I-66 and US-29 service Manassas, but neither passes through the City itself.

Industry

- The top 5 industries by employee numbers are:
 - Healthcare
 - Professional services
 - Government
 - Retail
 - Manufacturing
- The top 5 employers in the City are:
 - Micron Technology
 - Novant Health UVA Health System
 - Lockheed Martin
 - Manassas City Public Schools
 - City of Manassas

Hazard and Threat Analysis Summary

- The City of Manassas, within the Northern Virginia region, is vulnerable to a wide range of natural and human caused hazards. These hazards threaten the safety of residents and have the potential to damage or destroy both public and private property, disrupt the local economy, and impact the overall quality of life of individuals who live, work, and play in the region.
- The City must be prepared to respond to, recover from, and reduce the vulnerability to such incidents. One of the most effective tools a community can use to reduce hazard vulnerability is to develop, adopt, and update, as needed, a local hazard mitigation plan. The City of Manassas participated in and has adopted the *Northern Virginia Regional Hazard Mitigation Plan*. The plan establishes the broad community vision and guiding principles for addressing hazard risk, including the development of specific mitigation actions designed to eliminate or reduce identified vulnerabilities.
- The *Northern Virginia Regional Hazard Mitigation Plan* (December 2011) identifies the natural hazards and their associated risks that threaten the City of Manassas and the Northern Virginia region. Hazards were ranked using a semi-quantitative scoring system that involved grouping the data values (normalized to account for inflation) based on statistical methods. This method prioritizes hazard risk based on a blend of quantitative factors extracted from NCEM and other available data sources. The parameters considered include:
 - Historical occurrence;
 - Vulnerability of population in the hazard area; and
 - Historical impact, in terms of human lives and property and crop damage.
- The conclusions drawn from the qualitative assessments, combined with final determinations from the Mitigation Planning Committee, were fitted into categories for a final summary of hazard risk for the City of Manassas. It should be noted that although some

hazards are classified as posing low risk, their occurrence of varying or unprecedented magnitudes is still possible.

- The table below demonstrates the summary of the qualitative assessment of the hazards identified and the degree of risk assigned to each hazard based on historical data, anecdotal data, and input from the Mitigation Planning Committee.

High	Medium-High	Medium	Medium-Low
Flood Wind Tornado Winter weather	Drought	Earthquake	Landslide Wildfire Karst

Table 4: Northern Virginia Regional Hazard Mitigation Plan Hazard Ranking for the City of Manassas

Additional Considerations

- In addition to natural hazards the City is susceptible to various technological and human-caused incidents including acts of terrorism involving weapons of mass destruction and hazardous materials.
- Hazardous materials are transported through the City utilizing the road and rail infrastructure. Accidental or intentional release of these materials may pose a threat to the health and safety of the residents and visitors.
- The transportation infrastructure is susceptible to accidents such as multi-vehicle accidents, train derailments, and plane crashes.
- The City owns and operates a dam and water treatment plant at Lake Manassas located in Prince William County. Dam failure is a low risk threat and a Dam Response Plan is maintained by the Utilities Department.
- The scope and magnitude of these incidents may vary from minor impact requiring a minimal response to major impact requiring a significant response from numerous departments and partner organizations and may result in disaster declarations.

Planning Assumptions

- Nothing in this EOP alters or impedes the ability of Federal, State, or local departments and agencies to carry out their specific authorities or perform their responsibilities under all applicable laws, Executive Orders, and directives.

- The government of the City of Manassas is responsible for maintaining the EOP and response capability to protect the lives and property of its residents and visitors from the effects of human-caused and natural disasters. The City will commit all available resources to save lives, minimize property and environmental damage, and conduct emergency response and recovery operations.
- The City government must continue to function throughout a disaster or emergency situation. Depending upon the scope and magnitude of the incident, concurrent implementation of Continuity of Operations (COOP)/Continuity of Government (COG) operations may be necessary. All City departments are encouraged to maintain a current Continuity of Operations Plan.
- This plan has been developed to address “all-hazards” that threaten the City of Manassas providing the response framework and guidance to any emergency or disaster situation that occurs. The organization and concept of operations is designed to allow flexibility and discretion through command and control of the incident utilizing the concepts of the Incident Command System (ICS). Emergency operations will be managed in accordance with the National Incident Management System (NIMS).
- The immediate response priority to an emergency or disaster situation of any size and scope will be saving lives and protecting property and critical infrastructure.
- Emergencies of various types, size, intensity, and duration may occur within or near the jurisdictional boundaries of the City of Manassas with or without warning. These emergencies can develop into disasters that affect the safety, health, and welfare of the population and cause damage or destruction to private and public property and the environment.
- Emergency preparedness is everyone’s responsibility – citizens and government employees should be informed of their personal preparedness responsibilities and educated on how to appropriately prepare for maintaining self-sufficiency in an emergency situation.
- In situations in which there is warning (i.e. severe weather) appropriate emergency notifications (internal and external) will be conducted and preparedness actions will be taken by the agencies with emergency roles and responsibilities.
- Whenever an alert or notification is made of an emergency all City departments with emergency roles are expected to be prepared. Whenever an emergency or disaster is deemed to be of major or expanding proportions where serious injury, loss of life, or significant damage is anticipated, ALL City departments are expected to be prepared.

- City departments may be required to respond on short notice and at any time of the day or night to provide effective and timely assistance. It is the responsibility of each department to ensure staff are trained, prepared, and available to respond.
- Response operations may last for several hours, days, or weeks. Recovery operations may last for days, weeks, months, or years. City departments and organizations providing staff to the Emergency Operations Center (EOC) must have the capability to maintain operations 24 hours per day/7 days a week (24/7) for the duration of the emergency.
- Response personnel and other employees may be impacted by and/or become a casualty of the emergency situation impacting their availability to execute their emergency responsibilities.
- During emergency situations, capabilities to respond to collateral and non-related emergency situations must be maintained further impacting availability of resources for the emergency incident.
- An emergency situation may require the mobilization and reallocation of available resources. The situation may even overwhelm the local resources and capabilities.
- In the event the emergency situation exceeds local emergency response capabilities, outside assistance may be available, either through mutual aid support agreements with nearby jurisdictions and volunteer emergency organizations or through the Virginia EOC. However, often a local emergency must be declared and local resources must be fully committed before state and Federal assistance is available. Additionally, depending on the size and scope of the incident and/or concurrent incidents across a wide geographic area resources may not be available in a timely manner. This may result in competition among residents and jurisdictions for scarce resources.
- Widespread power and communications outages may require the use of alternate methods of communication to deliver essential services and public information. Communications may be problematic due to demands exceeding capacities.
- Residents or visitors may have medical or functional needs and may require assistance during an emergency. Each will have unique needs during an emergency and thus require operational strategies including: communication, registration, transportation, and sheltering designed to meet their needs prior to and during an emergency.

Delegations of Authority

Authority of City Manager

- The Commonwealth of Virginia Emergency Services and Disaster Law of 2000 as Amended

designates the City Manager as the Director of Emergency Management.

- The Director of Emergency Management, or designee, is responsible for organizing emergency management and directing emergency operations through the regularly constituted government structure, and using equipment, supplies, and facilities of existing departments and organizations of the City to the maximum extent practical.
- When a local emergency is declared the Director of Emergency Management, or designee, is authorized to:
 - Control, restrict, allocate, or regulate the use, sale, production, and distribution of food, fuel, clothing, and other commodities, materials, goods, services, and resource systems that do not impact systems affecting adjoining political subdivisions.
 - Enter into contracts and incur obligations on behalf of the City necessary to combat such threatened or actual disaster, protect the health and safety of persons or property, and provide emergency assistance to the victims of such disaster.
 - In exercising these powers, proceed without regard to time-consuming procedures and formalities prescribed by law (except mandatory constitutional requirements) pertaining to the performance of public work, entering into contracts, incurring obligations, employment of temporary workers, rental of equipment, purchase of supplies and materials, and expenditure of public funds, provided such funds in excess of appropriations in the current approved budget, un-obligated, are available.
- The EOP delegates the Director of Emergency Management's authority to specific individuals in the event that he or she is unavailable or delegates his/her authority. The line of succession for the Director of Emergency Management is established to be:
 - Fire and Rescue Department Chief
 - Police Department Chief.
- The Director of Emergency Management may designate other personnel when the nature of the emergency is such that a specific level or field of expertise is essential to direct operations.

Authority of On-Scene Commanders

- The Director of Emergency Management delegates authority to the Fire Chief, Police Chief, the Director of Public Works, and the Prince William Health District Public Health Director to appoint on-scene incident commanders and establish standard operating procedures (SOPs) to guide the management of emergency operations depending upon the type of incident.
- Upon arrival at an emergency, the senior responsible official on scene will establish "incident command" and designate a command post location in order to manage the emergency. Incidents that begin as a single agency response may evolve into an operation requiring a

multi-agency response to meet actual or expected needs.

Authority of the Emergency Management Coordinator

- The Director of Emergency Management, or designee, delegates authority to the Emergency Management Coordinator to activate, staff, and manage the EOC. In the absence of the Coordinator, an acting Coordinator will be appointed to carry out his/her assigned duties and responsibilities.

Authority of City Department Directors

- The City Manager delegates authority to each City department director to carry out his/her assigned duties and responsibilities. In the absence of the Director, an acting director will be appointed to carry out the assigned duties and responsibilities. Each department will have a Continuity of Operations Plan that identifies lines of authority and succession within the department.

Concept of Operations

- Each City department is responsible for ensuring that the specific Emergency Support Function(s) (ESFs) for which they are the primary or support department fulfills its applicable responsibilities. That obligation includes resources and personnel, which means each department needs to be cognizant of their available equipment and other physical resources and those resources' disposition, as well as ensuring that personnel are aware of and trained on the department's responsibilities.

Direction and Control

- The Commonwealth of Virginia Emergency Services and Disaster Law of 2000, as amended, stipulates that emergency services organizations and operations will be structured around existing constitutional government. The City of Manassas organization for emergency operations consists of existing government departments and private emergency response organizations.
- Direction and control of emergency management is the responsibility of the City Manager as the designated Director of Emergency Management. The day-to-day emergency preparedness program has been delegated to the Emergency Management Coordinator. The Director, in conjunction with the Coordinator will direct and control emergency operations in time of emergency and issue directives to other services and organizations concerning disaster preparedness.
- The Director of Emergency Management, or designee, has the constituted legal authority for implementing the Emergency Operations Plan and declaring a local emergency. A local emergency may be declared by the Director in consultation with the Emergency Management Coordinator. The declaration of a local emergency activates the EOP or parts thereof.

- The Director of Emergency Management, or designee or, the Emergency Management Coordinator will notify the Virginia Department of Emergency Management (VDEM) immediately upon the declaration of a local emergency.
- The Emergency Management Coordinator, or designee, monitors developing or threatening situations and determines when to recommend activation of the EOC. Any emergency situation requiring more than routine coordination and assistance and involving multiple departments and organizations may result in activation of the EOC.
- The Director of Emergency Management, or designee, has the authority to order a full activation of the EOC whenever it is appropriate in order to coordinate the response of the City departments to the incident. These circumstances may result in the Declaration of a Local Emergency.
- Departments and organizations will either be directed to provide a representative to the EOC or be placed on alert. ESOs may be selectively activated by the Director of Emergency Management, or designee, to meet actual or anticipated requirements. Representatives must have the authority to make decisions and commit resources on behalf of their department or organization.
- The Director of Emergency Management, or designee, in coordination with the Policy Group and the City Attorney when necessary, will make policy decisions and actions necessary to ensure an effective and efficient response to emergency incidents.

Incident Command System

- The Incident Command System is an emergency management system designed to enable effective and efficient management of incidents by integrating a combination of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure. The ICS is widely applicable to organize both short-term and long-term field operations for the full spectrum of emergencies.
- Most emergency situations are handled routinely by the Fire and Rescue and Police Departments with response activities conducted at the field level. The ICS is routinely implemented to organize response to the emergency or disaster, incorporating the functions, principles and components of ICS (unified command, action planning, span of control, hierarchy of command).
- Once an emergency or disaster has occurred or is imminent the responding department establishes on-scene incident command. This includes designating an Incident Commander (IC) and the establishing an Incident Command Post (ICP). Depending upon the scope and

magnitude of the event, the ICP may be a designated emergency vehicle or may evolve into a more formal facility as dictated by the situation.

- The IC is responsible for managing all on-scene tactical operations. The IC, as necessary, may request additional resources through established mutual aid agreements with neighboring jurisdictions. The IC allocates resources assigned to the incident including resources activated through the local mutual aid agreement.
- In the event that multiple locations within the City are affected, there may be several separate incidents each with an on-scene IC.

Unified Command

- Unified Command (UC) will be used when there is more than one City department or organization with incident jurisdiction, or when incidents cross political jurisdictions. Departments will work together through the designated members of the UC to establish common objectives and strategies under a single Incident Action Plan (IAP).
- In large-scale emergencies, Fire and Rescue officers and Police commanders may establish a Unified Command Post (UCP) at or near the incident site. They will notify other agencies that need to be present at the UCP. They will jointly appoint command and general staff as necessary to carry out incident objectives.

Area Command

- When a single incident covers a large geographical area or there are multiple incidents, multiple local ICS organizations may be required. When multiple organizations are operational, it may be necessary to establish an Area Command (AC) organization.
- An AC is an organization established to oversee the management of multiple incidents that are being handled by an ICS organization or to oversee the management of large or multiple incidents.
- AC has the responsibility to set the overall strategy and priority, allocate critical resources according to the priorities, and to ensure that all incidents are properly managed and established objectives are achieved.
- In the event an AC is needed, the Police Chief or Fire and Rescue Chief will ensure that appropriate coordination and consultation with the Emergency Management Coordinator is accomplished.

Multi-Agency Coordination System (MACS)

- The primary function of multi-agency coordination is to coordinate activities above the field level and to prioritize the incident demands for critical or competing resources, thereby assisting the coordination of the operations in the field.

- MACS consists of a combination of elements: personnel, procedures, protocols, business practices, and communications integrated into a common system. For the purpose of coordinating resources and support between multiple jurisdictions, MACS can be implemented from a fixed facility or by other arrangements outlined within the system.

Emergency Operations Center (EOC)

- One of the most commonly used elements of the MACS is the EOC. In emergency situations that require additional resource and coordination support, the City EOC will be used for this function and in some cases may also manage direction and control of the incident.
- Upon activation, communications and coordination will be established between Incident Command and the EOC. Additionally, the EOC will establish communication and coordination with neighboring EOCs and the Virginia EOC to coordinate response and recovery activities.

Department Operations Center (DOC)

- The DOC is an EOC specific to a single department or agency. The focus of a DOC is on internal departmental incident management and response.
- City departments may choose to establish a DOC to coordinate their emergency management activities.
- The DOC will be linked to the EOC and actions will be coordinated through the departmental representatives in the EOC.

Phases of Response Operations

- The following three phases will be used by the City of Manassas in conducting response operations:
 - **Increased Readiness:** For disasters or events with an advance warning, such as a weather forecast or other warning, actions will be taken prior to the projected impact to save lives and protect property. During this phase, warning systems may be activated, resources mobilized and positioned for immediate use, the EOC activated, and evacuations implemented as appropriate.
 - **Immediate Response:** During this phase, the emphasis will be on saving lives, controlling the situation, and minimizing the effects of the disaster. Immediate response activities are accomplished by City departments and organizations supported by local mutual aid resources and segments of the private sector. During this phase, an ICP and the EOC may be activated, emergency instructions issued to the public, and immediate response activities accomplished.
 - **Sustained Response:** As the emergency continues, assistance is provided to those affected and efforts are made to reduce secondary damage. Regional and/or Statewide

mutual aid and Federal assistance may be provided. Response support facilities may be established.

Emergency Operations Plan/Emergency Operations Center Activation

- The implementation of the EOP and activation of the EOC may occur simultaneously. The level of EOC and EOP activation will be based upon the severity and scope of the incident. The Emergency Support Functions (ESF) established by this plan and the Hazard Specific Annexes may be selectively activated based upon initial or anticipated requirements.
- The EOP may be implemented by the Director of Emergency Management, the Emergency Management Coordinator or designee. Activation may be based upon weather warnings issued through the National Weather Service (NWS), incidents or threats reported by other sources such as the Regional Incident Communications and Coordination System (RICCS), or through incidents reported through 911 communications.
- Any department head may request that the EOC be activated to support emergencies being managed by their organization.
- The EOC may be activated at one of three levels depending upon the nature and scope of the incident or potential incident. The EOC may also be activated for a significant planned event in order to monitor activities and provide for an effective response if necessary. The Director of Emergency Management, or designee, in cooperation with the Emergency Management Coordinator, will designate the level of activation and will ensure appropriate notifications are completed.
 - **Monitoring:** Monitoring activation provides for increased monitoring capability beyond normal daily operations and will typically involve staff and representatives from key response departments such as Fire and Rescue and Police. Activities will focus on collecting, analyzing, and disseminating information and conducting appropriate contingency planning.
 - **Partial:** Partial activation provides for a select activation of Emergency Support Function primary agencies and key support agencies that may be or will be engaged in the emergency situation.
 - **Full:** Full activation will include most if not all primary and support departments and organizations identified within the EOP. At Full activation the EOC may operate 24 hours a day.
- All departments and partner organizations are expected to provide a trained representative to the EOC with authority to make decisions and commit resources when requested.

Internal Notification and Warning

- All department point of contacts will be notified of the EOC activation by the Emergency Management Coordinator, or designee, through Everbridge messaging, emails and/or other available resources. City departments and organizations will notify their EOC representative(s) and other staff as appropriate through their internal notification process.
- The Director of Emergency Management, or designee, will notify the City Council of the activation of the EOC.
- Each ESF will be responsible for additional notifications necessary for emergency operations.
- Upon notification, identified EOC representatives shall report to the EOC at the appointed time and be prepared to carry out their assigned roles and responsibilities. Departments will provide appropriate representation to the EOC based upon the level of activation. Department representatives shall be prepared to staff the EOC until they are relieved by other department personnel or the incident is terminated.
- The Emergency Management Coordinator or designee will advise the Virginia Department of Emergency Management of EOP implementation and EOC activation through the Virginia EOC.

Emergency Support Functions

- The City of Manassas organizes the various departments and partner organizations into the Emergency Support Functions (ESF) structure. This structure is utilized by the Commonwealth of Virginia as outlined in the Commonwealth of Virginia Emergency Operations Plan (COVEOP) and the federal government as outlined in the National Response Framework (NRF). It provides the organization for coordinating interagency support for a response to an incident across all levels of government. It is a mechanism for grouping functions most frequently used to facilitate planning and coordination prior to an incident and to achieve effective emergency response and recovery following an incident. Each ESF represents an important function that may need to be fulfilled during an emergency response.
- Each ESF has an assigned **Primary Agency**, designated **Support Agency**, and partner organizations if applicable. An ESF may have multiple primary agencies (co-primary agencies) and have the specific responsibilities as outlined in the ESF Annex.
- The **Primary Agency** is designated because it has either statutory responsibility, significant authorities, or they have the prerequisite expertise, capabilities, and /or resources due to their programmatic or regulatory responsibilities. The table below designates the **Primary Agency** and **Support Agency** for each of the ESFs.

Function	Primary Agency	Support Agencies
ESF 1 – Transportation	Police Department	Manassas Regional Airport Public Works Manassas City Public Schools
ESF 2 – Communications	Finance and Administration – Information Technology Utilities – Communications and Control	Police Department
ESF 3 – Public Works and Engineering	Public Works	Community Development – Development Services
ESF 4 – Firefighting and Emergency Medical Services	Fire and Rescue System	None
ESF 5 – Emergency Management	Fire and Rescue Department – Emergency Management	Police Department
ESF 6 – Mass Care, Housing, Emergency Assistance and Human Services	Social Services	Manassas City Public Schools Prince William Health District American Red Cross Volunteer Prince William
ESF 7 – Logistics Management and Resource Support	Finance and Administration	None
ESF 8 - Public Health and Behavioral Health Services	Prince William Health District	None
ESF 9 – Search and Rescue	Fire and Rescue System Police Department	None

ESF 10 – Hazardous Materials	Fire and Rescue System	Prince William County Fire and Rescue Department
ESF 11 – Agriculture and Natural Resources	Prince William Health District	Public Works Utilities
ESF 12 – Energy and Utilities	Utilities	Utility Companies
ESF 13 – Public Safety and Security	Police Department	Adult Detention Center Prince William County Sheriff's Office
ESF 14 – Long-Term Community Recovery	Community Development	Finance and Administration Fire and Rescue Department – Emergency Management Economic Development Public Works Utilities Volunteer Prince William
ESF 15 – External Affairs	City Manager's Office – Communications Manager	Fire and Rescue Department Police Department Manassas Regional Airport Manassas City Public Schools
ESF 16 – Volunteer and Donations Management	Community Development – Neighborhood Services	Volunteer Prince William
ESF 17 – Animal Protection	Police Department – Animal Control Division	None

Table 5: Emergency Support Function Primary and Support Agencies

- The ESFs will be activated as needed to support actual or anticipated requirements. Primary agencies and organizations will provide a representative to the EOC when activated to coordinate ESF operations. Detailed information on each of the ESFs is provided in the corresponding ESF Annexes to this plan.
- Primary Agency** is generally a local government agency, is responsible for the following:

- Pre-incident planning and coordination to ensure that all support departments and organizations are prepared to provide resources and perform assigned operations roles.
- Supporting the EOC Manager and coordinating closely with the other ESFs for the provision of resources and technical expertise.
- Orchestrating response support within their functional area.
- Providing staff for the operations functions at fixed and field facilities.
- Notifying and requesting assistance from support agencies.
- Managing mission assignments and coordinating with support agencies, as well as appropriate State officials, operations centers, and agencies.
- Working with appropriate private-sector organizations to maximize use of all available resources.
- Supporting and keeping other ESFs and organizational elements informed of operational priorities and activities.
- Conducting situational and periodic readiness assessments.
- Executing contracts and procuring goods and services as needed.
- Ensuring financial and property accountability for ESF activities.
- Planning for short- and long-term incident management and recovery operations.
- Maintaining trained personnel to support interagency emergency response and support teams.
- Identifying new equipment or capabilities required to prevent or respond to new or emerging threats and hazards, or to improve the ability to address existing threats.
- Developing and maintaining annex(es) to the EOP as well as supporting documents such as standard operating procedures and job aids. Annex(es) will be developed in coordination with Emergency Management.
- **Support Agency** has specific capabilities or resources that support the primary agency in executing the mission of the ESF. Support agencies are responsible for:
 - Conducting operations, when requested by Emergency Management or the designated ESF primary agency.
 - Participating in planning for short- and long-term incident management and recovery operations and the development of supporting operational plans, SOPs, checklists, or other job aids, in concert with existing first-responder standards.
 - Assisting in the conduct of situational assessments.
 - Furnishing available personnel, equipment, or other resource support as requested.
 - Providing input to periodic readiness assessments.
 - Maintaining trained personnel to support interagency emergency response and support teams.
 - Identifying new equipment or capabilities required to prevent or respond to new or emerging threats and hazards, or to improve the ability to address existing threats.

Emergency Operations Center

- The EOC will serve as the direction and coordination facility for the City of Manassas government during major emergencies and disasters for assignment of resources, establishing policies, and coordination and approval of all requests for assistance outside

the City. The City of Manassas maintains an alternate EOC site in the event the EOC is inaccessible or otherwise not operational.

- The major functions of the EOC are:
 - **Situation Assessment.** This assessment includes the collection, processing, and display of all information needed. This may take the form of consolidating situation reports, obtaining supplemental information, and preparing maps and status boards.
 - **Incident Priority Determination.** The EOC will establish the priorities among ongoing incidents within the City. Processes and procedures will be established to coordinate with Area or Incident Commands to prioritize the incident demands for critical resources. Additional considerations for determining priorities will include: life-threatening situations, threat to property, high damage potential, incident complexity, environmental impact, economic impact, and other criteria established by the EOC.
 - **Critical Resource Acquisition and Allocation.** Critical resources will be acquired, when possible, from City departments. Resources may need to be shifted to match the incident needs as a result of incident priority decisions. Resources available from incidents in the process of demobilization may be shifted, for example, to higher priority incidents. Resources may also be acquired from outside the affected area.
 - **Support for Relevant Incident Management Policies and Interagency Activities.** The EOC will coordinate, support, and assist with policy-level decisions and interagency activities relevant to incident management activities, policies, priorities, and strategies.
 - **Coordination with Others.** A critical part of the EOC process is establishing communication and coordination with surrounding jurisdictions, the state and federal governments, partner organizations, and public and private sector resources.
 - **Coordination with Elected and Appointed Officials.** The EOC will have established policies and procedures to keep elected and appointed officials at all levels of government informed. Providing support and awareness for the officials is extremely important.
 - **Coordination of Summary Information.** Through situation assessment personnel implementing the multiagency coordination procedures may provide summary information within their area of responsibility as well as provide agency/jurisdictional contacts for media and other interested agencies.
- The EOC is organized utilizing ICS principals and consists of a command staff and 4 sections: Operations, Logistics, Planning, and Finance and Administration. Oversight of

City-wide emergency operations will be managed by the Director of Emergency Management and the Policy Group. The organization structure is depicted below.

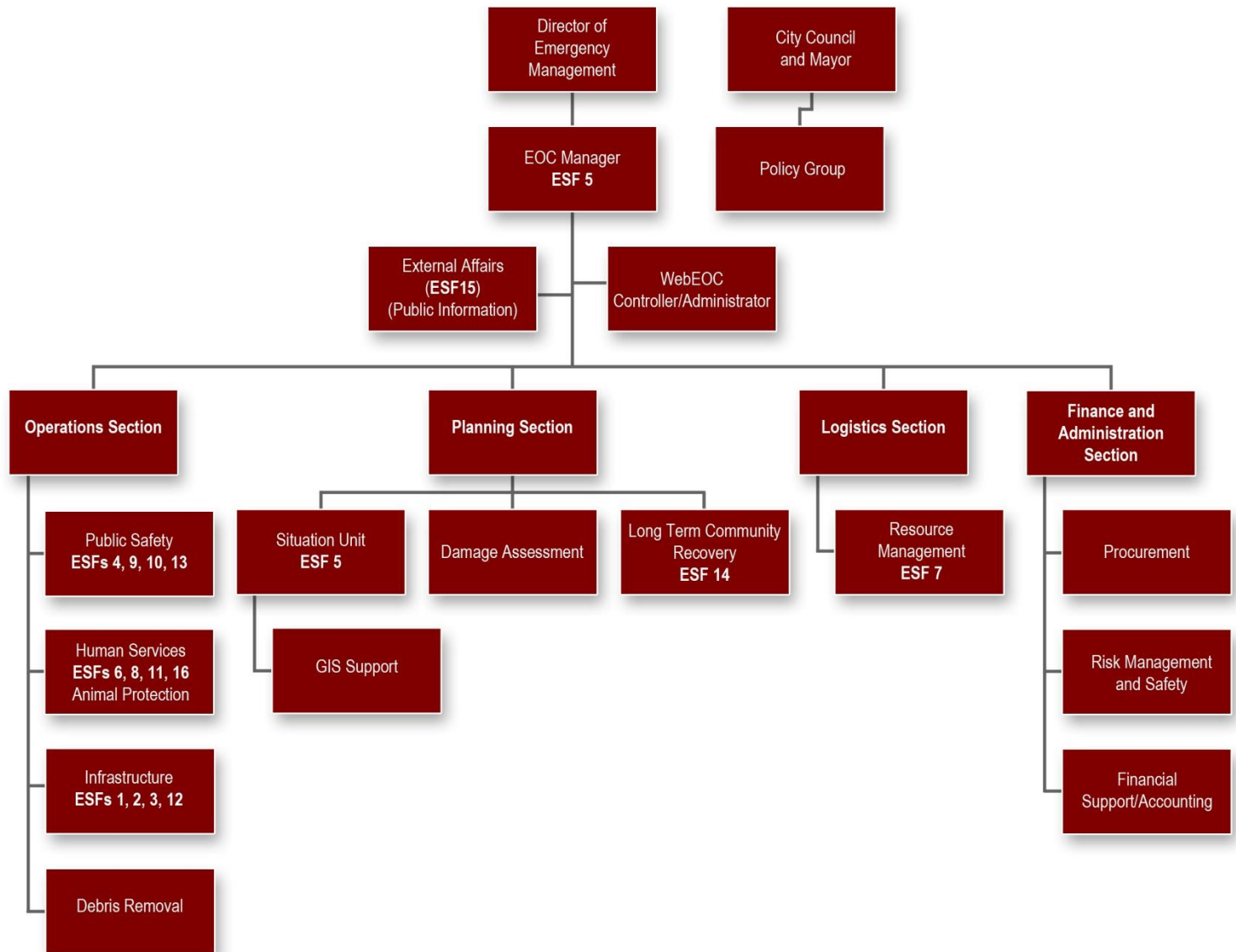


Figure 1 City of Manassas EOC Organization graphic

- The **Policy Group** is comprised of the City Manager, the Fire Chief, the Chief of Police, the Director of Public Works, Director of Utilities, the Director of Community Development, the Director of Social Services, and the Finance and Administration Director. The City Attorney will act as a legal advisor to the Policy Group. The primary responsibilities of this Group include:

- Establishing and promulgating emergency policy decisions.
 - Providing strategic direction and priorities for field operations.
 - Authorizing issuance of mandatory public evacuation orders.
 - Resolving incident related policy issues.
-
- The **EOC Manager** is appointed by the Emergency Management Coordinator and is responsible for the staffing and operations of the EOC. The EOC Manager directs the activities of the EOC staff and ensures that policies and priorities established by the Policy Group are implemented. He/she establishes the EOC objectives and directs, in consultation with the Policy Group, strategic and contingency planning efforts to address incident-related concerns and issues. The EOC Manager establishes the operational periods for the EOC and is the approving authority for the EOC Incident Action Plan.
 - The **EOC Operations Section** provides support to field operations directed towards reducing the immediate hazard, saving lives and property, establishing situational control, and restoring normal conditions. This Section also ensures that policy and resource decisions of the Policy Group related to operations are implemented. The Operations Section is responsible for coordination of all response elements applied to the incident.
 - The **EOC Planning Section** collects, analyzes, displays, and disseminates information related to the incident and the status of operations. This section also collects and maintains information on the status of all resources assigned by the EOC to field operations. The Section is also responsible for facilitating the incident action planning process for the EOC and produces the Incident Action Plan (IAP). The Planning Section functions as the primary support for strategic level decision making at the EOC including preparing situation reports and briefings, map displays, collecting and consolidating damage assessment information, and developing plans necessary to address situational changes in the field.
 - The **EOC Logistics Section** is responsible for the acquisition and movement of supplies, equipment, and personnel in support of the response operations in the field. This Section also will provide for the establishment of operating facilities needed to support on-going response and recovery operations.
 - The **EOC Finance and Administration Section** provides financial management policy guidance and establishes procedures to authorize the commitment and payment of funds for resources or services ordered through the EOC. This section tracks expenditures and processes invoices for payment of vendor purchases, contracts, and other payments, and ensures that an accurate accounting of the cost of responding to the incident is maintained.

- The EOC will establish operational periods as a basis for the incident action planning process at the EOC. Typically, the operational periods are 12 hours long (i.e. 0700 to 1900 and 1900 to 0700) during 24-hour operations. The planning process is designed around identifying expected accomplishments over the next operational period. An IAP will be produced for each operational period to communicate overall EOC objectives.
- The EOC will schedule and conduct an operational period (or shift change) briefing at the beginning of each operational period to ensure EOC staff are briefed on the operational elements of the IAP and are aware of the objectives that are expected to be accomplished.
- Operations within the EOC will be organized and conducted with established operational procedures, checklists, and job aids.

Emergency Declarations

Non-Declared Disasters

- The Director of Emergency Management, or designee, may direct City departments to respond to emergencies or disasters as outlined in this plan without a formal declaration of an emergency when the expectation is that local resources will be used and that no reimbursement of costs will be requested.
- The Director of Emergency Management, or designee, may re-direct and deploy City resources and assets as necessary to prepare for, adequately respond to, and quickly recover from an emergency incident.
- For significant events, the EOC may be activated to monitor the situation, coordinate activities among departments, and to ensure that the City is positioned to rapidly respond to the incident.

Types of Declarations

There are three types of emergency declarations that may apply to a disaster or emergency within the City of Manassas, depending upon the scope and magnitude of the event: local, Commonwealth, and Federal.

- **Local Declaration:** A local emergency declaration activates the Emergency Operations Plan and provides for the expeditious mobilization of City resources in responding to a major incident.
- **Commonwealth Declaration:** A declaration of an emergency by the Governor of Virginia that includes the City of Manassas provides the City access to the resources and assistance of the departments and agencies of the Commonwealth, including the National Guard, in the event local resources are insufficient to meet the needs.

- **Federal Declaration:** The Governor of Virginia may request a Federal emergency or major disaster declaration. In the event that the City of Manassas is included in the Federal declaration the resources of Federal departments and agencies are available to provide resources and assistance to augment those of the City and the Commonwealth.

Local Emergency Declaration

- The Commonwealth of Virginia Emergency Services and Disaster Law of 2000, Sections 44-146.13 to 44-146.28:1 Code of Virginia, as amended prescribes the authorities pertaining to the declaration of local emergencies.
- The Director of Emergency Management, or designee, may declare a local emergency subject to later ratification by the City Council.
- A local emergency is declared when, in the judgment of the Director of Emergency Management, or designee, the threat or actual occurrence of an emergency or disaster is of sufficient severity and magnitude to warrant a coordinated response by the various City departments and support organizations.
- The declaration of a local emergency activates the EOP and applicable provisions of the plan.
- When, in its judgment, all emergency activities have been completed the City Council will take action to terminate the declared emergency.
- All City departments and partner organizations will receive notification of emergency declarations and terminations through established notification procedures.

State of Emergency

- The Commonwealth of Virginia Emergency Services and Disaster Law of 2000, Sections 44-146.13 to 44-146.28:2 Code of Virginia, as amended, prescribes the authority and implications of a declaration of a state of emergency by the Governor.
- The Governor may declare a state of emergency to exist whenever, in his or her opinion, the safety and welfare of the people of the Commonwealth require the exercise of emergency measures due to a threatened or actual disaster.
- The Governor's Declaration of a State of Emergency provides for the expeditious provision of assistance to local jurisdictions, including use of the Virginia Army and Air National Guard.

Federal Emergency and Major Disaster Declarations

- Under the provisions of the Robert T. Stafford Act, the Governor may request the President to declare a major disaster or emergency declaration for incidents that are (or threaten to be) beyond the scope of the state and local jurisdictions to effectively respond.
- A Presidential Major Disaster Declaration puts into motion long-term Federal recovery programs, some of which are matched by State programs, designed to help disaster victims, businesses, and public entities.
- An Emergency Declaration is more limited in scope and without the long-term Federal recovery programs of a Major Disaster Declaration. Generally, Federal assistance and funding are provided to meet specific emergency needs or to help prevent a major disaster from occurring.
- The Major Disaster or Emergency Declaration designates the political subdivisions within the State (normally counties and independent cities) that are eligible for assistance.

Continuity of Operations (COOP)

- A major incident or emergency could include death or injury of key City officials, the partial or complete destruction of established facilities, and the destruction of vital public records essential to the continued operations of the government. It is essential that law and order be preserved and government services maintained.
- Continuity of leadership and government services is particularly important with respect to emergency services, direction of emergency response operations, and management of recovery activities. Under the Commonwealth of Virginia's concept of mutual aid, local officials remain in control of their jurisdiction's emergency operations while additional resources may be provided from other local, State, or Federal sources. A key aspect of this control is the continued capability to communicate official requests, situation reports, and other emergency information throughout the event.
- The Letter of Agreement to this plan includes a provision that all departments maintain a department-specific Continuity of Operations Plan (COOP), according to standards issued by Emergency Management Coordinator and the overall City of Manassas Continuity of Operations Plan.
- To ensure continuity of government, the following elements need to be addressed:
 - Line of succession (minimum three "deep") for essential department positions.
 - Pre-delegation (in writing) of emergency authorities to key officials.
 - Provision for the safeguarding of vital records and systems.
 - Protection of facilities and personnel.
 - Provision for relocation to an alternate operating facility.

Public Notifications and Warnings (External Communications)

- During an emergency situation, it is essential that the public be provided with timely, accurate, and easily understood information on any protective measures that need to be taken to save lives and protect property. An emergency situation may occur with little or no warning.
- When a local emergency is declared and/or upon activation of the EOC, the City of Manassas Communications Manager will serve as the Public Information Officer (PIO) and will be the primary point of contact for release of information to the media. The PIO will coordinate with the EOC and will assume responsibility for public information as the lead for Emergency Support Function 15, External Affairs.
- Any request for information by the media shall be referred to the EOC and/or the PIO. This does not preclude public safety PIOs from responding to media inquiries on the scene and coordinating with ESF 15.
- The PIO will be provided assistance by other departments with technical expertise for preparing appropriate protective action guidance and other emergency related information.
- The PIO will coordinate the release of information through the appropriate outlets. The PIO will also be responsible for arranging regular briefings for the media at a suitable time and location.
- The Virginia EOC has the primary responsibility of keeping the public informed when the emergency affects a widespread area. State-level emergency public information will be broadcast by the Emergency Alert System (EAS). This will supplement information provided by the National Weather Service.
- The EAS is a national system jointly administered by the Federal Communications Commission, the Federal Emergency Management Agency (FEMA), and the National Weather Service. It is designed to provide the President of the United States automatic access to the nation's broadcast and cable systems to speak directly to the nation in times of national disaster. The EAS system will be used as necessary within the City to disseminate appropriate emergency information.
- The National Weather Service issues watches and warnings related to weather related threats that are disseminated through a variety of sources.
- The City website will be used to provide emergency information to residents.
- The City of Manassas has access to the Regional Incident Communication and Coordination System (RICCS) managed by the Metropolitan Washington Council of Governments

(MWCOC) as a means of receiving and distributing information to government officials about incidents with regional implications for the National Capital Region (NCR).

- The ALERT *City of Manassas* system provides the capability to distribute notifications and emergency alerts to residents that have registered with the system via electronic mail, cellular phone, or pager using a text messaging system.

Special Considerations

- The Stafford Act and Post-Katrina Emergency Management Reform Act (PKEMRA), along with Federal civil rights laws, mandate integration, and equal opportunity for people with disabilities.
- The City of Manassas recognizes the varying and special requirements of individuals that require and utilize the assistance of family members, personal assistants, and/or service animals and is committed to ensuring that the physical and mental health needs of these individuals are appropriately addressed and that the individuals and assistance providers remain together to the maximum extent possible during evacuation, transport, sheltering, or the delivery of other services. Service animals shall be treated as required by law (e.g., the Americans with Disabilities Act of 1990).
- This plan is developed on the premise of non-discrimination and recognizes the need for reasonable modifications of policies, practices, and procedures to ensure nondiscrimination, with reasonableness judged in light of nondiscrimination principles applied in emergent circumstances. The following hallmark tenets of nondiscrimination laws are observed in all phases of emergency management:
 - Self-Determination – People with disabilities are the most knowledgeable about their own needs.
 - No “One-Size-Fits-All” – People with disabilities do not all require the same assistance and do not all have the same needs. Many different types of disabilities affect people in different ways. Preparations should be made for people with a variety of functional needs, including people who use mobility aids, require medication or portable medical equipment, use service animals, need information in alternate formats, or rely on a caregiver.
 - Equal Opportunity – People with disabilities must have the same opportunities to benefit from emergency programs, services, and activities as people without disabilities. Emergency recovery services and programs should be designed to provide equivalent choices for people with disabilities as they do for people without disabilities. This includes choices relating to short-term housing or other short- and long-term disaster support services.
 - Inclusion – People with disabilities have the right to participate in and receive the benefits of emergency programs, services, and activities provided by governments, private businesses, and nonprofit organizations. Inclusion of people with various types of disabilities in planning, training, and evaluation of programs and services will ensure

that all people are given appropriate consideration during emergencies.

- Integration – Emergency programs, services, and activities typically must be provided in an integrated setting. The provision of services such as sheltering, information intake for disaster services, and short-term housing in integrated settings keeps people connected to their support system and caregivers and avoids the need for disparate services facilities.
- Physical Access – Emergency programs, services, and activities must be provided at locations that all people can access, including people with disabilities. People with disabilities should be able to enter and use emergency facilities and access the programs, services, and activities that are provided. Facilities typically required to be accessible include: parking, drop-off areas, entrances and exits, security screening areas, bathrooms, bathing facilities, sleeping areas, dining facilities, areas where medical care or human services are provided, and paths of travel to and from and between these areas.
- Equal Access – People with disabilities must be able to access and benefit from emergency programs, services, and activities equal to the general population. Equal access applies to emergency preparedness, notification of emergencies, evacuation, transportation, communication, shelter, distribution of supplies, food, first aid, medical care, housing, and application for and distribution of benefits.
- Effective Communication – People with disabilities must be given information that is comparable in content and detail to that given to the general public. It must also be accessible, understandable and timely. Auxiliary aids and services may be needed to ensure effective communication. These resources may include pen and paper; sign language interpreters through on-site or video; and interpretation aids for people who are deaf, deaf-blind, hard of hearing or have speech impairments. People who are blind, deaf-blind, have low vision, or have cognitive disabilities may need large print information or people to assist with reading and filling out forms.
- Program Modifications – People with disabilities must have equal access to emergency programs and services, which may entail modifications to rules, policies, practices, and procedures. Service staff may need to change the way questions are asked, provide reader assistance to complete forms, or provide assistance in a more accessible location.
- No Charge – People with disabilities may not be charged to cover the costs of measures necessary to ensure equal access and nondiscriminatory treatment. Examples of accommodations provided without charge to the individual may include ramps; cots modified to address disability-related needs; a visual alarm; grab bars; additional storage space for medical equipment; lowered counters or shelves; Braille and raised letter signage; a sign language interpreter; a message board; assistance in completing forms or documents in Braille, large print or audio recording.

Medical, Functional, and Access Needs

- Residents or visitors with medical, access and functional needs may include those who have

disabilities, live in institutional settings, are elderly, are from diverse cultures, have limited, or no English proficiency, are children, or are transportation disadvantaged.

- People with medical, access and functional needs may require assistance in one or more functions including but not limited to maintaining independence, communications, transportation, supervision, and medical care.
- Residents or visitors with medical needs are those who have a health condition and cannot manage independently in a shelter or evacuation center and require assistance in performing activities of daily living and/or require care for the monitoring of a health condition. Physical conditions that require equipment that uses electricity may come under this definition, although the individuals may regularly perform activities of daily living without human help.
- The City will develop and maintain policies and procedures to serve these populations to facilitate the delivery of service during an emergency or disaster.
- The Police Department as the primary agency for ESF 1 (Transportation), will be responsible for coordinating transportation for individuals with medical and access needs to and from shelters.
- The Department of Social Services, as the primary agency for ESF 6 (Mass Mass Care, Emergency Assistance, Housing, and Human Services) will develop and maintain plans and procedures to ensure shelter accommodations are suitable for people with access, functional and medical needs.
- The Emergency Management Coordinator in coordination with the Public Information Officer will be responsible for ensuring information is communicated during all four phases of emergency management using an array of technologies.
- The Fire and Rescue System, as the primary agency for ESF 4 (Firefighting and Emergency Medical Services, and the Health Department, as the primary agency for ESF 8 (Public Health and Behavioral Health Services) will be responsible for establishing procedures to address the needs of those with medical conditions.

Companion Animals

- The Pets Evacuation and Transportation Standards Act of 2006 (PETS Act), Public Law 109-30, amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act to ensure that State and local emergency preparedness operational plans address the needs of individuals with household pets and service animals following a major disaster or emergency.
- Any disaster that threatens humans, threatens animals too. Whether it is a natural disaster

or human-caused, caring for animals, either domesticated or wild, will pose special challenges. Depending on the circumstances and nature of the emergency, it may be necessary to provide water, shelter, food, and first aid for more animals than anticipated facilities can house or handle.

- A companion animal is generally defined as “any dog, cat, or other domesticated animal normally residing and cared for in or near the household of the owner of that animal.”
- Animal protection planning will ensure proper care and recovery for animals and people during emergencies. Keeping in compliance with the PETS Act, these plans will include measures to identify housing and shelter, communicating information to the public and proper animal care, reunification, fostering, adoption, or in the case of wildlife, release.
- Animal evacuation and sheltering will be conducted in conjunction with human evacuation and sheltering efforts. Animals should be sheltered near their owners to the extent possible however owners should be expected to provide food, water, husbandry, and exercise for their pets during the time they are in emergency shelters when it is determined safe to do so.

Children

- The City of Manassas recognizes the varying and special requirements of children and is committed to ensuring that the physical and mental health needs of children will be appropriately addressed, and that children will stay with their families or caregivers to the maximum extent possible during evacuation, transport, sheltering, or the delivery of other services in emergency situations.

Assignment of Responsibilities

General

- Officials at all levels of government share responsibility for the planning needed to minimize losses and provide relief from possible disasters. This shared responsibility includes the disaster preparedness and response capabilities of the City of Manassas government, districts and independent authorities, regions, volunteer agencies, and State and Federal governments.
- In exercising the powers vested by Code of Virginia, Chapter 32, 44-146.13, et al, under the supervision and control of the Governor, the city may proceed without regard to time-consuming procedures and formalities prescribed by law (except mandatory constitutional requirements) pertaining to the performance of public work, entering into contracts, incurring of obligations, employment of temporary workers, rental of equipment, purchase of supplies and materials, levying of taxes, and appropriations and expenditure of public funds.

- Operational plans shall be developed for accomplishment of various emergency management program goals and objectives designed to effectively reduce hazards and to bring long-range recovery to distressed areas.
- In the event of a significant emergency incident, the City of Manassas government will make every effort to continue to function and provide emergency and essential services. Emergency operations will mirror day-to-day government operations to the extent possible. A Continuity of Operations Plan (COOP) is in place to establish procedures for continuity of operations.

Mayor

- Receives regular situation status updates from the City Manager and is briefed as appropriate on policy issues related to the response and recovery operations.
- Coordinates with other elected officials at the local, regional and state level including the Congressional Delegation.

City Council

- Establishes policy and provides guidance to the Mayor and senior staff.
- Reviews and ratifies local declarations of emergency.
- Receives regular situation status updates from the City Manager and is briefed as appropriate on policy issues related to the response and recovery operations.
- Hosts community meetings to ensure needs are being addressed and information is provided to residents.
- Maintains internal notification rosters and Continuity of Operations (COOP) Plan.
- Promulgates the codes, regulations, and ordinances of the City, and provides the funds required to implement and enforce an effective response, recovery, and mitigation program.

City Manager (Director of Emergency Management)

- Serves as the designated Director of Emergency Management for the City of Manassas and performs the functions identified in the Code of Virginia and this Plan.
- Appoints, with the consent of the City Council, the Emergency Management Coordinator to manage the day-to-day functions of emergency management.
- As the Director of Emergency Management, provides direction and control of emergency operations.
- Directs activation of the City's COOP, as necessary, in order to maintain essential City operations.
- Organizes and directs emergency operations through the regularly constituted City government using equipment, supplies, and facilities of existing departments and organizations to the maximum extent practical.

- Develops or causes the development of mutual aid or reciprocal assistance agreements with other public and private agencies within the Commonwealth, other States, or localities within other States, as necessary.
- Directs and reallocates, when necessary, City assets and resources during an emergency.
- The Director of Emergency Management may assume command of an incident or appoint incident commanders to carry out his/her directives.

Emergency Management Coordinator

- The Emergency Management Coordinator is appointed by the City Manager.
- Develops and coordinates emergency management plans governing the immediate use of all facilities, equipment, staff, and other resources of the City for the purposes of minimizing or preventing damage to persons and property, and for restoring government services and public utilities necessary for public health, safety, and welfare.
- Ensures the timely activation, staffing, and management of the Emergency Operations Center.
- Coordinates with State and Federal authorities and other political subdivisions as necessary to ensure effective disaster preparedness and response capabilities.
- Coordinates the recruitment of volunteer personnel to provide assistance during disasters and emergencies
- Coordinates with other public and private agencies engaged in emergency management activities.
- Develops and maintains the City of Manassas Continuity of Operations Plan.
- Develops and maintains the City's Emergency Operations Plan.
- Coordinates damage assessment activities within the City and submission of required reports to the Virginia Department of Emergency Management (VDEM).
- Coordinates the submission of all requests for statewide mutual aid.
- Coordinates emergency management mutual aid agreements dealing with adjacent jurisdictions and relief organizations, such as the American Red Cross in the National Capital Region.
- Facilitates an after-action assessment of the disaster/emergency incident to determine what actions can be taken to mitigate future disaster effects. Maintains a corrective action program that records and monitors "lessons learned" and "corrective actions."

City Department and Organizations

- City department heads are responsible for managing their departments and organizations on a day-to-day basis in accordance with the authority granted to them by the City Council, Mayor, City Manager, or Commonwealth law. In the event of a significant emergency, they will be expected, to the extent possible, to carry out their day-to-day assigned duties as well as those outlined in the EOP Base Plan and ESF and Hazard Specific Annexes.
- The general emergency preparedness responsibilities of all City government organizations and non-government organizations include:
 - Perform assigned roles and responsibilities identified in this plan.

- Implement the Emergency Operations Plan concepts, processes, and structures when carrying out assigned roles and functional responsibilities.
 - Conduct operations in accordance with the National Incident Management System, applicable Homeland Security Directives, the Commonwealth of Virginia Emergency Operations Plan, and the National Response Framework.
 - Conduct planning and preparedness activities designed to prepare department staff to accomplish assigned emergency preparedness, response, and recovery responsibilities.
 - Familiarize and train all personnel with their emergency responsibilities and procedures on a regular basis.
 - Develop and maintain supporting plans, operational procedures, functional annexes, and checklists to accomplish assigned responsibilities.
 - Conduct planning and training in cooperation with identified primary and support agencies and Emergency Management.
 - Maintain financial records in accordance with guidance from the Finance and Administration Department, Emergency Management, and other applicable City procedures.
 - Establish, maintain, and exercise emergency notification procedures.
 - Develop and maintain an inventory of department resources applicable to accomplishing assigned emergency functions.
 - Provide senior representatives to the Emergency Operations Center, command post, or other identified emergency locations when activated and requested with appropriate authority to commit personnel and resources on behalf of the department.
 - Participate in approved drills, tests, and exercises.
 - Maintain an approved department-specific Continuity of Operations Plan in accordance with guidelines and standards, including identifying and preparing an alternate site(s) for the efficient relocation of operations.
 - Maintain a three-tier (or greater) line of succession for the department's senior position(s) with authority to make decisions for committing organizational resources.
 - Safeguard vital records including computer digital data at all times.
 - Where appropriate, establish stand-by contracts for services, equipment, and other resources with private industry in consultation with the Finance and Administration Department.
 - Establish mutual aid agreements to maintain liaison with surrounding municipal, county, non-profit, and private sector counterparts as appropriate.
 - Periodically review and update all emergency plans, policies, and procedures.
- The Emergency Support Function (ESF) roles of each department are identified in the annexes to this Plan. In addition, other responsibilities for departments during emergency operations in the City of Manassas may be assigned depending on the type, scope, and needs of the incident.

Partner Organizations

- The City of Manassas has established relationships with organizations that provide support services to the government and residents of the City either on a daily or as-needed basis. During emergency operations it may be necessary to coordinate with these organizations for the information sharing or the provision of services.
- Roles and responsibilities of key partner organizations have been identified in the ESF and Hazard/Incident Specific annexes where necessary. Other organizations will be engaged on an as needed basis depending on the type, scope, and needs of the incident.

Regional

- The National Capital Region (NCR) is not an operational entity. However, the Metropolitan Washington Council of Governments (MWCOC) champions emergency planning, training, and exercises among the NCR jurisdictions.
- The Metropolitan Washington Council of Governments (MWCOC) is a not-for-profit organization representing local governments in the District of Columbia, Suburban Maryland, and Northern Virginia. The MWCOC members are the elected officials from 19 local governments in the NCR plus area delegation members from the Maryland and Virginia legislatures, the United States Senate, and the United States House of Representatives.
- The COG includes a Human Services and Public Safety Policy Committee and National Capital Region Emergency Preparedness Council (NCREPC). The NCREPC oversees and implements the Regional Emergency Coordination Plan (RECP) and coordinates the activities of the various Regional Emergency Support Function (RESF) working groups. The City of Manassas is actively engaged in these activities.

Commonwealth of Virginia

- The Commonwealth of Virginia maintains the Commonwealth of Virginia Emergency Operations Plan (COVEOP) which establishes the framework for how emergency operations will be conducted within the Commonwealth including assigning emergency roles and responsibilities to state agencies and delineating the coordination and communication mechanisms between the local jurisdictions and the state.
- The City of Manassas will coordinate with the Commonwealth for information sharing and requesting resources when all local resources have been exhausted. Each ESF within the City EOC will coordinate with its state counterpart ESF at the Virginia EOC when necessary. Additionally, City departments will coordinate directly with their state counterpart agencies based on established requirements and procedures.

Federal

- The National Response Framework (NRF) presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies – from the smallest incident to the largest catastrophe. The NRF defines the key principles, roles, and structures that organize the way we respond as a Nation. It describes how communities, tribes, States, the Federal Government, and private-sector and nongovernmental partners apply these principles for a coordinated, effective national response. The NRF is always in effect, and elements can be implemented at any level at any time.

Information Collection, Analysis, and Dissemination

- The Planning Section in the EOC will be responsible for collection, analysis, and dissemination of incident specific information through a variety of mechanisms including situation status reports, briefings, email communication, maps, graphics, and WebEOC.
- ESF 5 will establish the essential elements of information and reporting schedule.
- All ESFs will be responsible for maintaining current situational awareness and reporting requested information accurately and in a timely manner. Critical information will be disseminated in a timely manner independent of reporting schedules.
- Each ESF will be responsible for establishing the necessary communication and coordination mechanisms with supporting and partner organizations for information sharing and situational awareness.
- Information related to the incident and other information such as personal protective actions or recovery activities will be coordinated with the PIO (ESF 15) and disseminated to the public.

Communications

- The communications infrastructure may be impacted by the emergency situation. Additionally, communications may be problematic due to demands exceeding capacities. It can be anticipated that normal means of communication in the affected areas will either be disrupted or incapacitated. This will require the use of alternate methods of communication to deliver essential services and public information.
- ESF 2 in the EOC will be responsible for establishing and maintaining internal City communications systems.
- The EOC Manager and ESF 5 will be responsible for establishing communications with surrounding jurisdictions, the Virginia EOC, and federal agencies as appropriate.

- Public safety agencies maintain interoperable radio communications as established through the National Capital Region Tactical Interoperability Communications Plan as well as with the State Interdepartmental Radio System.

Administration

Reporting and Documentation

- Documenting actions taken during response and recovery is important to create a historical record of the event, recover reimbursable costs, document when and why decisions were made, under what circumstances, and what actions were taken, and provide data for after action reviews, planning, mitigation and preparedness purposes.
- Each ESF and EOC representative and each department is responsible for documenting actions and expenditures for the duration of the incident.
- The Planning Section in the EOC is responsible for collecting and collating all reports.
- The Finance and Administration Section of the EOC is responsible for collecting and collating all financial documentation.
- WebEOC is a web-based crisis information management system that provides secure real-time information sharing. It is used by the City of Manassas and other NCR jurisdictions to manage local and regional incidents. WebEOC logs provide a means to share pertinent information and create a historical record of actions.
- Periodic Situation Reports and Incident Action Plans will be created when the EOC is activated. Each ESF will be required to provide requested information in accordance with the established reporting schedule.

After Action Reporting

- After-action reviews are essential for identifying issues that impeded operations or innovative approaches that were introduced during the response and recovery that may be applicable to future incidents. In order for issues to be addressed they need to be identified and documented.
- All departments and partner organizations will participate in the after-action review process and submit issues and recommended solutions to the Emergency Management Coordinator for review and consolidation.
- The Emergency Management Coordinator or designee may schedule and facilitate an after-action review meeting to verify and document issues for further review and corrective action. Primary ESF agencies should conduct after-action reviews with their support agencies to

identify ESF specific issues or concerns that will be monitored through the corrective actions process.

- A formal after-action report may be developed for significant incidents or planned events. Corrective actions for the identified deficiencies or areas for improvement will be developed.
- Departments will be assigned responsibility for developing recommended solutions, identifying a timeline for completion, and implementing the corrective actions.
- The Emergency Management Coordinator will be responsible for managing the corrective action program by documenting issues and tracking the status of resolutions. Open actions will be reviewed as determined appropriated.

Finance

- All agencies participating in response and recovery operations will maintain accurate records that substantiate their response and recovery actions to include costs and obligations for resources utilized.
- The City of Manassas may be eligible to apply for reimbursement of disaster-related expenses either through the state or the federal government. It is important that accurate records are readily available to support requests for recovery assistance from the state or federal government.
- Specific guidance for documentation will be provided through the Finance and Administration Section in the EOC. Information that may be required includes, but is not limited to:
 - Purchase orders
 - Invoices
 - Vouchers
 - Payroll information
 - Hours worked and work locations

Logistics

Resource Ordering and Management

- In a disaster or emergency situation, any resources or assets in control of the City will be made available to resolve the situation. Requests will be made by the Incident Commander (IC) to the EOC. If additional resources are required, procurement will be processed via ESF 7.
- The following are sources or potential sources for resources that may be available to the City in responding to disasters and emergencies:

- Personnel, staff, equipment, and facilities belonging to the City.
 - Resources available from neighboring jurisdictions through local mutual aid agreements.
 - Resources available from the private sector through acquisition/purchasing.
 - Resources of the Commonwealth of Virginia including the National Guard.
 - Mutual aid resources from other states through the Emergency Management Assistance Compact (EMAC) pursuant to Code of Virginia Section 44-146.28.1.
 - Mutual aid available through the Statewide Mutual Aid Program.
 - Resources available from the Federal government under the National Response Framework.
- If City resources are exhausted, the EOC will submit the request to the State or request mutual aid assistance from outside jurisdictions within the State or other local jurisdictions within the National Capital Region. Note that this provision does not apply to existing “automatic” aid/mutual aid agreements.
 - Unique and/or specialized resources will be requested from local vendors or the State to resolve the situation.
 - The Department of Criminal Justice Services and the Virginia Criminal Injuries Compensation Fund shall be contacted immediately to deploy assistance in the event of an emergency as defined in the emergency response plan when there are victims as defined in § 19.2-11.01.
 - All costs associated with resource procurement will be documented for recovery of expenses incurred regardless of the source.
 - All requests for outside assistance must be made to the EOC when a declared “Local State of Emergency” exists, so that City-wide requests can be tracked and prioritized. ESF 5 at the EOC is responsible for tracking resource requests on behalf of the EOC.
 - If State resources are exhausted, VDEM will request outside assistance from the Federal government provided that a Federal declaration of an emergency or major disaster is in place.
 - Support by military units may be requested through State EOC provided that a State of Emergency Declaration including the City of Manassas is in place. Military forces, when made available, will support and assist local agencies, and may receive from the City Manager or his/her designated representative, mission-type requests, to include objectives, priorities, and other information necessary to accomplish missions.

Mutual Aid and Memoranda of Understanding

- The Virginia Emergency Services and Disaster Law of 2000, as amended, authorizes the City Manager, as the Director of Emergency Management, in collaboration with other public and private agencies within the Commonwealth of Virginia or other States or localities within other States, to develop mutual aid or reciprocal assistance agreements in case of a disaster that is too great to be dealt with unassisted.
- Emergency assistance may be made available from neighboring jurisdictions in accordance with mutual aid agreements. Emergency resources may be sent from the City of Manassas to assist adjoining jurisdictions. Such assistance will be in accordance with existing mutual aid agreements or, in the absence of official agreements, as directed by the City Manager, or designee, when it is determined that such assistance is necessary and feasible.
- The City coordinates the deployment of fire and rescue resources with neighboring jurisdictions through written mutual aid agreements. The City of Manassas maintains a Mutual Fire Fighting and Rescue Assistance Agreement with the City of Manassas Park and Prince William County (April 1994) that establishes an automatic regional fire and rescue response system among the 3 jurisdictions.
- The City of Manassas has adopted the National Capital Region Mutual Aid Agreement that provides a framework for mutual aid among the 19 NCR jurisdictions. Requests for mutual aid assistance under the auspices of this agreement will be coordinated through the EOC. Individual City departments will request assistance accordingly.
- The City has also adopted the Virginia Statewide Mutual Aid Agreement operated by the Virginia Department of Emergency Management as a supplement to day-to-day local mutual aid agreements. Requests for statewide mutual aid will be coordinated by Emergency Management in accordance with the Statewide Mutual Assistance Manual.
- Mutual aid assistance from other States is available through the Emergency Management Assistant Compact (EMAC). A Governor's Proclamation of a State of Emergency must be in place to request EMAC assistance. ESF 5 at the EOC will process and manage requests for EMAC assistance in accordance with procedures established by VDEM.
- City Departments may establish additional local mutual aid agreements as necessary to carry out their assigned roles and responsibilities following a disaster or emergency.

Recovery Operations

Transition to Recovery

- Although there is no clear line between the response and recovery phases, the command and control, coordination, and resources to serve disaster victims transitions from immediate needs to a more deliberate process of program delivery. Recovery activities may include

coordination with the State and Federal government for administering State and Federal assistance.

- Generally, the termination of the local declaration of emergency and/or the closing of the EOC will signal the formal transition to the recovery phase. The Community Development Department is the lead for coordinating recovery operations and developing a plan for long-term recovery and will assume incident command upon the approval of the Director of Emergency Management, or designee.
- The formal transition from response and recovery and the transfer of incident command to Community Development will be announced to all departments and organizations using existing notification protocols and procedures.
- Short-term recovery is generally any activity to return vital life-support systems and critical infrastructure to minimum operating standards. Short-term recovery operations will begin during the response phase and will focus on rapid debris removal and cleanup, and a coordinated restoration of essential services such as electricity, water, and sanitary systems. Generally, the existing command and ESF structures established by this plan will be used to manage short-term recovery.
- Long-term recovery includes any activity designed to return life to normal or an improved state such as business resumption, employment, and rebuilding efforts. The goal of long-term recovery is to restore facilities to pre-disaster condition. Long-term recovery includes hazard mitigation activities, restoration or reconstruction of public facilities, and recovery of disaster response costs. The major objectives of long-term recovery include:
 - Coordinating delivery of social and health services;
 - Improving land use planning;
 - Restoring local economy to pre-disasters levels;
 - Recovering disaster response costs; and
 - Effectively integrating mitigation strategies into recovery planning and operations.
- The City of Manassas may be eligible to apply for reimbursement of disaster-related expenses either through the Commonwealth of Virginia or the Federal government. Recovery assistance that will be available will depend upon whether or not the City is included in a State and/or Federal emergency or disaster declaration. In the event there is no State or Federal declaration, recovery assistance will include what is provided through City departments and various voluntary organizations.
- In the event of a Federal disaster or emergency declaration, Federal and State officials will establish and co-locate at a Joint Field Office (JFO) that will serve as the hub for the coordination of disaster assistance and recovery programs throughout the Commonwealth for all declared jurisdictions. Community Development as the lead for ESF 14 will provide

coordination with VDEM on implementation and management of the recovery programs. Other City departments will provide support as appropriate.

- The disaster recovery process may continue for an extended period of time depending upon the scope and magnitude of the incident and the complexity of the recovery process. The Director of Emergency Management, or designee, may establish a Recovery and Restoration Task Force to serve as an advisory group on long-term recovery and restoration issues, policies, and activities.

Damage Assessment

- Damage assessment is a critical element of recovery operations. The damage assessment determines the impact of the disaster, identifies resource needs, and, as appropriate, justifies requests for State and Federal assistance. The damage assessment also provides a basis for determining priorities for repair and restoration of essential facilities.
- The Emergency Management Coordinator, with assistance from other City departments, is responsible for damage assessment. Department heads are responsible for assessing damage to their resources and in their area of expertise. Within the EOC, the Planning Section is responsible for the collection, analysis, and distribution of damage assessment information.
- Damage assessment includes the collection of information on the status of critical infrastructure, such as electric power generation and distribution, telecommunications, transportation, medical services, water supply and distribution, sanitary services, and information on the number and types of residential, commercial, and/or industrial structures that have been damaged or destroyed. The collection of this information requires the support of multiple City departments and Emergency Support Functions.
- The damage assessment process begins with the on-scene public safety personnel. Responders will immediately begin collecting damage information on the numbers and types of injuries and fatalities, environmental hazards, street and bridge access, damage to buildings, downed power lines, and damage to critical infrastructure. This information will be provided to the Incident Commander or his/her designee for use in managing the incident, establishing priorities, and determining the need to request additional resources.
- There are three types of damage assessments that will be conducted as needed throughout the incident: rapid assessment, initial damage assessment, and preliminary damage assessment.
 - **Rapid Assessment (RA) (also referred to as “Windshield Survey):** a quick survey of the area impacted by a disaster or emergency to ascertain the scope of the event and to determine immediate life-threatening situations and imminent hazards. The RA is conducted by the Fire and Rescue System, supported by other on-scene public safety

personnel. A Rapid Assessment is normally accomplished within 24 hours of the incident.

- **Initial Damage Assessment (IDA):** an initial and/or detailed evaluation and inspection of residential and commercial structures damaged by the incident. IDAs are conducted by City departments for their respective areas of responsibilities and by the Damage Assessment Team if mobilized. An IDA normally will commence within 24 to 48 hours following an incident.
- **Preliminary Damage Assessment (PDA):** a survey of the affected area(s) by Federal and State officials to assess the scope and magnitude of damage to determine if Federal assistance may be required. A PDA is initiated by a request from the State to FEMA. Generally, a PDA is conducted prior to an official request by the Governor for the declaration of an emergency or major disaster by the President. Depending upon the types of damages, PDA teams will be organized to assess damage to private property (Individual Assistance - the Federal program that provides disaster housing, grants and loans to aid individuals and households) or public property (Public Assistance – the Federal program that provides aid to local and state governments to help pay the cost of rebuilding a community’s damaged infrastructure), or separate teams to assess both. The City, through the EOC, will provide administrative and logistical support for the PDA process. Data collected by the City damage assessment process will be provided as appropriate to the joint State and Federal PDA teams.
- The objectives of damage assessments are as follows:
 - Determine the immediate needs and priorities of disaster victims.
 - Evaluate the damage to housing, businesses, lifelines, and critical facilities.
 - Develop initial cost estimates of damage to housing, businesses, lifelines, and critical facilities.
 - Identify obstacles or interruptions to emergency operations or impediments to relief efforts.
 - Identify secondary threats such as unsafe buildings still occupied or areas at risk to rising floodwaters.
 - Estimate the economic impact of the disaster including damages to commerce and industry.
 - Monitor public health.
 - Determine the resources needed to respond to the disaster and identifying the gaps that need to be filled from outside sources.
- The departments with assigned damage assessment responsibilities will develop appropriate internal procedures to accomplish their assigned tasks. City departments will work together at the EOC to gather and share information regarding the status of critical infrastructure to maximize the use of specialized resources and to provide a basis for

requesting assistance. Information will be provided to the Planning Section at the EOC for consolidation and analysis.

Disaster Assistance Programs

- The types of disaster assistance will vary depending upon the level of emergency and/or disaster declarations. Disaster assistance programs are designed to meet the needs of four distinct groups: individuals and families, businesses, government, and nonprofit organizations.
- Individuals may receive loans or grants for real and personal property, dental, funeral, medical, transportation, unemployment, sheltering, and rental assistance, depending upon the extent of the damage. The State Recovery Task Force program assists the local government to ensure that needed assistance is provided to disaster victims.
- The Small Business Administration (SBA) provides loans to many types of businesses, and can provide assistance with both physical and economic losses as the result of a disaster of emergency.
- Funds and grants are available to government and certain nonprofit organizations to repair, reconstruct, and mitigate the risk of future damage. The Commonwealth Emergency Relief for Localities program is designed to assist local governments that suffer uninsured damages to public property.
- Under a Presidential Major Disaster Declaration, individuals, businesses, and the City may be eligible for a variety of Federal disaster assistance programs.
- Assistance for individuals and families is also provided by a wide variety of voluntary relief organizations including, among others, the American Red Cross in the National Capital Region and the Salvation Army.
- The FEMA public assistance program requires a local emergency declaration, a state of emergency proclamation, and a Federal declaration of a major disaster that specifically authorizes public assistance for the City of Manassas.
- This program provides public assistance to state agencies, local governments, political subdivisions of local governments, and certain private nonprofit organizations. This assistance can cover debris removal and/or emergency protective measures taken during the response phase, as well as repair and restoration of damaged facilities. It also includes certain mitigation actions.
- The Individual Assistance Program is jointly administered by VDEM and FEMA and serves individuals and families affected by the disaster. This program requires that a Federal major

disaster declaration is in effect, and that the Individual Assistance Program has been authorized for the City.

- This Program is designed as a supplement to other assistance that may be available, such as private insurance or disaster assistance loans offered through the Small Business Administration. Individual Assistance may be available to individuals and households, and can be in the form of a grant, temporary housing (such as travel trailers), low interest loans, services (such as crisis counseling), and eligibility for programs not normally available unless there is a Federal disaster declaration. Individuals register to receive Federal disaster assistance by calling the FEMA toll-free “tele-registration” number.

Unmet Needs

- Unmet needs are any disaster-related losses experienced by the victim that cannot be provided for by the programs available from the City, state, or federal agencies due to the victim’s ineligibility for such services or the goods or services.
- During the recovery phase, a collaborative effort is established between the government and the private nonprofit community to address the issue of unmet needs.
- During the recovery phase, ESF 14 may establish an Unmet Needs Coordination Committee to address this issue. The purpose of this committee will be to identify and resolve emergency and long-term disaster-related unmet needs that cannot be met through traditional programs or resources.

Training and Exercises

- A comprehensive training and exercise program is essential for the effective implementation of the Emergency Operations Plan. The Emergency Management Coordinator is responsible for the overall coordination of disaster related training and exercises within the City. A Training and Exercise Plan Workshop should be conducted annually to develop or update the City of Manassas Training and Exercise Plan. The Training and Exercise Plan will include training and exercise priorities, the target capabilities that the City will train and exercise, and a multi-year training and exercise schedule.
- The Emergency Operations Plan should be exercised in some capacity on an annual basis. The Emergency Management Coordinator is responsible for establishing a Training and Exercise Plan that will include the scheduled training and exercise activities for the City.

- Exercises will be evaluated so that shortcomings in the plans, training, coordination, and operational procedures can be identified and corrected through a Corrective Action Program.
- Each department with assigned roles and responsibilities in this Plan will ensure that staff members are trained for their emergency roles and responsibilities and provided the opportunity to participate in exercises. Departments will maintain a roster of trained staff.



CITY OF MANASSAS
MANASSAS, VA 20110

ENGINEERING DEPARTMENT
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January 16, 2025

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

Re: Virginia CFPF Grant Application- Authorization to Request Funding
CID 510122 – City of Manassas, VA

CFPF Grant Committee:

This letter serves to provide certification that I, as the Interim City Manager for the City of Manassas, have provided authorization for submission of a grant application to fund the City of Manassas Flood Hazard Assessment & Mitigation Study for the Flat Branch Tributary A Watershed in accordance with the CFPF Grant Manual.

Furthermore, I certify that the City has sufficient funding to cover the required matching funds with the understanding that awards granted under the CFPF will be disbursed in accordance with the CFPF Grant Manual by the Virginia Resources Authority. The City will utilize Stormwater Fund dollars to fund the project.

Please direct any additional questions to Mr. Lance Kilby, P. E. at lkilby@manassasva.gov.

Sincerely,

Douglas W. Keen
Interim City Manager
City of Manassas

Virginia Community Flood Preparedness Fund Grant Application

Preparation of a Flood Hazard Assessment and Mitigation Study for the Flat Branch Tributary-A Watershed in the City of Manassas



Virginia Community Flood Preparedness Fund **Grant Application**

Preparation of a Flood Hazard Assessment and Mitigation Study for **the Flat Branch Tributary A Watershed in the City of Manassas**

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Virginia Community Flood Preparedness Fund **Grant Application**

Preparation of a Flood Hazard Assessment and Mitigation Study for **the Flat Branch Tributary A Watershed in the City of Manassas**

Executive Summary

The City of Manassas (COM) is applying for grant assistance under the Virginia Department of Conservation and Recreation (DCR) Community Flood Preparedness Fund (CFPF) Round 5 'Study' category to assess flood hazards and flood risks for a selected watershed within the City and identify potential flood mitigation measures that could be implemented to reduce flood risks within the watershed. This work will address both riverine and pluvial flooding, urban flooding, drainage issues, and identify possible measures for the mitigation of the flood hazards. The study area has been chosen as the Flat Branch Tributary A watershed which is identified as a critical flood hazard location by the City of Manassas. A similar project (flood hazard assessment) is currently underway for the City's Cockrell Branch watershed which the City considers to be a pilot program, the results of which will inform the scope of future watershed flood hazard assessments. Accordingly, the work for the Flat Branch Tributary A Watershed Flood Hazard Assessment will be similar to the pilot project but informed by "lessons learned" during the pilot project. The City desires to perform similar studies in the future for all the critical watersheds within the City so long as adequate funding sources are available.

1. Introduction and Background

The City of Manassas is pleased to submit this 2024 Virginia Community Flood Preparedness Fund grant application to provide matching funds for the development of a Flood Hazard Assessment and Mitigation Study. Accordingly, this grant request is for the 'Study' category. This work is going to support the City's 2040 goal to protect, enhance, and restore the integrity of the City's water resources ([Chapter 8 - Environmental Sustainability & Health web.pdf](#)). It will investigate and assess current and future possible flood hazards within the Flat Branch Tributary A watershed in the City of Manassas, and suggest possible mitigation plans to address identified flooding issues.

The world is experiencing a pronounced warming since the industrial era and in the last few decades climate adversity has been exacerbated due to greenhouse impacts. The temperature rise associated with climate change, a significant contributor to sea level rise, and the change in precipitation patterns are believed to be the key responsible factors for the severe flood hazards observed recently (Gopika, S., M et al, 2024, M.J. Booij et al., 2005). Virginia is also found to be within a substantial flood risk zone based on recent events, risk assessment tools and planning processes (source: [The Status of Flood Resilience in the Commonwealth – December 2023 \(virginia.gov\)](#)). Many parts of Virginia are facing severe high intensity, short duration rainfall events causing intense flood experiences. Repetitive flood occurrences are also believed to be due in part to changes in the rainfall patterns. As an example of an extreme flood event, on July 8, 2019, a severe thunderstorm resulted in 5 inches of rain within less than an hour period in Fairfax and Arlington counties in Virginia, which is estimated to have a 1000-year recurrence interval or a 0.1% chance of occurring in any given year. This event caused extreme, widespread flooding resulting in significant losses to property and infrastructure, totaling approximately \$15 million.

The City of Manassas has also been facing repetitive flood hazards in many areas, identified as critical areas for flood risk. Figure 1 shows areas with significant statewide flood risk (50-80 percentile) within the City of Manassas as projected by U.S. Environmental Protection Agency (EPA) ([EJ Screen \(epa.gov\)](https://www.epa.gov/ej-screen)). The flood risk projected by EPA is determined with the First Street Foundation Flood Model, which is a nation and statewide probabilistic flood model showing the risk of flooding at any location at 3-meter resolution.

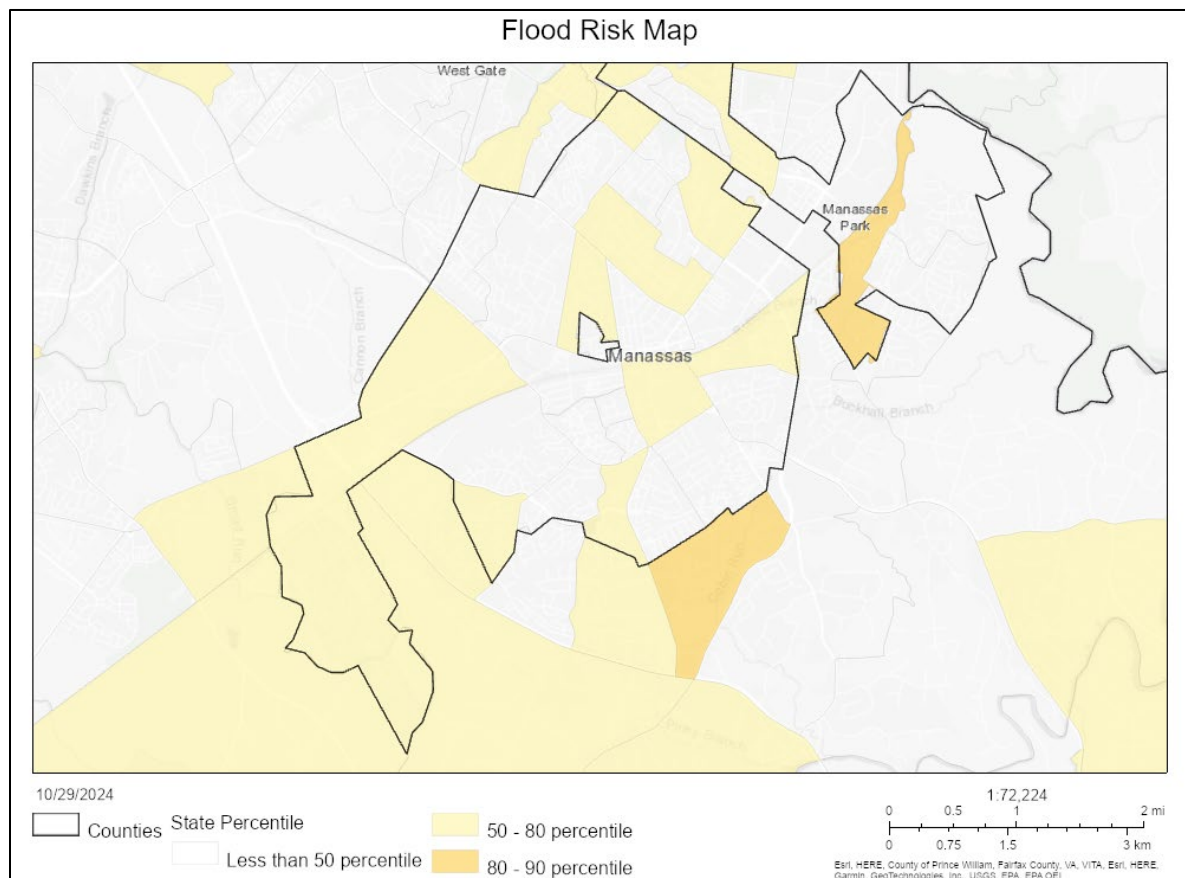


Figure-1: Flood risk area within the City of Manassas by EPA.

For example, the City experienced a significant, torrential rainfall event on August 12, 2020. A nearby amateur weather station recorded the precipitation data, which is shown in Figure 2. This shows the rainfall beginning at around 3 am and ending at 6 am. The precipitation rate exceeded 4 inches in just an hour, and the accumulated total rainfall exceeded 5 inches over a 3-hour period. This storm event also approached a 1000-yr recurrence interval.

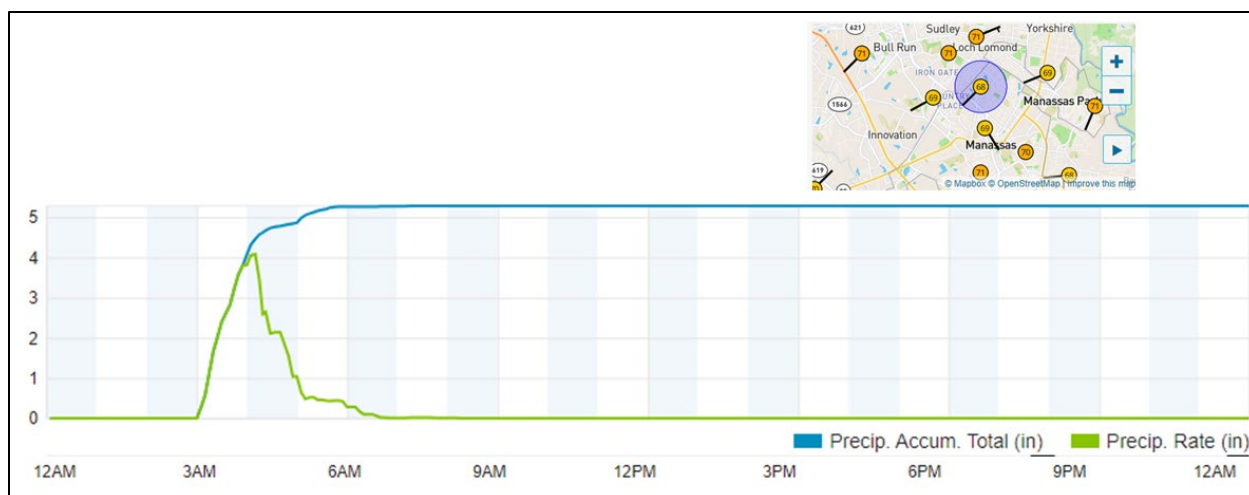


Figure-2: Precipitation data for the August 12, 2020, storm event recorded at a nearby amateur weather station in the Summer Lake subdivision.

This torrential rain caused flooding in many areas near the City of Manassas. In nearby Manassas Park the storm resulted in severe damage to Moseby Court. Figure 3 shows an online report with photos of Moseby Court on August 12, 2020, after the rain incident.

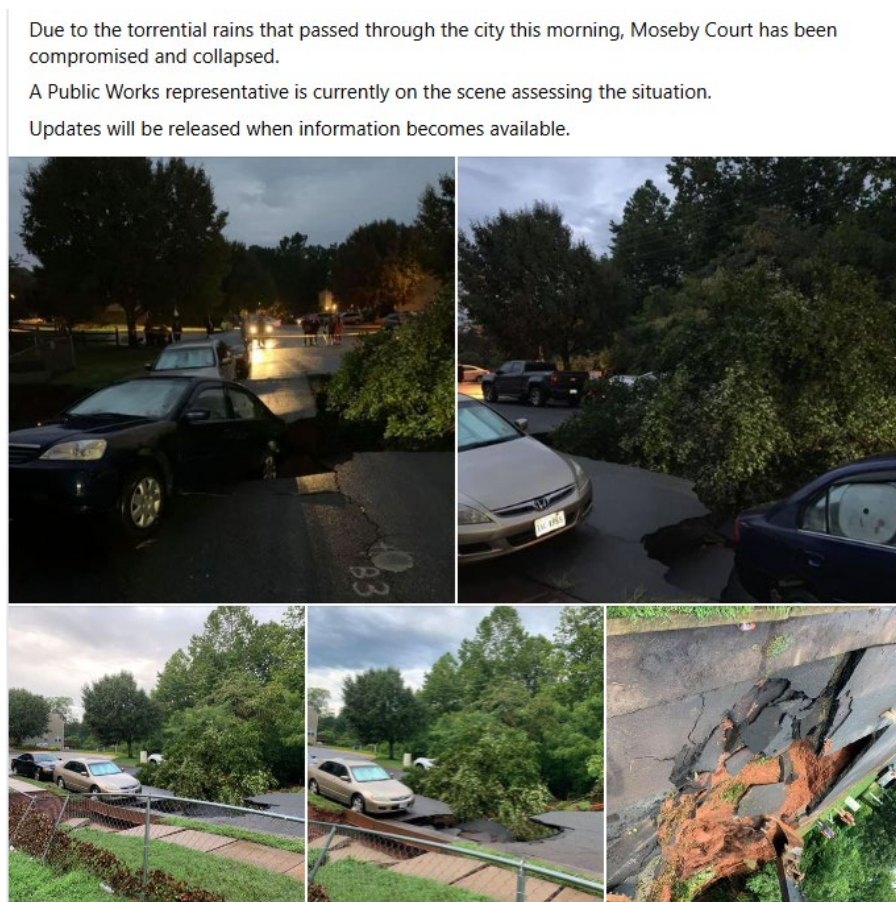


Figure-3: Moseby Court incident on August 2020 storm event.

In addition to the occasional torrential rain induced flood event, there are numerous smaller, nuisance flood events that have been reported and documented by City of Manassas staff over past couple years.

Some example photos and notes concerning those events are provided below in Figure 4:



(a) Hutchison Lane (2022)



(b) 10413 Dumfries Rd. (2023)



(c) Between West St. and Grant Ave. (2024)



(d) Quarry Rd. (2024)

Figure-4: Some flood incidents within the City of Manassas reported between 2022-2024. (a) Hutchison Lane (2022), an area which is very flat and has poorly drained roadside ditches, (b) Dumfries Rd. (2023) in front of the John Deere Store that is also poorly drained and holds water, (c) Alleyway between West St. and Grant Ave. (2024), this is a private area which routinely floods during rain events, (d) Quarry Rd. (2024), flooding during a typical rainfall event.

Figure 5 shows the flood risk map for part of the City of Manassas, mainly the Flat Branch Tributary A Watershed area as identified by Federal Emergency Management Agency (FEMA). It shows the 100-year floodplain (1% annual chance of flood hazard) area as well as the 500-year floodplain and floodway. However, the FEMA Flood Maps focus primarily on fluvial or riverine flooding sources, whereas there are also significant pluvial or urban flood issues within the watershed resulting from rapid urbanization and changing storm patterns.

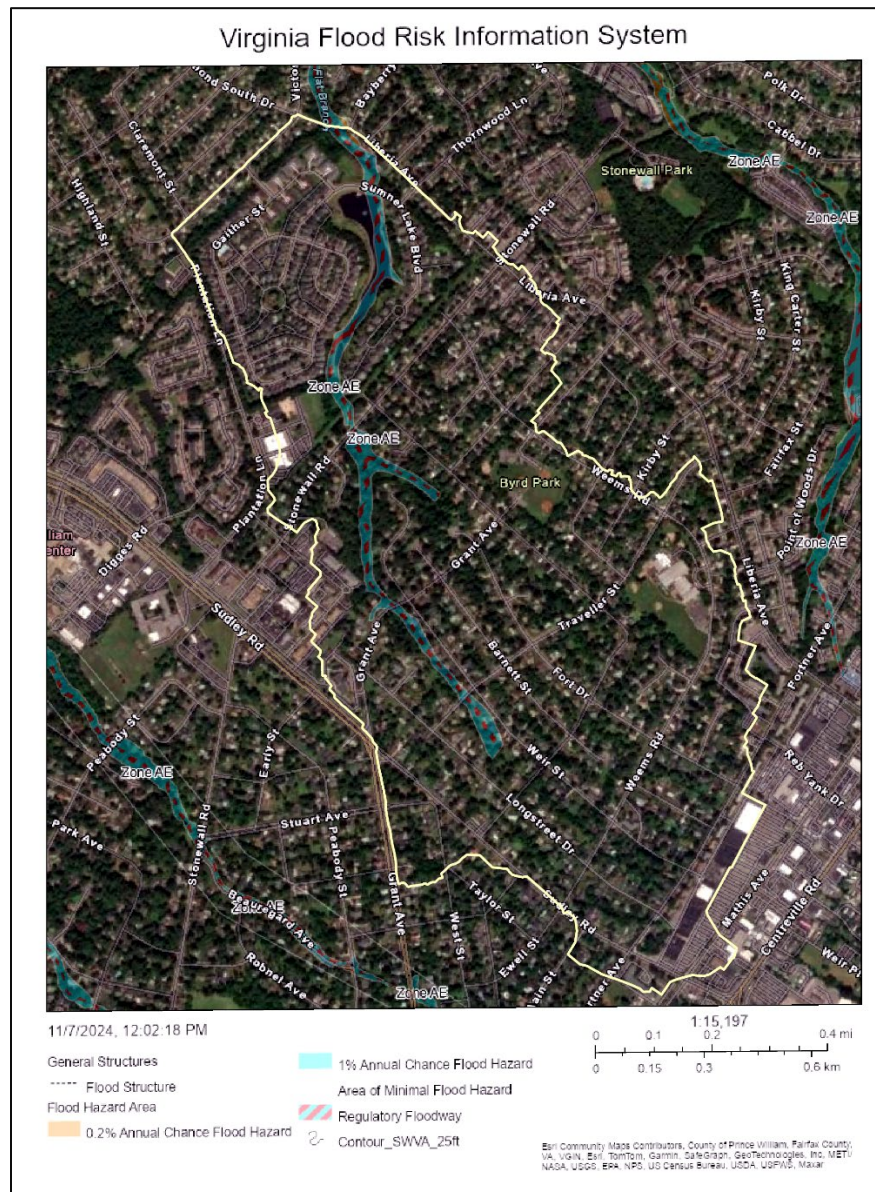


Figure-5: FEMA Flood Hazard Map of the Flat Branch Tributary A in the City of Manassas. The watershed boundary is marked on the map. (Source: <https://fema.maps.arcgis.com/>)

Figure 6 points to the specific areas in the City of Manassas reported for flood events and road closures during 2018-2020. These flood events are both pluvial (urban) and fluvial (riverine).

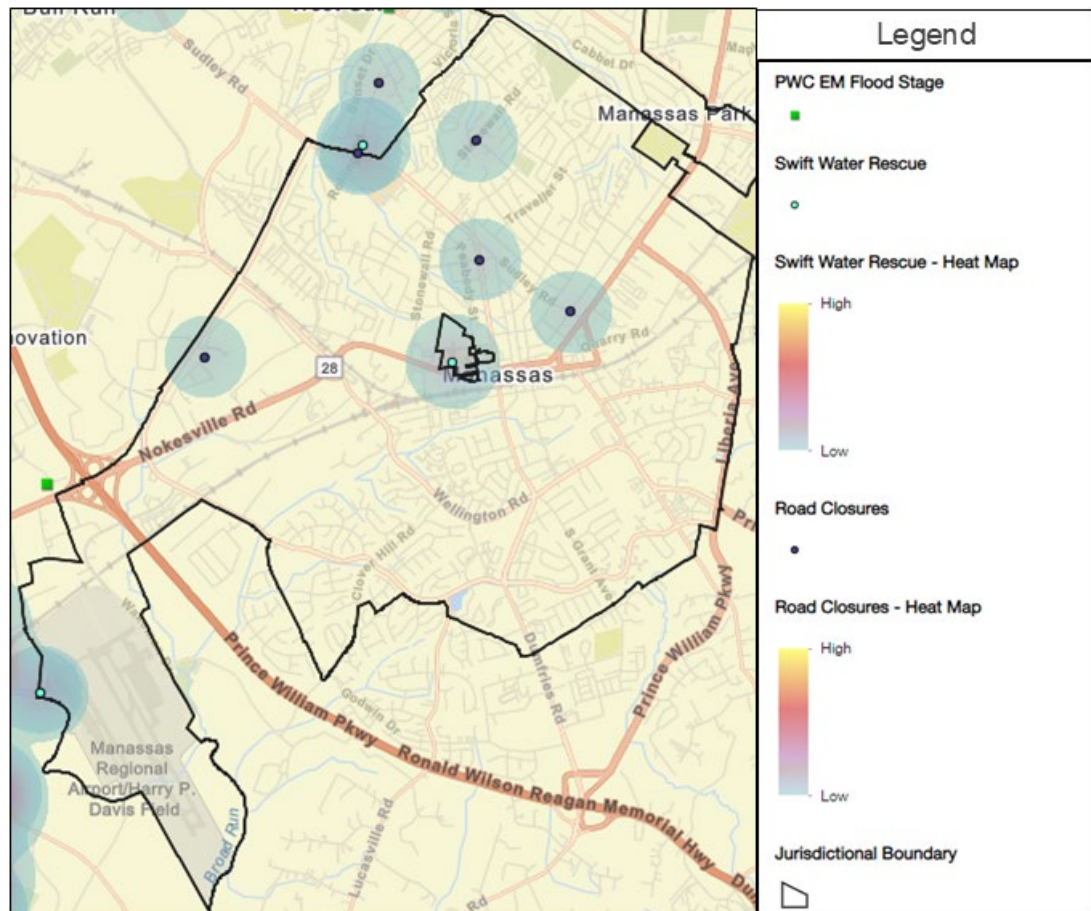


Figure-6: Map shows areas in City of Manassas, VA experiencing flooding due to extreme rainfall along with reported water rescues between 2018-2020. (Source: [Flood Control and Safety \(pwcva.gov\)](http://Flood Control and Safety (pwcva.gov)))

In this study both the urban and riverine flood hazards will be identified. The floodplain mapping is currently being revised based on updated hydrologic and hydraulic analysis. With that, the storm water network will be investigated to identify any major issues contributing to flooding. After analyzing the reported and prospective flood hazards, conceptual flood mitigation plans will be developed for those locations judged to be subject to the greatest flood risks. This will be helpful for the City and residents of this watershed to identify sustainable solutions to mitigate repetitive flood incidents and to take actions that could reduce susceptibility to future flood risks. It is hoped the results of this study will identify both sustainable and resilient measures that when implemented will reduce the impact of regular flood events, as well as losses from excessive future floods resulting from extreme storm events (as happened in Fairfax and Arlington in 2019 or in Manassas in August 2020).

2. Scope of Work Narrative

2.1 Project information/ problems

The City of Manassas has 8 primary watersheds, further divided into regional sub-watersheds. Figure 7 shows the watershed map of the City of Manassas. Some of the watersheds are identified as critical watershed areas (red hatched in the map, Figure 7), with reports of repetitive flood issues in the City's Maintenance Log data. For this work, one of these critical watershed areas is chosen for further assessment. The chosen watershed is within the Flat Branch primary

watershed and is known as Tributary A to Flat Branch. The Flat Branch Tributary A watershed includes the Sumner Lake Regional Stormwater Management Facility at the northern, downstream end.

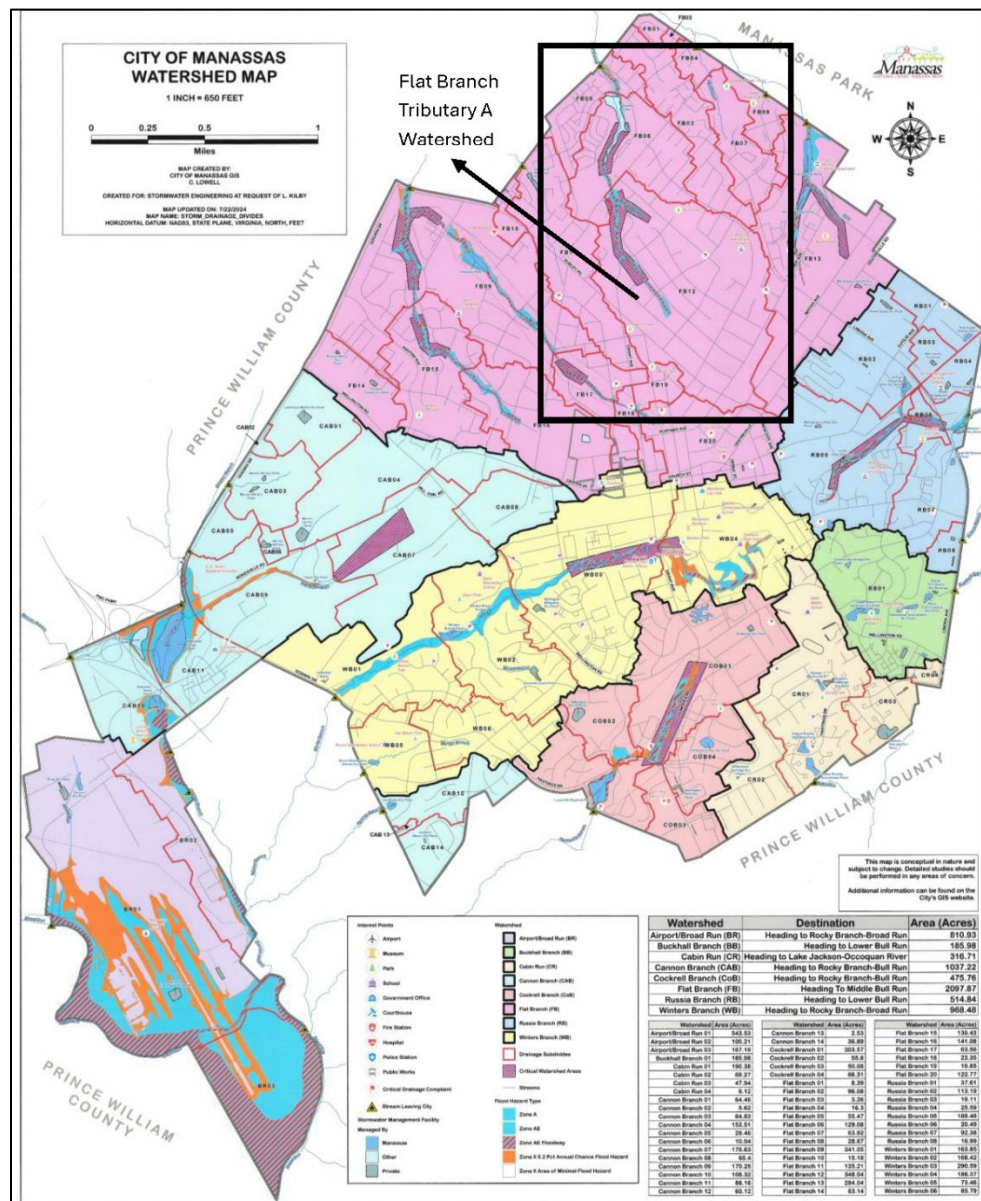


Figure 7: City of Manassas Watershed Map including the critical watershed areas. Flat Branch Trib A as the selected study site is marked.

Site description: The Flat Branch Tributary A watershed, consists of Tributary A flowing towards Sumner Lake and Tributary No. 3 flowing towards the confluence of Tributary A. The watershed starts from Mathis Avenue at the south and ends at the Lomond South Drive at the north, just downstream of Sumner Lake. The total area of the watershed is approximately 0.813 sq. miles. The watershed is mostly covered by suburban development (primarily single family detached residential) with some higher density residential areas (for example, apartment buildings, and townhouses) at the south-east and south-west parts of the watershed. There are also commercial buildings and shopping centers at the south, upstream end along Mathis Avenue. The approximate imperviousness of the total watershed is 40%. The area was recognized as

moderate socially vulnerable by running the VFRIS (Virginia Flood Risk Information System) social vulnerability index.

Though much of the infrastructure in this watershed is old, a major part of the watershed area has been developed significantly within the last three decades, most notably including the Sumner Lake subdivision. A historic timeline of the aerial view shows the changes in the landscape from 1991 to present in Figure 8. Approximately 20% of the watershed was converted from open space to residential development (i.e. the Sumner Lake subdivision).

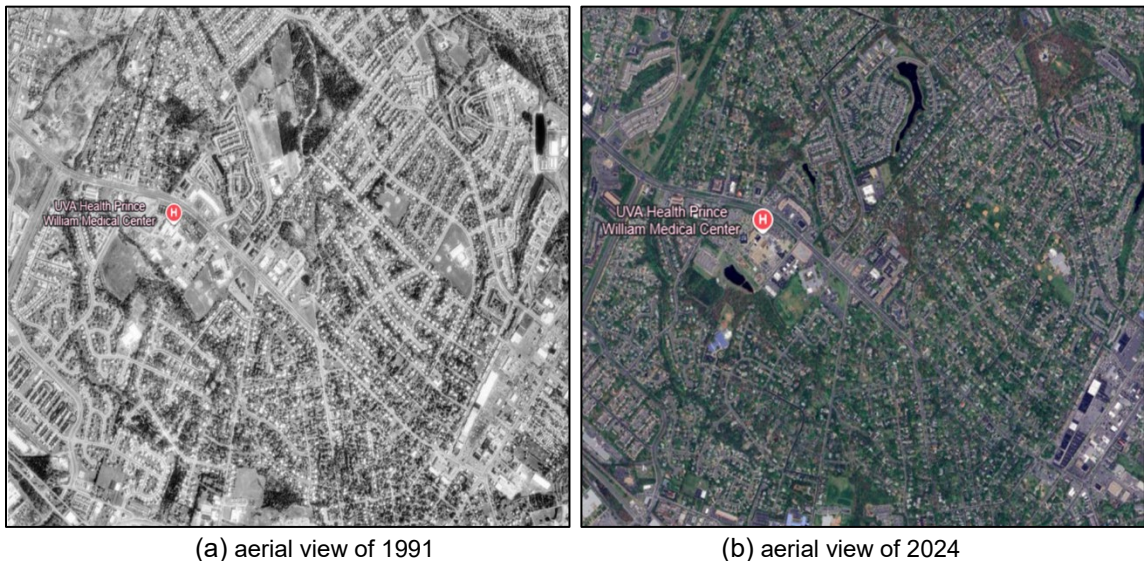


Figure 8: Historic timeline of the aerial view of Flat Branch Trib A watershed area. (a) is the aerial view of 1991 and (b) is of 2024.

The Sumner Lake (Figure 9) subdivision was developed on farmland in the early 2000s and included construction of a regional stormwater management wet pond (i.e. Sumner Lake). Even though the Sumner Lake Regional SWM Facility was developed to manage storm water and reduce downstream flood impacts, some areas of the watershed upstream of Sumner Lake are susceptible to both fluvial and pluvial flood hazards. Sumner Lake is recognized as a critical component of the City's stormwater management system. Sumner Lake Dam is a state regulated dam with a High hazard classification.



Figure-9: Sumner Lake (developed in early 2000s)

Specific problem and contributing factors: The current “effective” FEMA floodplain mapping is based on hydraulic analysis performed in 1977, which is outdated and does not reflect a significant amount of land development that has occurred since that time. Accordingly, the City is pursuing an application for a Letter of Map Revision (LOMR) to update the FEMA floodplain mapping within the Flat Branch Tributary A watershed and has retained Dewberry Engineers to perform updated floodplain analysis and prepare the LOMR application. While working on the LOMR application Dewberry Engineers performed field investigations along fluvial floodplain areas within the watershed which revealed that numerous obstructions have been constructed within the floodplain by homeowners. For example, some owners have built fences across the floodplain, and some have extended backyards and patios into the floodplain, creating obstructions that reduce flood conveyance and potentially increase flood hazards (Figure 10).



Figure-10: A wood fence and a chain link across the stream and the flood plain constructed by a homeowner, which might increase the flood hazard.

The City of Manassas has received flooding reports/complaints within the Flat Branch Tributary A Watershed. The issues typically concern undersized storm water pipes, deterioration of storm drainage infrastructure (e.g. major storm pipe joint displacements), and residential structures and fences in the floodplain. The reported flood issues include both riverine and urban (pluvial) flooding, resulting from both natural and human induced causes.

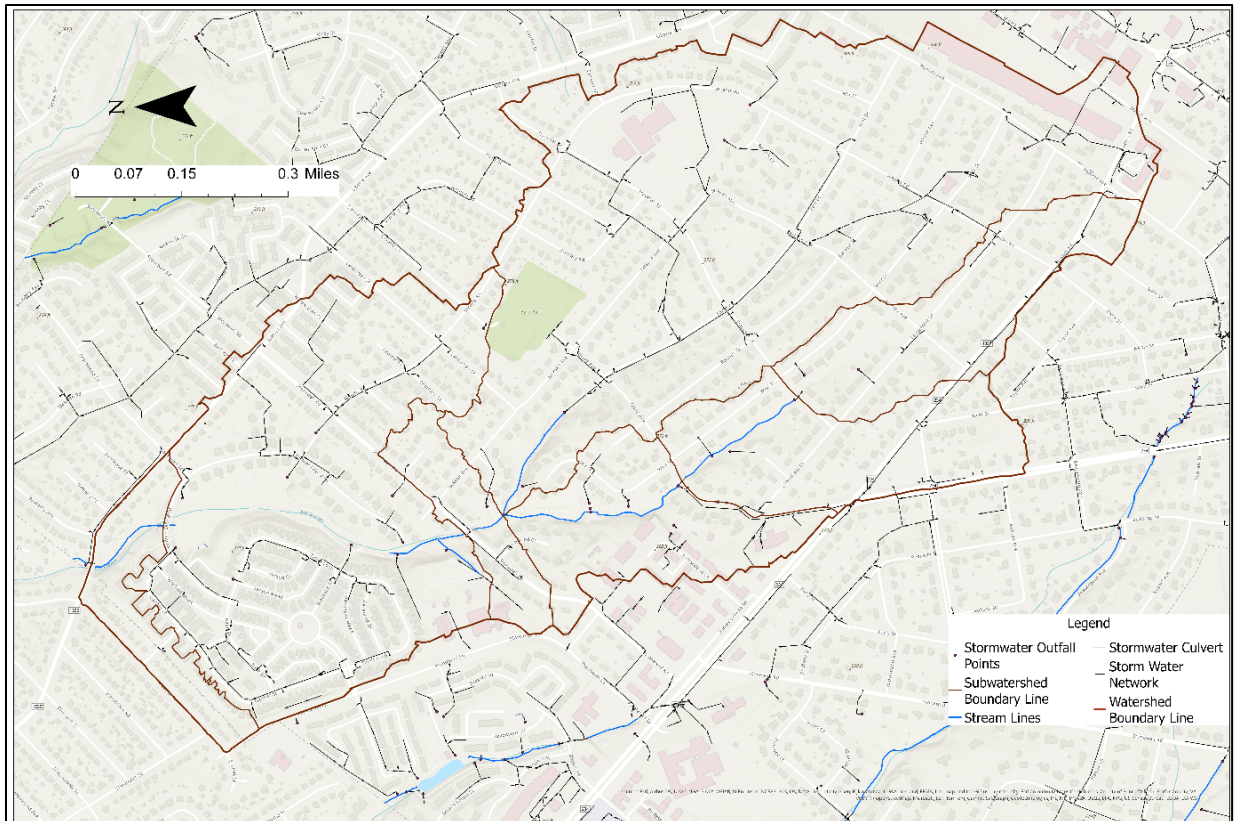


Figure 11: Flat Branch Trib A watershed drainage area map and storm sewer layout.

Need for the project: The need of the project is to protect the residents and businesses within the watershed from ongoing or future flood hazards and reduce the impact of extreme storm events in this area. In this regard, updated floodplain mapping and hydrologic/hydraulic analyses associated with the LOMR application will be used to assess flood hazards in the watershed. The stormwater network (SWN) within the watershed will be reviewed to investigate possible causes of the reported flood issues and to identify possible inadequacies within the existing stormwater conveyance system. In this study the stormwater network will also be evaluated to identify possible causes of ongoing urban flood incidents. Additional hydrologic and hydraulic analysis will be performed to determine peak discharges and potential flood elevations in urban areas subject to pluvial flooding (e.g. sinks and minor storm drainage systems outside of the fluvial floodplain areas). After analyzing all the reported and prospective flood hazards, conceptual flood mitigation plans will be developed for those locations judged to be subject to the greatest flood risk.

2.2 Goals and objectives

Following are the primary goals and objectives of the project:

- To closely investigate potential areas of flooding (riverine and urban) in the watershed by doing topographic base map analysis and field survey.
- To collect data on flooding from citizen complaints and identify deficiencies in the City's storm drainage system based on preliminary engineering analysis and review of CCTV inspection data.
- To perform a sink analysis using the City GIS data coupled with VGIN terrain data to identify overland relief pathways and sump areas that may be flood prone during storm events exceeding the capacity of the City's storm drainage system.
- To perform preliminary hydrologic and hydraulic analysis of portions of the watershed subject to pluvial flooding using the results of the GIS sink analysis to identify overland

relief paths, coupled with the City's storm sewer network data, for the purpose of identifying areas of inadequate storm sewer capacity and/or overland relief.

- To assess the future flood risk for the study area based on updated hydrologic and hydraulic analysis depicting ultimate watershed development.
- To evaluate measures for minimizing present and future flood vulnerability.
- To develop alternatives for reducing identified flood risk in the watershed.
- To develop conceptual plans for potential flood mitigation projects.
- To help the City of Manassas in achieving its environmental goal for 2040, by protecting the floodplain, developing updated floodplain maps, improving wildlife habitat, and engaging the community for better understanding and implementation of the flood mitigation plans.
- For the flood mitigation plans, nature-based solutions will be considered when appropriate and practical.

2.3 Work plan / major tasks

Task 1 – Review of City Drainage Complaints, CCTV Data, and Field Reconnaissance

In this task the City database for flood complaints will be reviewed to identify the on-going or repetitive flood incidents. The work steps are as followed:

- a) To review the watershed with the help of City of Manassas (COM) staff to identify known drainage and flooding issues.
- b) To review the list of flood complaints by citizens within the Watershed.
- c) To review pipes, streams and channels in the vicinity of the noted complaints using the City's GIS database.
- d) To conduct field investigations of the areas identified in the drainage complaints and identified by City staff.
- e) To do an initial review of the CCTV data for the pipes in the vicinity of the noted complaints using the City's CCTV database.

Task 2 – Preparation of Topographic Base Map and Sink Analysis

A high-resolution Digital Elevation Model (DEM) data will be collected for the study area. A topographic base map of the watershed will be prepared using the DEM and the GIS topographic data. The sinks or depressions will be identified within the DEM. A sink is a cell in the map whose flow direction cannot be assigned, occurring when the neighboring cells are higher than the processing cell. Afterwards, the flow direction will be identified, and flow accumulation will be performed to determine the overland relief flow paths. The municipalities' drainage systems are divided into minor and major drainage systems. Whereas the minor systems consist of storm sewer network or culverts, the major systems are the overland relief paths that convey the larger storms which might exceed the capacity of the minor systems. Adequate overland relief occurs when this excess runoff can be conveyed overland with little or no flooding of habitable structures or critical infrastructure. Within this task, the overland flow areas will be identified.

Task 3 - Limited Field Survey of Storm Drain Network

Based on the findings from Task 1 and Task 2 the locations of flood complaints will undergo preliminary survey on the storm drain networks. Field Survey may also include determination of storm drain inlet geometry (inverts, throat lengths, etc.) and storm sewer pipe geometry (size, type, inverts, etc.). Field survey data collected under this task will be used to analyze the minor drainage system and identify potential areas of concern.

Task 4 – Computation of Peak Discharges

Natural Resource Conservation Service (NRCS) Hydrologic Methods will be utilized to compute rainfall runoff amounts and associated peak flows at locations susceptible to flooding, including locations where flooding complaints have been reported. The hydraulic and hydrologic analysis will be performed using revised streamlines based on the updated topographic survey, updated NOAA_C rainfall distribution, and rainfall depths as published in NOAA Atlas 14. The obstructions or structures in the channels and floodplain will be identified and checked to determine if they are making the flood situation worse. Peak flows will be computed for 24-hour duration design storms having 2-, 10-, 25-, 50-, 100-yr, and 500-yr recurrence intervals.

Task 5 – Assessment of Pipe Conditions in Flooding Areas

This task will be performed to investigate in more detail the conditions of the storm network pipes and structures. Any damaged pipes or structures in need of repairs, potentially causing repetitive flooding conditions, will be identified from this detailed survey. Together the CCTV database and flood reports within the City of Manassas will be used to identify the locations of repetitive flooding or drainage issues in the watershed.

Task 6 – Assessment of Flooding Issues and Development of Potential Resilient Plan for Flood Mitigation

Under this task, flooding issues identified in Task 1 will be reviewed and possible remedial measures to alleviate the flooding will be developed. There could be one or multiple reasons for each of the flooding incidents and those will be identified in this study. Potential flooding issues may be due to undersized pipes or culverts, undersized conveyance channels, floodplain encroachment or partial blockage of storm conveyance systems, limited overland relief or a combination of these factors.

Flood mitigation measures will be developed for locations comparatively judged to have the most significant flood hazard potential within the Flat Branch Tributary A watershed. Based on the results of Tasks 1 - 5, a list of potential flood mitigation projects for the selected locations with significant flood hazard to alleviate localized flooding issues will be developed. For the flood mitigation plans, nature-based solutions (e.g., infiltration practices such as rain gardens, porous pavements etc.) will get considered alongside more conventional structural solutions where appropriate and practical. Conceptual drawings of the proposed flood mitigation projects will be prepared. Conceptual level design will be performed and used to develop approximate (order-of-magnitude) construction cost estimates.

Task 7 – Preparation of Report

Under this task, a report summarizing the list of identified flooding issues and potential mitigation projects will be prepared. One-page conceptual drawings of the proposed flood mitigation projects will be incorporated along with approximate cost estimates as attachments to the report.

2.4 Future more detailed evaluation of proposed flood mitigation projects

After completion of the proposed Flood Hazard Assessment report that is the subject of this grant application, more detailed evaluation of the effectiveness of the proposed flood mitigation concepts will be performed which may include the following actions.

- More detailed hydraulic and hydrological modeling may be performed to better assess the effectiveness of the proposed mitigation measures. More detailed modeling will better quantify the proposed project's impact on flood levels. With the help of more detailed modeling, project benefits can be more accurately quantified.
- Modeling the 1000 yr return period flood event can also be used to check the effectiveness and efficiency of a proposed mitigation project and determine if the

mitigation measure is sufficiently robust to reduce the impacts of storm events larger than the design storm.

- A cost-benefit analysis may be done to evaluate the return on investment by comparing the project's cost with the financial savings from the on-going or assumed reduced flood damage.
- Surveys and/or public meetings may be conducted to obtain citizen feedback on proposed mitigation projects and answer any questions they may have concerning impacts and benefits.

3. Budget Narrative:

A detailed budget narrative is included below and contains the required information outlined in the 2024 Funding Manual for the Virginia Community Flood Preparedness Fund. Estimated Total Project Cost: The total identified project cost to complete the Flat Branch Tributary A Flood Hazard Study is \$185,397.

3.1 City drainage complaints review and reconnaissance:

This includes gathering all the complaint reports and CCTV footages, then reviewing them for better understanding the issues. This might include the kick-off meeting with City staff, monthly project coordination meetings, and advisory committee formation and meetings.

Contractor Hours	Contractor Cost	Total Cost
134	\$22,214	\$22,214

3.2 Topo base map and sink analysis:

This task includes the collection of high-resolution DEM data and GIS topographic data. With the help of the data the expertise of the engineers will be used for sink analysis.

Contractor Hours	Contractor Cost	Total Cost
107	\$15,651	\$15,651

3.3 Limited field survey of storm drain network:

This task will require limited field survey of specific flood prone areas and the involvement of residents to identify and characterize flooding issues, and issues related storm drainage system capacity.

Contractor Hours	Contractor Cost	Total Cost
79	\$16,041	\$16,041

3.4 Peak discharge computations:

This part will require hydraulic and hydrologic analysis with the help of the collected GIS and survey data.

Contractor Hours	Contractor Cost	Total Cost
100	\$15,795	\$15,795

3.5 Assessment of pipe conditions:

This will need detailed field survey and more detailed review of CCTV footages on the identified locations.

Contractor Hours	Contractor Cost	Total Cost
67	\$11,844	\$11,844

3.6 Assessment of flood hazards:

This will need involvement of engineers, planners, and stakeholders to assess the flood hazards and develop possible mitigation plans. The plan will be consistent with the requirements for a resilience plan as articulated in the guidance manual.

Contractor Hours	Contractor Cost	Total Cost
416	\$68,116	\$68,116

3.7 Preparation of report:

A report will be prepared by the contractor summarizing the results of the tasks outlined above, along with conceptual drawings of flood mitigation proposals for each of the selected locations.

Contractor Hours	Contractor Cost	Total Cost
210	\$35,736	\$35,736

3.8 Summary of Budget Narrative:

In the budget narrative a breakdown of fund required for different steps of the project are provided. The total project budget will be funded through a 50-50 match, where the 50% of the cost will be secured by the City through the Stormwater Fund, and the remainder will be secured through CFPF grant as mentioned in the authorization letter from the Acting City Manager. The budget included the labor hours, which is the actual cost of the project. Other costs for example- activity fringe benefits, travel, equipment, supplies, construction, contracts are not applicable for this project. Also, no indirect costs have been added in the budget narrative. This application is also not requesting any loan.

Attachment 1

**Appendix A: Application Form for Grant and Loan
Requests for All Categories**

Appendix A: Application Form for Grant and Loan Requests for All Categories

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

Name of Local Government:

Category Being Applied for (check one):

☐ Capacity Building/Planning

☐ Project

☒ Study

NFIP/DCR Community Identification Number (CID) 510122

Name of Authorized Official and Douglas Keen, Interim City Manager

Title: Signature of Authorized Official: _____

Mailing Address (1): 9027 Center Street

Mailing Address (2): _____

City: Manassas **State:** Virginia **Zip:** 20110

Telephone Number: (703) 257-8212 **Cell Phone Number:** ()

Email Address: citymanager@ci.manassas.va.us

Contact and Title (If different from authorized official): _____

Mailing Address (1): _____

Mailing Address (2): _____

City: _____ **State:** _____ **Zip:** _____

Telephone Number: (____) _____ Cell Phone Number: (____) _____

Email Address: _____

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

Categories (select applicable activities that will be included in the project and used for scoring criterion):

Capacity Building and Planning Grants

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

Study Grants (Check All that Apply)

- ☒ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards, and practices.

- ☒ Conducting hydrologic and hydraulic (H&H) studies of floodplains. *Changes to the base flood, as demonstrated by the H&H must be submitted to FEMA within 6 months of the data becoming available.*
- ☐ 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.
- ☒ Pluvial studies.
- ☐ 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, freeboard, or other higher standards, RiskMAP public noticing requirements, or correcting issues identified in a Corrective Action Plan.

Project Grants and Loans (Check All that Apply – Hybrid Solutions will include items from both the “Nature-Based” and “Other” categories)

Nature-based solutions

- ☐ 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, and where the flood mitigation benefits will be achieved as a part of the same project as the property acquisition.
- ☐ Wetland restoration.
- ☐ Floodplain restoration.
- ☐ Construction of swales and settling ponds.

- ☐ Living shorelines and vegetated buffers.
- ☐ 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, or the acquisition of developed land for future conservation.
- ☐ Dam removal.
- ☐ Stream bank restoration or stabilization.
- ☐ Restoration of floodplains to natural and beneficial function.

Other Projects

- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.
- ☐ Dam restoration.
- ☐ Beneficial reuse of dredge materials for flood mitigation purposes
- ☐ Removal or relocation of structures from flood-prone areas where the land will not be returned to open space.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ 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, and where the flood mitigation benefits will **not be** achieved as a part of the same project as the property acquisition.
- ☐ Other project identified in a DCR-approved Resilience Plan.

Location of Project or Activity (Include Maps): Flat Branch Tributary-A, City of Manassas

NFIP Community Identification Number (CID#): 510122

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): Portions of the watershed are in Zone AE

Flood Insurance Rate Map Number(s) (If Applicable): 51153C0113 D

Total Cost of Project: \$185,397

Total Amount Requested \$ 92, 698.5

Amount Requested as Grant \$ 92,698.5

Amount Requested as Project Loan (Long-Term, not including short-term loans for up-front costs)
N/A

RVRF Loan Amount Requested as Project Match (Not including short-term loans for up-front costs)
N/A

Amount Requested as Short-Term loan for Up-Front Costs (not to exceed 20% of amount requested as Grant) N/A

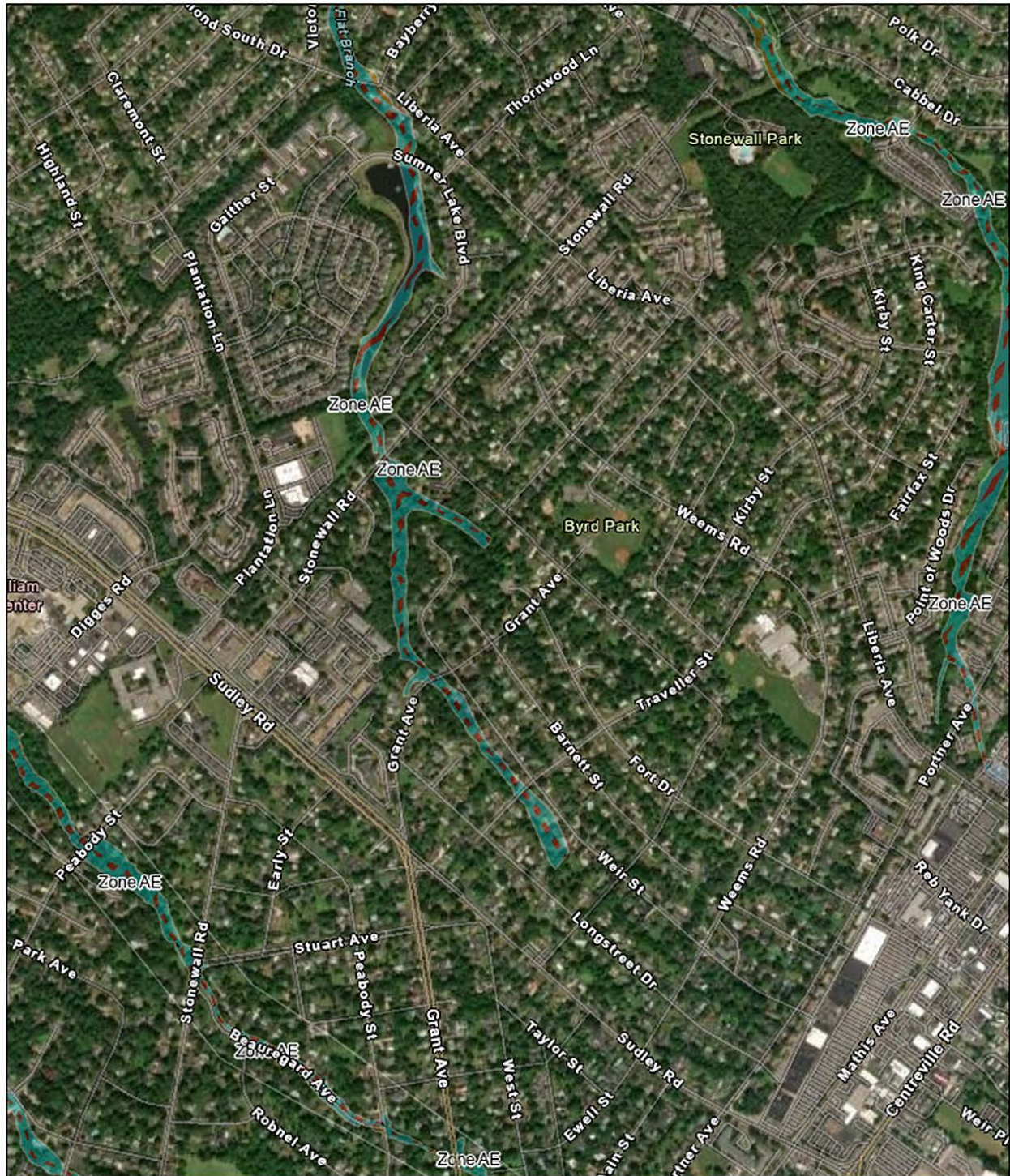
For projects, planning, capacity building, and studies in low-income geographic areas: Are you requesting that match be waived? ☐ Yes ☒ No

For informational purposes only: Supplemental information for loan requests may include but are not limited to the following. This information will be collected AFTER a CFPF award is made, prior to the signing of a grant agreement.

- General Obligation
- Lease, Revenue
- Special Fund Revenue
- Moral obligation from other government entity)
- Desired loan term
- Since the date of your latest financial statements, any new debt
- Pending or potential litigation by or against the applicant
- Five years of current audited financial statements (FY18-22) or refer to website if posted
- Capital Improvement Plan
- Financial Policies
- List of the ten largest employers in the jurisdiction.
- List of the ten largest taxpayers in the jurisdiction

All loan requests are subject to credit review and approval by Virginia Resources Authority.

Flat Branch Tributary A, City of Manassas Virginia Flood Risk Information System



11/7/2024, 12:02:18 PM

General Structures

----- Flood Structure

Flood Hazard Area

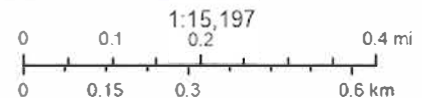
0.2% Annual Chance Flood Hazard

1% Annual Chance Flood Hazard

Area of Minimal Flood Hazard

Regulatory Floodway

Contour_SWVA_25ft



Esri Community Maps Contributors, County of Prince William, Fairfax County, VA, VGIN, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/ NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, Maxar

[illegible]

Flat Branch Tributary A, City of Manassas

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, X, AR
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard. Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. Zone X
	Future conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee. See Notes. Zone X
	Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard Zone X
	Effective LOMRs
GENERAL STRUCTURES	Area of Undetermined Flood Hazard Zone D
	Channel, culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
MAP PANELS	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Digital Data Available
	No Digital Data Available
	Unmapped

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/6/2024 at 12:58 PM, and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Flat Branch Tributary A, City of Manassas

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, V, AE, AR With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard. Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. Zone X Future conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee. See Notes. Zone X Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard Zone X Effective LOMRs Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES	channel, culvert, or Storm Sewer Levee, Dike, or Floodwall
CROSS SECTIONS	20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary
OTHER FEATURES	Coastal Transect Baseline Profile Baseline Hydrographic Feature
MAP PANELS	Digital Data Available No Digital Data Available Unmapped The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/16/2024 at 1:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Basemap Imagery Source: USGS National Map 2023

Attachment 2

Appendix B: Budget Detail

<p style="text-align: center;">Applicant Name: City of Manassas Community Flood Preparedness Fund & Resilient Virginia Revolving Loan Fund Detailed Budget Narrative Period of Performance: <u>January 2025</u> through <u>December 2025</u> Submission Date: <u>December 31, 2024</u></p>									
Grand Total State Funding Request									\$ 92,698.5
Grand Total Local Share of Project									\$ 92,698.5
Federal Funding (if applicable)									\$ -
Project Grand Total									\$ 185,397
Locality Cost Match									\$ 50%
Breakout By Cost Type	Personnel	Fringe	Travel	Equipment	Supplies	Contracts	Indirect Costs	Other Costs	Total
Federal Share (if applicable)									
Local Share						\$ 92,698.5			\$ 92,698.5
State Share – CFPF Grant						\$ 92,698.5			\$ 92,698.5
State Share – RVRF Match Loan									
Pre- Award/ Startup									
Maintenance									
Total	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 185,397	\$ -	\$ -	\$ 185,397

Attachment 3
Appendix C: Checklist All Categories

Appendix C: Checklist All Categories

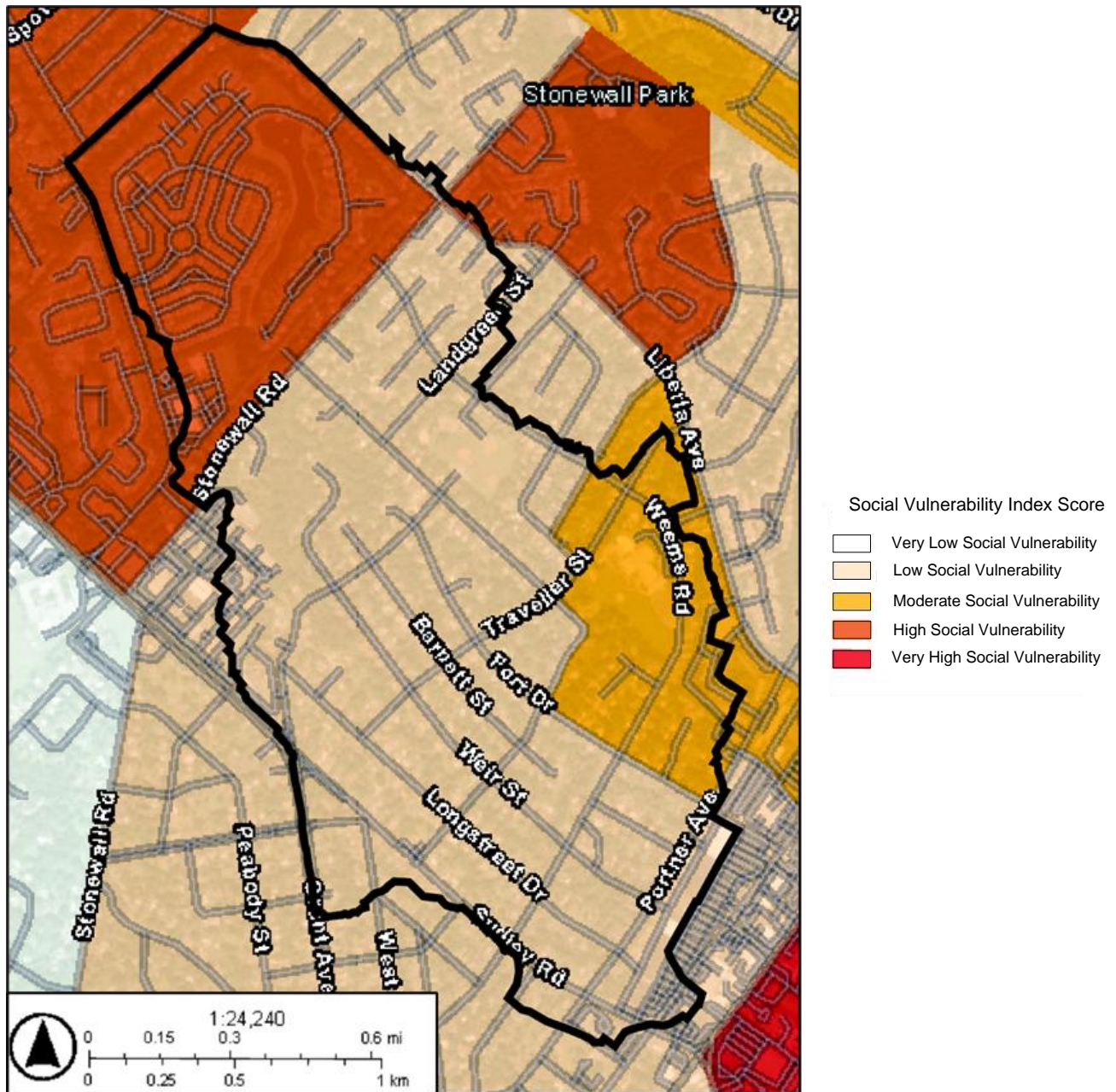
(Benefit-cost analysis must be included if the proposed Project is over \$2 million.)

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

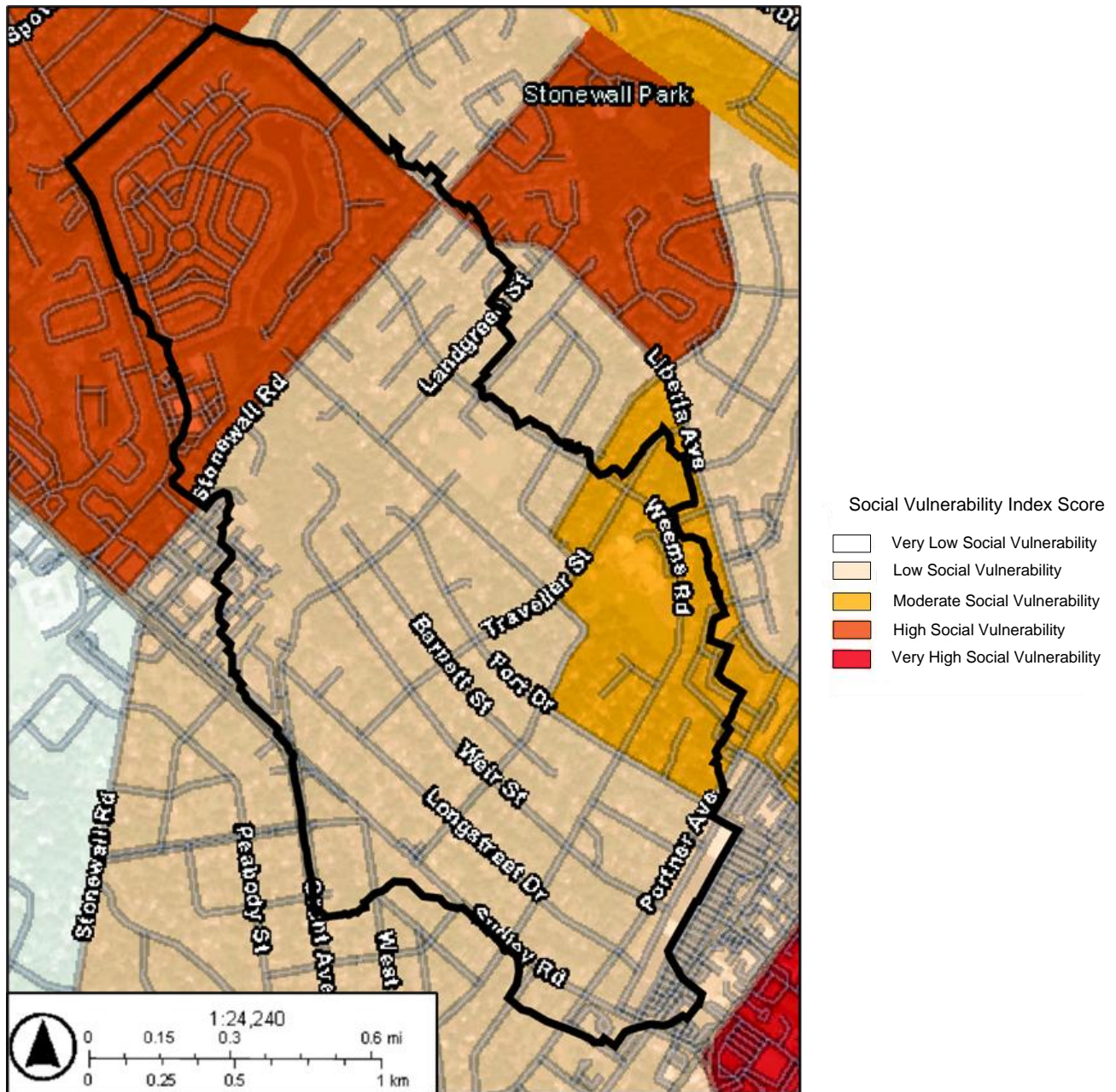
- ☒ Detailed map of the project area(s) (Projects/Studies)
- ☒ FIRMette of the project area(s) (Projects/Studies)
- ☒ Historic flood damage data and/or images (Projects/Studies)
- ☒ A link to or a copy of the current floodplain ordinance
(https://library.municode.com/va/manassas/codes/code_of_ordinances?nodeId=PTIICOOR_CH66FL_ARTIIFLMA)
- ☐ Non-Fund financed maintenance and management plan for project extending a minimum of 10 years from project close N/A
- ☒ A link to or a copy of the current comprehensive plan
(<https://cms9files.revize.com/manassasva/Community%20Development/Comp%20Plan/Chapter%208%20-%20Environmental%20Sustainability%20&%20Health%20web.pdf>)
- ☒ Social vulnerability index score(s) for the project area from VFRIS SVI Layer
- ☐ If applicant is not a town, city, or county, letters of support from affected localities N/A
- ☐ Letter of support from impacted stakeholders N/A
- ☒ Budget Narrative
- ☐ Supporting Documentation, including the Benefit-Cost Analysis tool or narrative (for projects over \$2 million) N/A
- ☒ Authorization to request funding from the Fund and/or RVRP Match loan from governing body or chief executive of the local government
- ☐ Signed pledge agreement from each contributing organization N/A
- ☒ Detailed budget and narrative for all costs

Flat Branch Tributary A, City of Manassas- Social Vulnerability Index Score



Tract	Vulnerability Score	Classification
910202.04	1.46	High Social Vulnerability
910201.03	-0.34	Low Social Vulnerability
910201.06	-0.25	Low Social Vulnerability
910201.03	0.54	Moderate Social Vulnerability
Composite	0.35	Moderate

Flat Branch Tributary A, City of Manassas- Social Vulnerability Index Score



Tract	Vulnerability Score	Classification
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