

Waverly Hills/Cherrydale - Stormwater Update

Community Meeting With Department of Environmental Services Stormwater Program

September 23, 2020

Previous update February 19, 2020



Introductions

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Overview / Agenda

GENERAL VISION – FLOOD RESILIENT ARLINGTON

- ❑ Engineering, design, development and policy advancements
- ❑ Enhanced public-private interface
- ❑ Greater integration of all Program components
- ❑ Adaptive Management and Climate Resiliency

SUMMARY – ACTIONS AND INITIATIVES

- ❑ Status of Emergency Response and Life Safety, and Communications
- ❑ Recommendations for CIP Strategies & Policy in Re/development
- ❑ Updated Land Disturbance Activity Program (LDA 2.0)
- ❑ RAMP

GENERAL UPDATES ON Waverly Hills Stormwater Solutions

- ❑ Spout Run – Status Engineering Analysis
- ❑ Distributed Detention – Woodstock Park

Next Actions / Steps

- ❑ Bond Referendum
- ❑ Report Back to Spout Run Civic Associations

A Path to a More Flood Resilient Arlington

Climate-Ready



Capacity Improvements

Watershed-scale projects and local capacity improvements and expansions to mitigate high risk flood areas



Water Quality

Projects to repair damaged streams and infrastructure

Reduce pollution
Comply with MS4 permit requirements



Maintenance Capital

Supports state of good repair to replace and maintain system assets

Risk Mitigation



**Public Infrastructure
Improvements** designed
for variable near-mid-
long-term capacity needs

**Re/development
Standards** for Resilience
and Risk Mitigation

**Residential & Commercial
Property-Owners** --
Custom Measures to
Enhance Property
Resilience

Advanced Approaches for Public & Private Implementation

Strategic & Programmatic Updates

Stormwater Master Plan (SMP) remains a living document following numerous updates since 1957.

Risk Assessment and Management Plan, or RAMP (2021 Q1) provides updated climate projections (2040 and 2070) and new capacity studies to identify system gaps. The RAMP maps critical community facilities in all sectors, to support vulnerability and risk assessments. The result is multi-resource asset for resiliency planning, high-performance blended engineering solutions, and measuring the “cost of inaction”.

Stormwater Interdepartmental Working Group (formed Nov 2019), to inform Emergency Planning/Response, Enhanced Communications, Strategic Engineering and Capital Programming, and Policy Innovations for Re/Development.

Conceptual Engineering Plans. Blended or hybrid approaches that meet 10-year design storm + model overland relief paths in critical watersheds.

Strategic & Programmatic Updates

NEW: FEMA Update to Countywide Flood Insurance Rate Maps (FIRM). Draft maps released September 18, 2020 with public comment period to follow.

Updated Land Disturbance Activity Program (LDA 2.0). Program enhancements that expand developer options for on-site controls of runoff, streamlined templates and processes, and piloting new measures to incentivize and increase on-site effectiveness.

System Asset Inventory. Updating inventory to use age as a proxy for condition. Supports more strategic allocation of maintenance and capital maintenance funds.

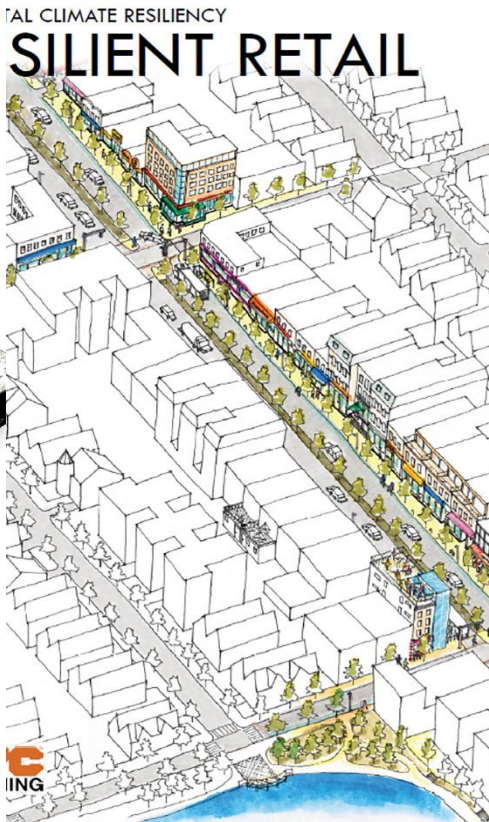
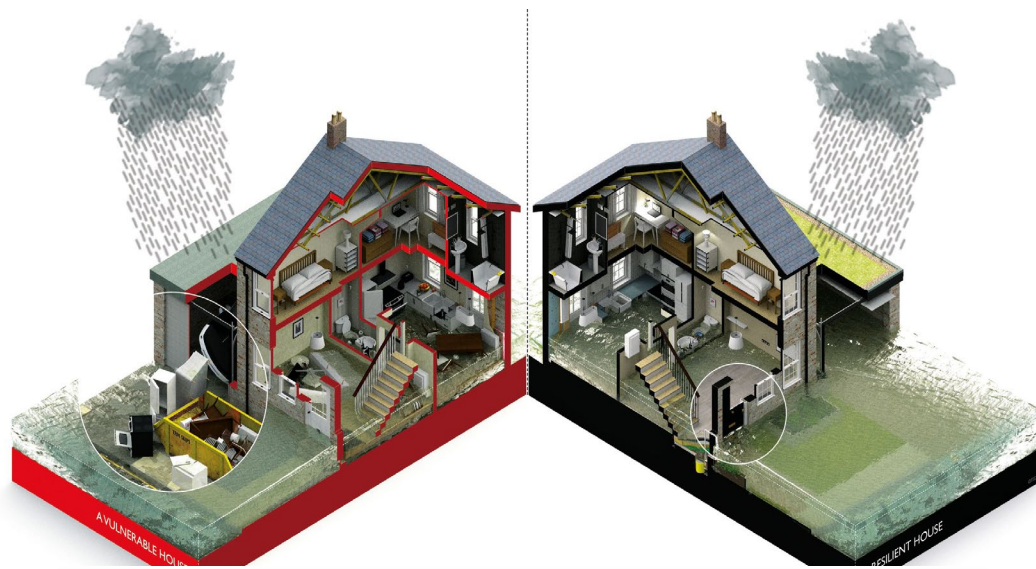
Utility Feasibility Study (2020-21), as an option for expanding funding/financing mechanisms and options, where rates are tied to scale of impervious.

Capital Project Execution. Refining project roles & responsibilities for improved execution.

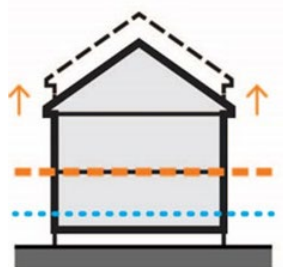
RAMP – Application(s)



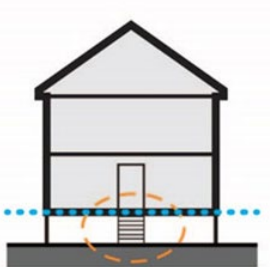
- ❑ Map County’s “urban” floodplains (outside FEMA floodplains)
- ❑ Measures both Flooding and Sea Level Rise/Storm Surge Risks
- ❑ Define and value risks from flooding
- ❑ Measure true value(s) of stormwater investments
- ❑ Support cross-sector (e.g., transportation) climate adaptation planning
- ❑ Drive innovations in engineering and policy solutions
- ❑ Informs flood resilient design and construction standards
- ❑ Expands communications platform



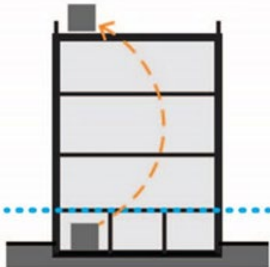
SW Working Group



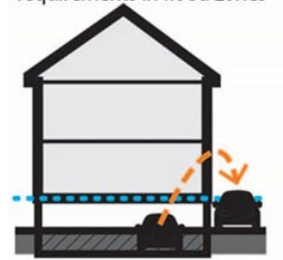
Height
must recognize elevation requirements in flood zones



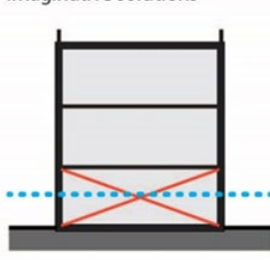
Access
need for stairs/ramps requires imaginative solutions



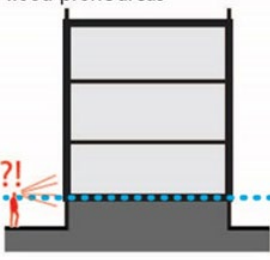
Mechanical Systems
must allow relocation out of flood-prone areas



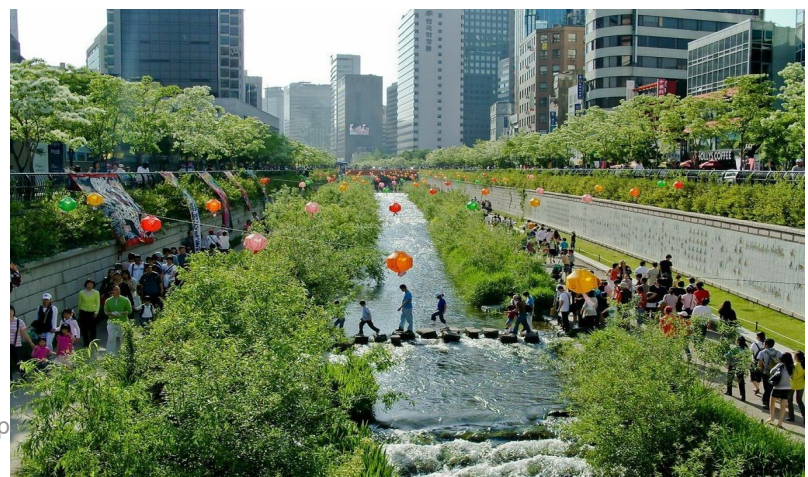
Parking
may not be possible below ground



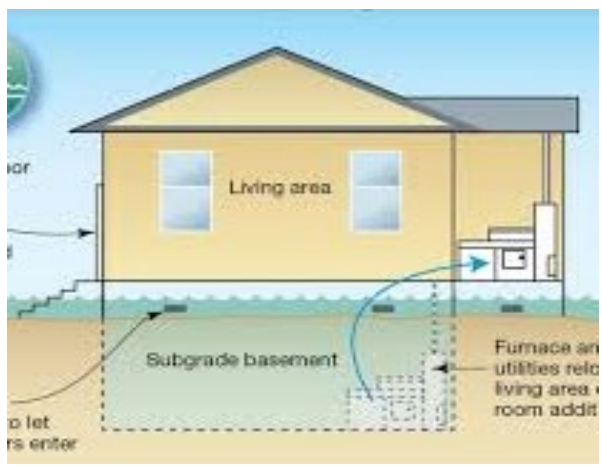
Ground Floor Use
buildings may be allowed only limited use of ground floors



Streetscape
limit negative effect of blank walls on streetscape



Prop

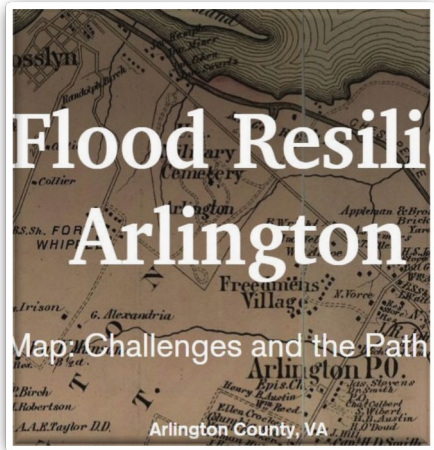


SWG - Prior Consideration and Implementation



Emergency Response & Life Safety

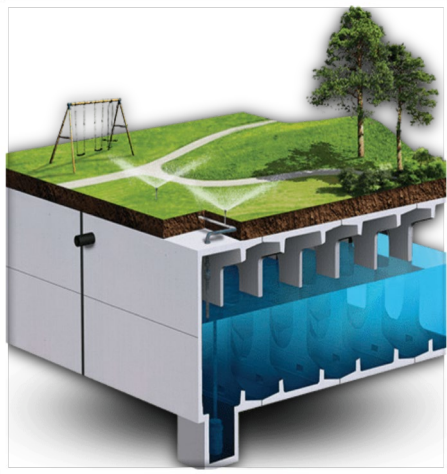
- Best practices for flood warning systems
- Flood sensors and potential locations
- Develop cost estimates
- Recommendations delivered to County Board as part of the County Manager's Feb 2020 Report;
- Greenlight for two Flood Warning installations



Communications

- Integrated and up-to-date website for program
- Story Map to tell the story of stormwater and development
- Opportunities for continuous public input
- Identify and develop customized flood complaint reporting tool
- Promote Flood Resilient Arlington on social media and other County channels
- Continuous and ongoing from August 2019

SWG - Pending Focus Areas – General Objectives



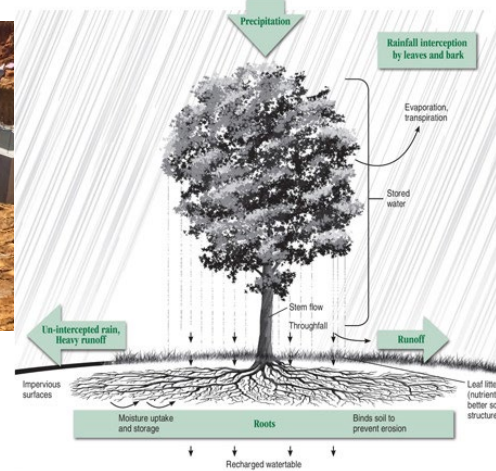
Strategic Upgrades to CIP and Engineering Design

- Increase capacity
- Engineering changes – performance, flexibility, long-term cost-effectiveness
- Revisit Storm Design Standard
- Improve execution framework



Policy in Re/Development

- Modify re/development for flood resilient design/ construction
- Inform private sector application of measures
- Risk mitigation approach
- Consider practice AND policy updates
- Use inundation maps as “urban floodplains”?



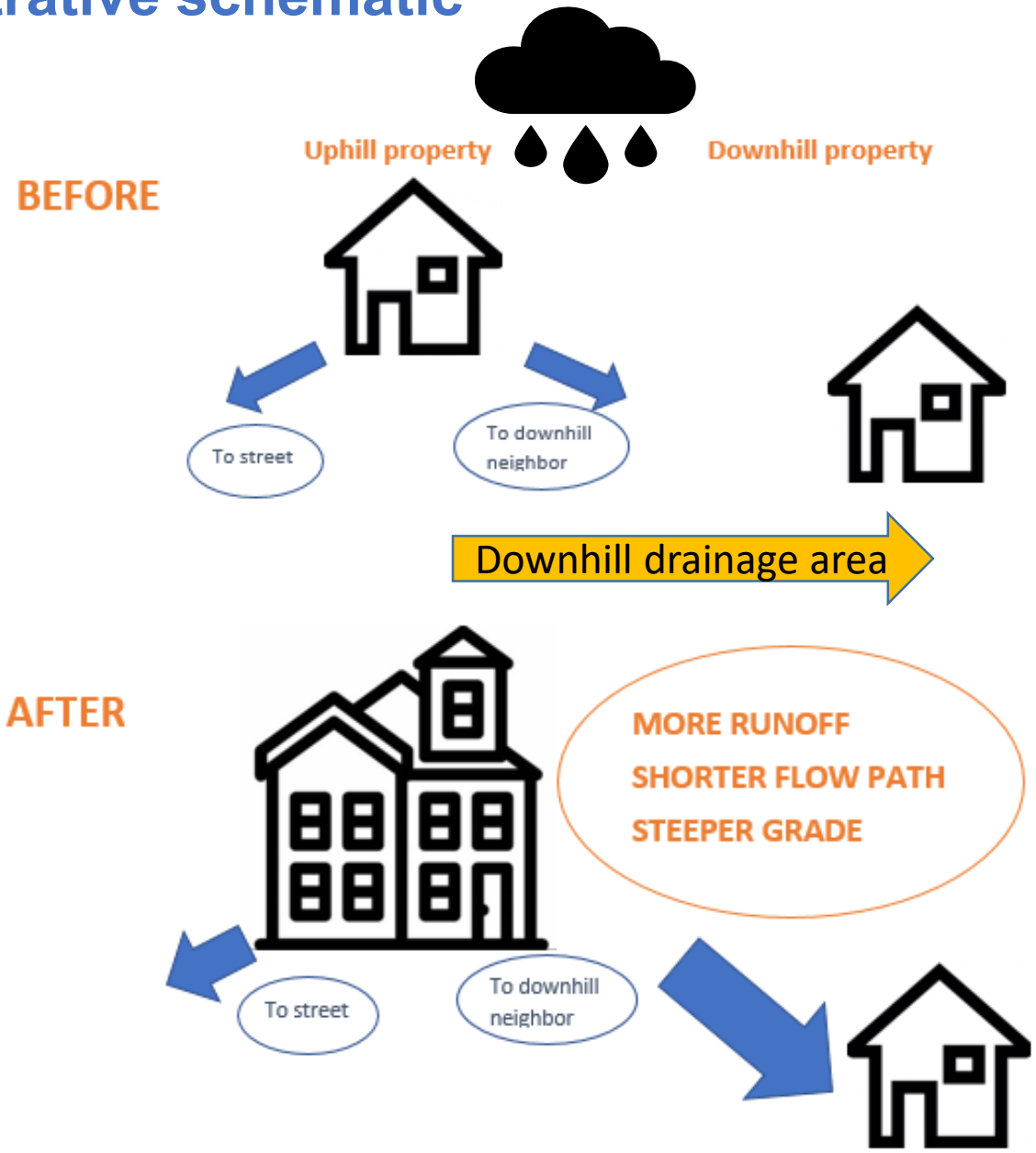
LDA 2.0

Primary Goal of LDA 2.0

Recalibrate the program to improve mitigation of off-lot stormwater impacts from new single-family homes in response to a more demanding development and precipitation environment

- Place greater emphasis on managing stormwater runoff quantity (volume and flow) over regulatory stormwater quality credit, while not putting the County at a compliance disadvantage for its MS4 permit obligations
- Improve plan preparation and review efficiency
- Maintain feasibility for builders to construct and homeowners to operate and maintain stormwater facilities on their properties.

Illustrative schematic



Alternative compliance option provides stronger, targeted, and more reliable downhill property protection

“Slow it down, soak in”

Less official water quality credit in exchange for increased detention performance and reliability

After the Community Meeting in February

- Developed methods for public input into Budget processes:
 - Web portals:
<https://www.engage.arlingtonva.us/collections/how-should-we-be-spending-money>
- Developed web based information regarding flood risk for residents
<https://newsroom.arlingtonva.us/release/stormwater-flooding-flood-resilient-arlington/>
<https://www.arlingtonva.us/flooding/>
- Held a Stormwater CIP Online Meeting: June 30
- RAMP is proceeding
- One Year CIP Adopted

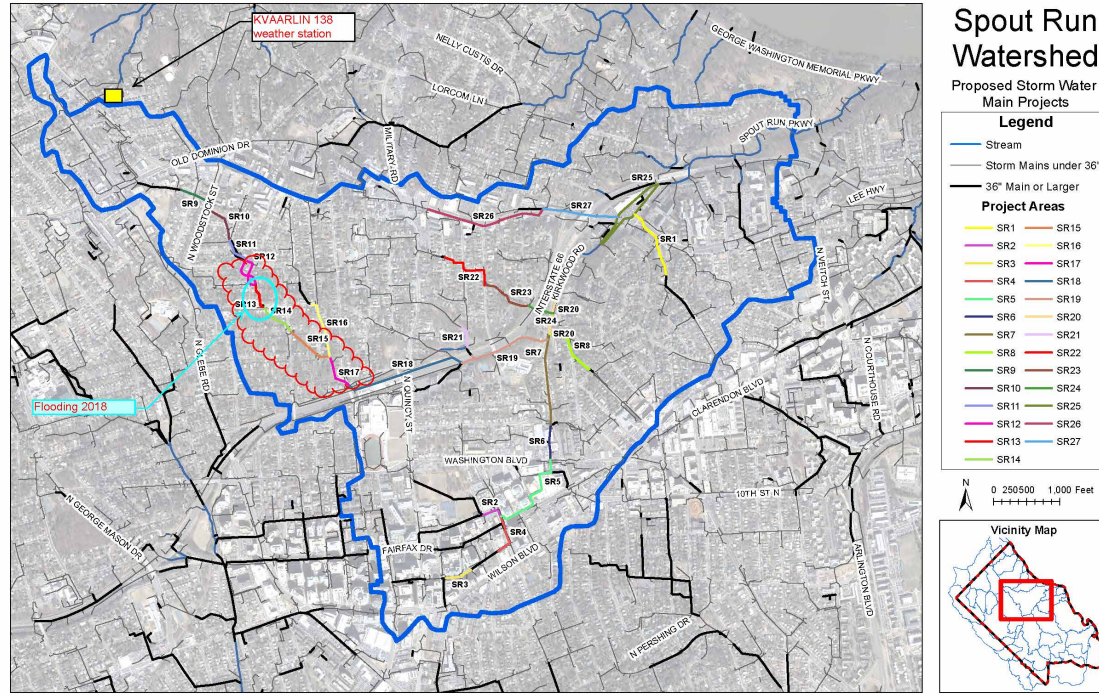
In February 2020, we outlined the next steps for the Spout Run Watershed Scale Project in Waverly Hills:

- Continue working with Parks regarding Woodstock Park ✓
- Continue with land acquisition pilot case ✓
- Refine concept plans and estimates ✓
- Continue with budget process – especially CIP ✓
- Continuing dialogue and outreach with Spout Run CAs and Neighbors ✓

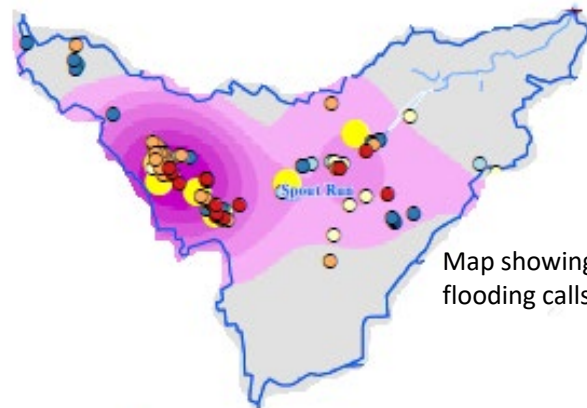


Progress has been made on all of the above!

Spout Run Watershed



Stormwater Masterplan Projects



Map showing concentration of flooding calls

- **Multi-phase & Watershed Scale Analysis**

- Phasing still under development

- Additional flooding has occurred in some areas

- **Blended approach**

- Distributed detention (public / private land)
 - **Current focus is Woodstock Park**
 - Overland relief (property acquisition)
 - Pipe expansion and tertiary infrastructure

- **Mitigate repetitive loss/threats**

- Residential
 - Affordable Housing Complex(es)
 - Transportation interruptions
 - Commercial property
 - Public safety

- **Key Assumption**

- Passage of bond referendum

Spout Run/Waverly Hills – Current Status of Engineering Analysis

DES analyzing entire watershed to determine:

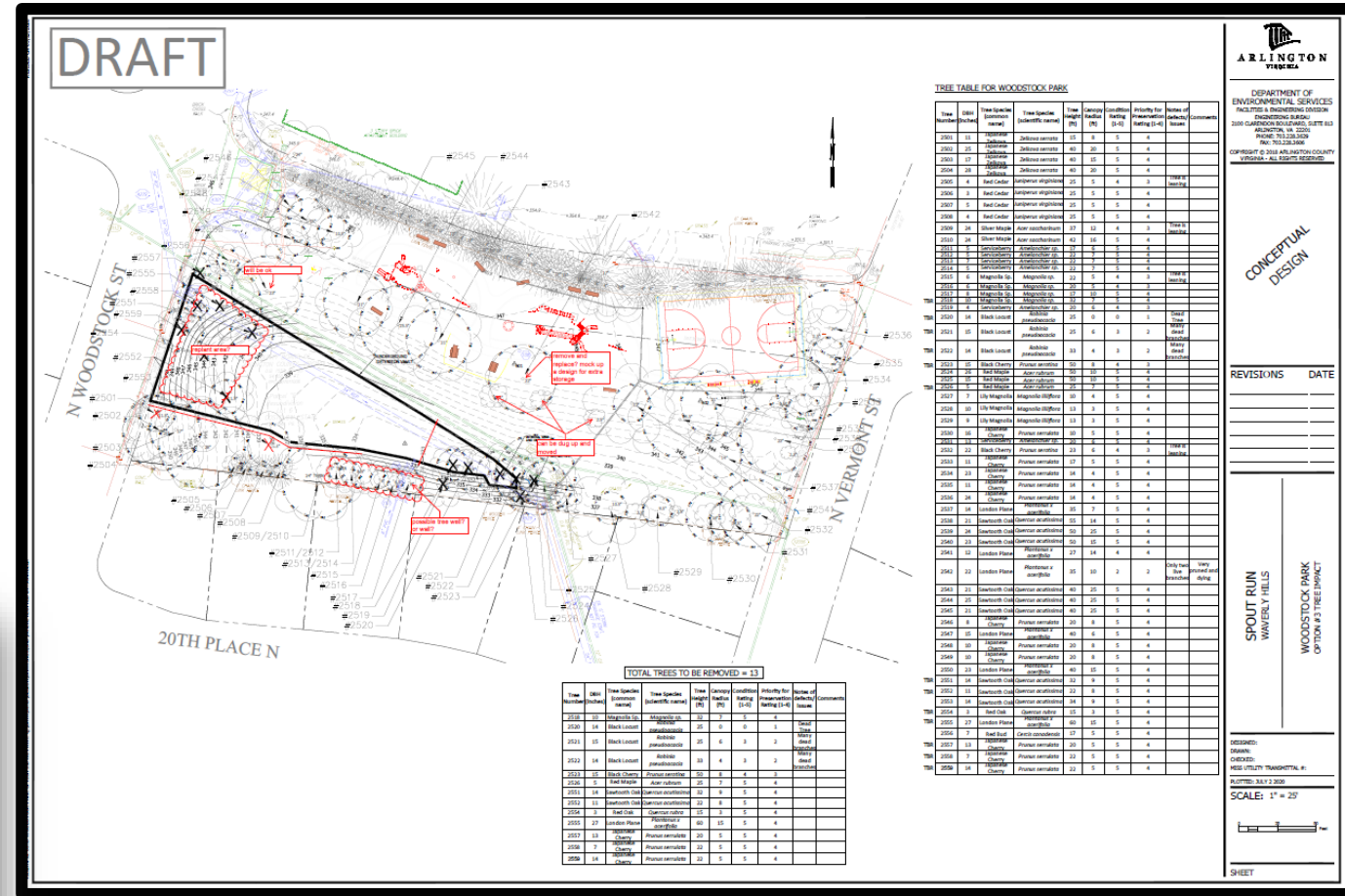
- detention options- multiple have been considered
- pipe upgrades
- overland flow paths
- potential property acquisitions
 - (some suggested by residents themselves, or the local civic associations)

Analysis is now focused on Woodstock Park for underground detention.

- DES and DPR are worked closely to develop multiple concepts.
- Focusing on one option to refine

Currently developing:

- Concept plans
- Cost estimates
- Geotechnical investigations
- Tree Surveys and Assessments
- Topographic Survey
- Schedules

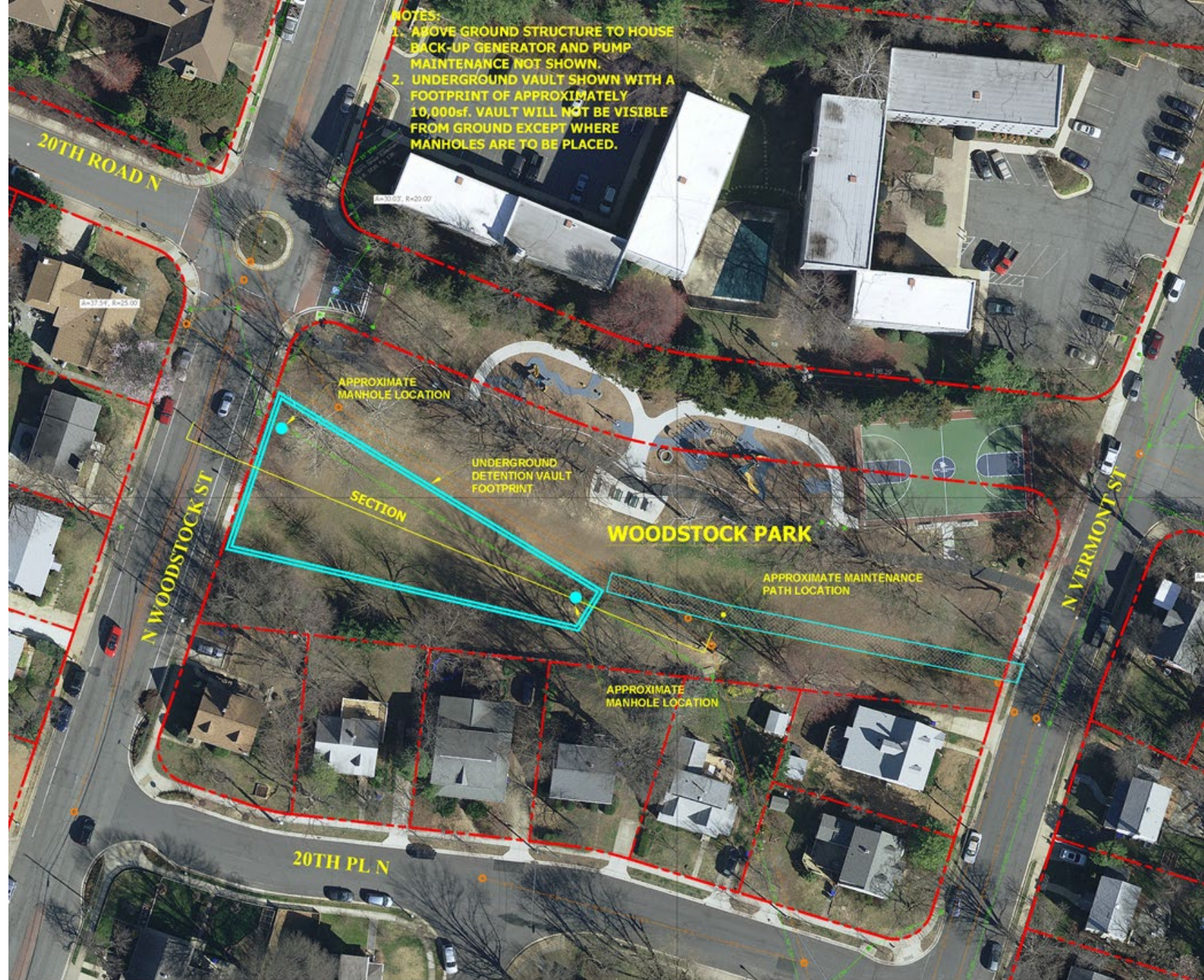


Tree Survey

Preliminary overland flow path

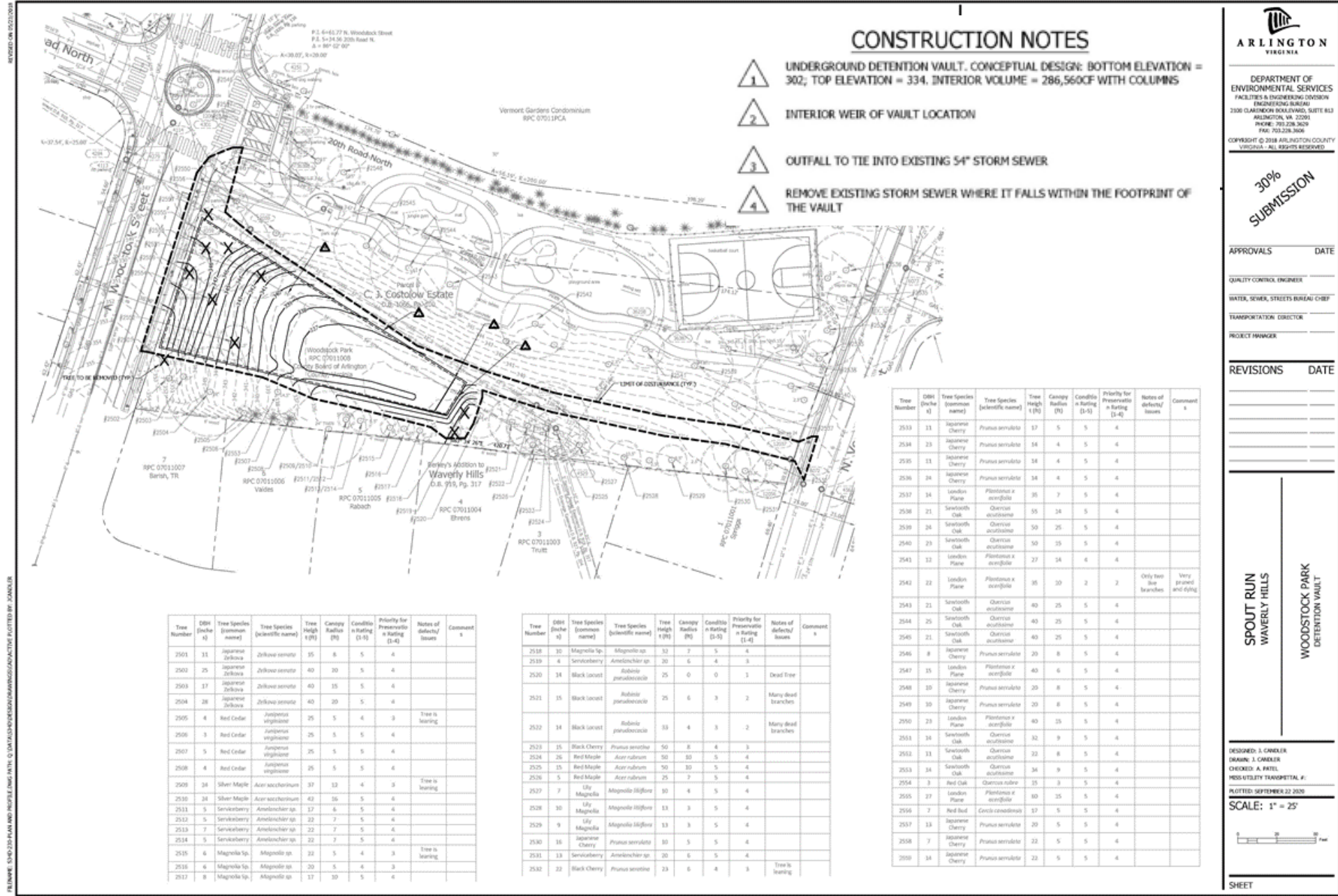
Woodstock Park Preferred Option

1. Footprint (10,000 sf.) Minimizes Park Disruption
2. Underground vault not visible from surface
3. Vault provides 270,000 cf storage. Represents approximately 80% of volume needed to minimize flooding in targeted area with most severe flooding (19th and 18th St. areas)
4. Minimizes Tree Impacts
5. Provides Storage for 10-Year Storm
6. Requires Pump and maintenance access.
7. A small above ground structure to house pump and backup generator needed.
8. Structural, geotechnical, and mechanical preliminary design underway



Woodstock Park Preferred Option

1. Minimizes Tree Impacts
2. Park to remain open during construction
3. Worked closely with DPR to determine footprint
4. Minimizes Park Disruption
5. Requires Pump and maintenance access
6. Structural, geotechnical, and mechanical preliminary design underway



ARLINGTON VIRGINIA

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30% SUBMISSION

APPROVALS _____ DATE _____

QUALITY CONTROL ENGINEER _____

WATER, SEWER, STREETS BUREAU CHIEF _____

TRANSPORTATION DIRECTOR _____

PROJECT MANAGER _____

REVISIONS _____ DATE _____

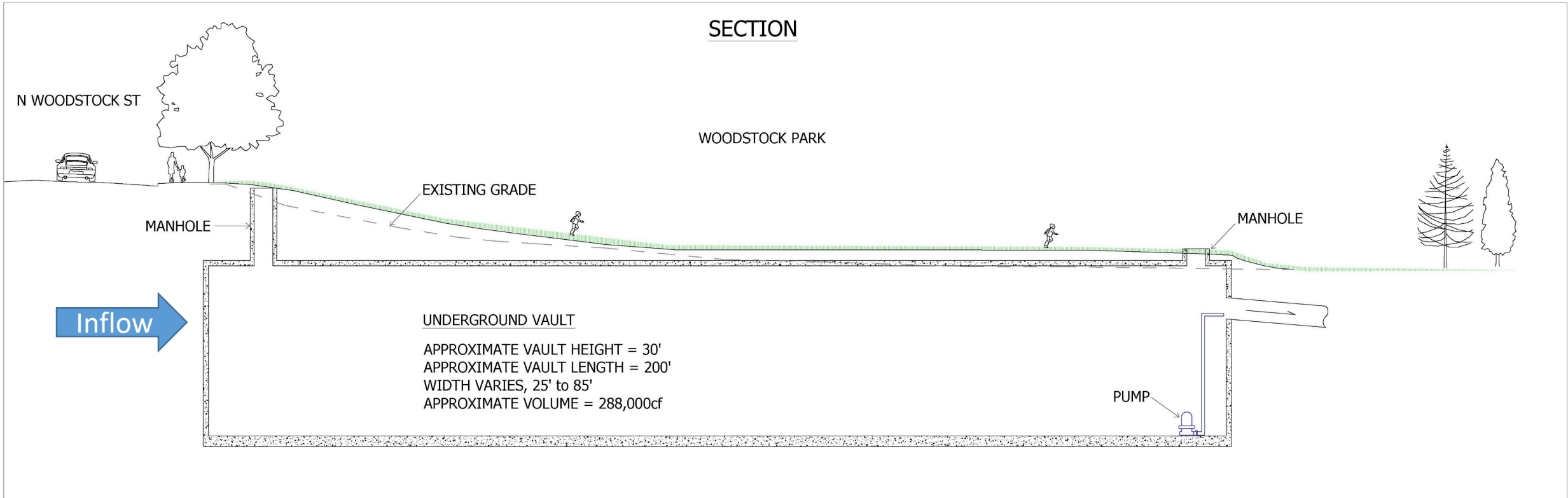
SPOUT RUN WAVERLY HILLS
 WOODSTOCK PARK DETENTION VAULT

DESIGNED: J. CARLIER
 DRAWN: J. CARLIER
 CHECKED: A. FAREL
 MISS UTILITY TRANSPORTAL #:
 PLOTTED: SEPTEMBER 22, 2020

SCALE: 1" = 25'

SHEET

Woodstock Park – Detention Vault, Section



- Maintains sledding hill and minimizes tank visibility from above the ground
- Pump is needed due to depth of vault in comparison to outfall

What's next - Bond Referendum (Question 5)

One of 5 questions

5. Stormwater

\$50,840,000

Shall Arlington County contract a debt and issue its general obligation bonds in the maximum principal amount of \$50,840,000 to finance, together with other available funds, the cost of various capital projects for the County Stormwater Program?

This proposal will fund a variety of County stormwater projects. The proposed bonds are expected to fund the following projects:

Capacity Improvements

- Spout Run Watershed (\$26,890,000)
- Flood Risk Reduction and Capacity Improvements (\$4,980,000)
- Land Acquisition (\$4,800,000)
- Torreyson Run Watershed (\$2,380,000)
- Lubber Run Watershed (\$750,000)

Water Quality Improvements

- Ballston Pond (\$3,840,000)
- Watershed Retrofits (\$500,000)

Maintenance Capital Projects

- Dumbarton Culverts (\$6,700,000)

The County Board may reallocate bond funds among other stormwater projects within the County's Capital Improvement Plan, as amended from time to time, to the extent necessary or desirable.

Stormwater Proposed CIP

(\$ in millions)

	FY 2021 Funding	FY 2022 Funding	Total Estimated Cost (over 10 years)
Capacity Improvements	\$7.8	\$11.6	\$120.8
Water Quality	4.0	4.0	33.0
Maintenance Capital	2.8	5.5	35.1
Total	\$14.6	\$21.1	\$188.9

- Will require \$2.3M in additional funding in FY 22

Capacity Improvement Projects (\$ in millions)

Goal: Reduce flooding to protect public safety, reduce likelihood of damaged buildings or homes; enhance safe and timely transportation of people, goods and services.

Project Name	Description	FY 2021	FY 2022	10-Year Cost Estimate
Spout Run Watershed	FY 2021 funding for design and land acquisition. Funding required through FY 2025 for construction	\$1.4	\$4.5	\$29.9
Torreyson Run Watershed	FY 2021-22 funding for design and capacity project at new Reed School. Funding required through FY 2030 to complete construction.	0.7	1.7	15.7
Lubber Run Watershed	FY 2021 funding for design. Funding require through FY 2030 to complete construction	0.3	1.0	15.2
Flood Risk Reduction & Capacity Improvements	Drainage improvement projects on a sub-watershed scale, as well as installation of tertiary system assets, to address localized repetitive flooding.	3.0	2.0	33.7
Land acquisition	Funding for strategic opportunities in watershed high risk flood areas to provide critical overland relief	2.4	2.4	26.2
Total		\$7.8	\$11.6	\$120.8

Stormwater Bond Referenda

Proposed Bond Referenda Projects	Proposed Bond Funding (\$ in millions)
Spout Run Watershed ⁽¹⁾	\$26.89
Torreyson Run Watershed	2.38
Lubber Run Watershed	0.75
Flood Risk Reduction & Capacity Improvements	4.98
Land Acquisition	4.80
Ballston Pond ⁽¹⁾	3.84
Watershed retrofits	0.50
Dumbarton Culverts ⁽¹⁾	6.70
Total	\$50.84

- (1) Bond funding is proposed for these projects for FY 2021, FY 2022 and the years beyond in order to fund contractual obligations for construction. Construction for these projects will take several years.*
- (2) Stormwater bond referenda does not affect overall County debt capacity; stormwater is funded through a dedicated funding source*