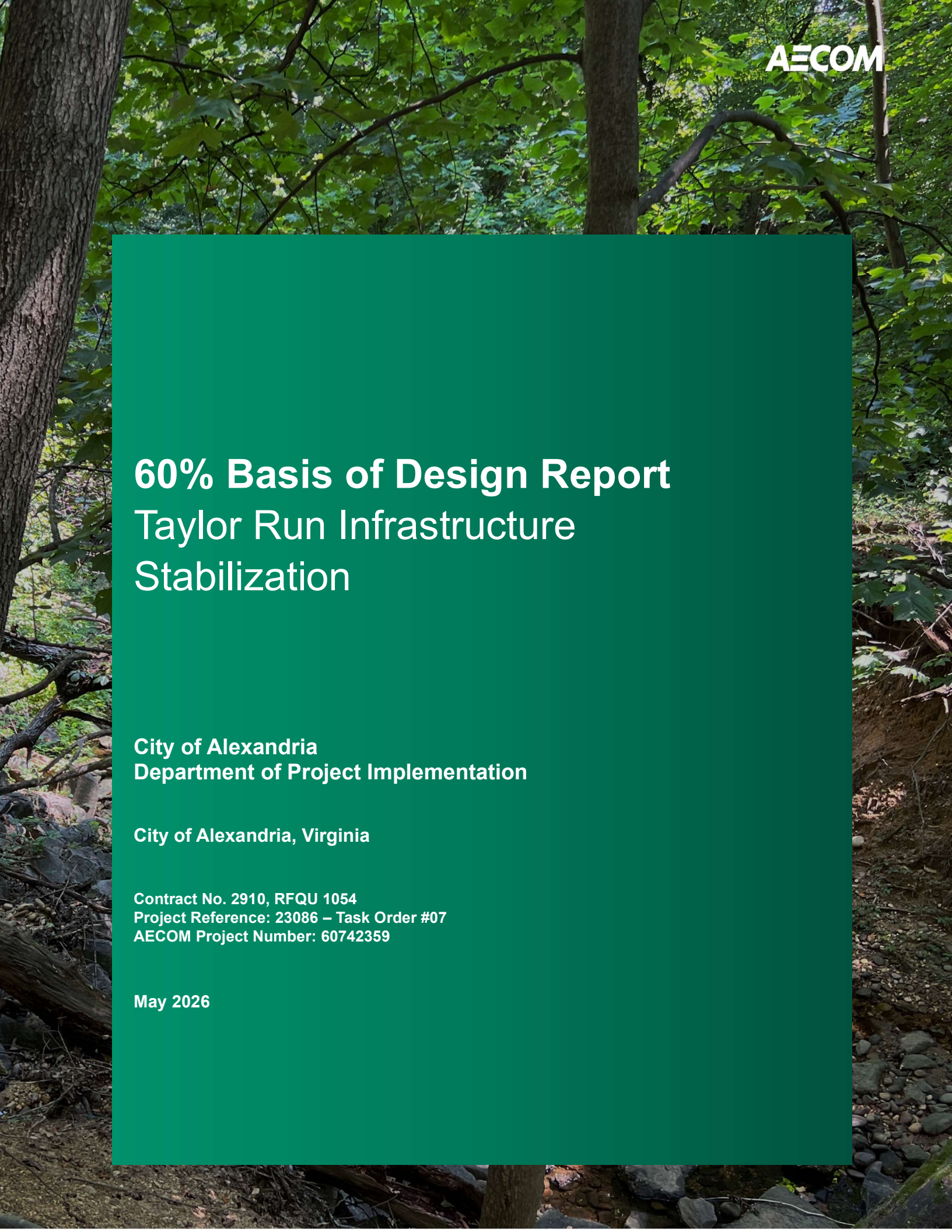

60% Basis of Design Report
Taylor Run Infrastructure Stabilization

City of Alexandria
Department of Project Implementation

City of Alexandria, Virginia

Contract No. 2910, RFQU 1054
Project Reference: 23086 – Task Order #07
AECOM Project Number: 60742359

May 2026

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Executive Summary

The Taylor Run Infrastructure Stabilization Design Project (Project) is located in the City of Alexandira, Virginia. The goal of the project is to implement a 'minimal stabilization' approach to protect at-risk infrastructure and provide stream stabilization along approximately 590 linear feet of non-continuous stream necessary to provide long-term infrastructure protection.

The project has been divided into four distinct areas, each addressing specific infrastructure vulnerabilities:

1. **Upstream Stormwater Outfall:** Currently in disrepair, surrounding stream banks are actively eroding, and outfall discharges into an undersized plunge pool causing excessive bed scour.
2. **Sanitary Sewer Crossing 1 and Stormwater Outfall:** Sanitary sewer crossing is at-risk of structural damage, adjacent stormwater outfall in deteriorating, contributing to eroding stream bed and banks.
3. **Exposed Sanitary Sewer Manhole:** Exposed sanitary sewer manhole is exposed and vulnerable to damage from storm flows or debris.
4. **Sanitary Sewer Crossing 2 and Retaining Wall:** The roots of a large tulip poplar tree are exposed, putting the tree at risk of falling, stream bank and bed erosion has exposed an existing sanitary sewer crossing risking structural damage, and a nearby retaining wall is failing due to insufficient embedment depth.

Updated topographic and tree surveys were completed to ensure the most current site data was used in the design process. The project areas were evaluated during site visits, and items of note included erosion undermining trees, destabilizing stream banks, and threatening City infrastructure. Debris blockages occur throughout the stream and consist primarily of woody debris and concrete rubble. Stormwater and sanitary sewer infrastructure, including two stormwater outfalls, two exposed pipe crossings and an exposed sanitary sewer manhole, is susceptible to damage. To proceed with construction, a Nationwide Permit will be required for activities related to maintenance, bank stabilization, and utility line protection.

Taylor Run has a FEMA designated Zone AE floodplain, necessitating that proposed solutions do not result in adverse impacts, such as increases downstream water surface elevations. A hydraulic analysis using FEMA effective flows has been completed to establish existing conditions. Proposed conditions will be modeled and submitted for review in future design phases.

Proposed stabilization measures include constructing gravity retaining walls to stabilize stream banks and protect the exposed sanitary infrastructure, replacement of deteriorated outfall headwalls, encasement of exposed sanitary sewer pipes, establishment of a plunge at the start of the project reach, and install boulder cascades to dissipate energy through the project areas supporting long term stability and reduced project grading extents.

The engineer's Opinion of Probable Construction Cost (OPCC) at the 60% design phase is approximately $1,795,000. This estimate includes a 20% contingency to account for design uncertainties and a 4.3% escalation factor to reflect anticipated inflation between now and the mid-point to construction.

1 Introduction

The Taylor Run Stream Restoration Project, conducted during 2019–2020 under Task Order No. 22 of Contract No. 0000292, was initiated to stabilize the stream while generating nutrient and sediment reduction credits to support the City of Alexandria's compliance with Chesapeake Bay cleanup mandates.

Following stakeholder engagement and evaluation of project goals, the decision was made to pursue a more 'minimal stabilization' approach, focusing primarily on the protection of at-risk infrastructure rather than broader ecological restoration goals and objectives.

AECOM, in collaboration with the City of Alexandria Department of Project Implementation and Transportation and Environmental Services, has prepared this 60% Design Report to document the development of the Taylor Run Infrastructure Stabilization Design Project. The project focuses on implementing a minimal stabilization approach to protect at-risk infrastructure along Taylor Run. Designs for four key project areas emphasize targeted interventions to address exposed sanitary sewer infrastructure, deteriorating stormwater outfalls, eroding stream bed and banks, exposed critical root zone of a large tulip poplar tree, deteriorating retaining wall, and an undersized plunge pool where the stream daylights.

Construction access and site disturbance will be carefully planned to minimize tree impacts and reduce disruption to the surrounding community. This minimal approach was selected over a more extensive stream restoration strategy based on stakeholder input favoring reduced environmental and community impacts.

The report and accompanying design documents outline recommended strategies to provide long-term stability to vulnerable infrastructure, maintain existing systems, and guide further design development and regulatory review.

1.1 Project Site Overview

Taylor Run is within the Mid-Atlantic Region within the Middle Potomac-Anacostia-Occoquan (HUC8: 02070010), Cameron Run-Potomac River (HUC10:0207001003), and Cameron Run (HUC12: 020700100302) watersheds. The stream discharges into Holmes Run, which ultimately flows into the Potomac River and then the Chesapeake Bay.

The project is situated in a developed urban area across two parcels owned by the City of Alexandria. The contributing drainage area encompasses approximately 333 acres of densely developed land. Surrounding the limits of disturbance (LOD) are residential neighborhoods, a community center, a

school, open space, and forested buffers. The total watershed imperviousness is estimated at approximately 38%, contributing to increased runoff and deteriorating infrastructure conditions.

Four distinct project areas (**Figure 1**) were identified for necessary stabilization of at-risk infrastructure:

1. **Upstream Stormwater Outfall:** Currently in disrepair, surrounding stream banks are actively eroding, and outfall discharges into an undersized plunge pool causing excessive bed scour.
2. **Sanitary Sewer Crossing 1 and Stormwater Outfall:** Sanitary sewer crossing is at-risk of structural damage, adjacent stormwater outfall in deteriorating, contributing to eroding stream bed and banks.
3. **Exposed Sanitary Sewer Manhole:** Exposed sanitary sewer manhole is exposed and vulnerable to damage from storm flows or debris.
4. **Sanitary Sewer Crossing 2 and Retaining Wall:** The roots of a large tulip poplar tree are exposed putting the tree at risk of falling, stream bank and bed erosion has exposed an existing sanitary sewer crossing risking structural damage, and a nearby retaining wall is failing due to insufficient embedment depth.

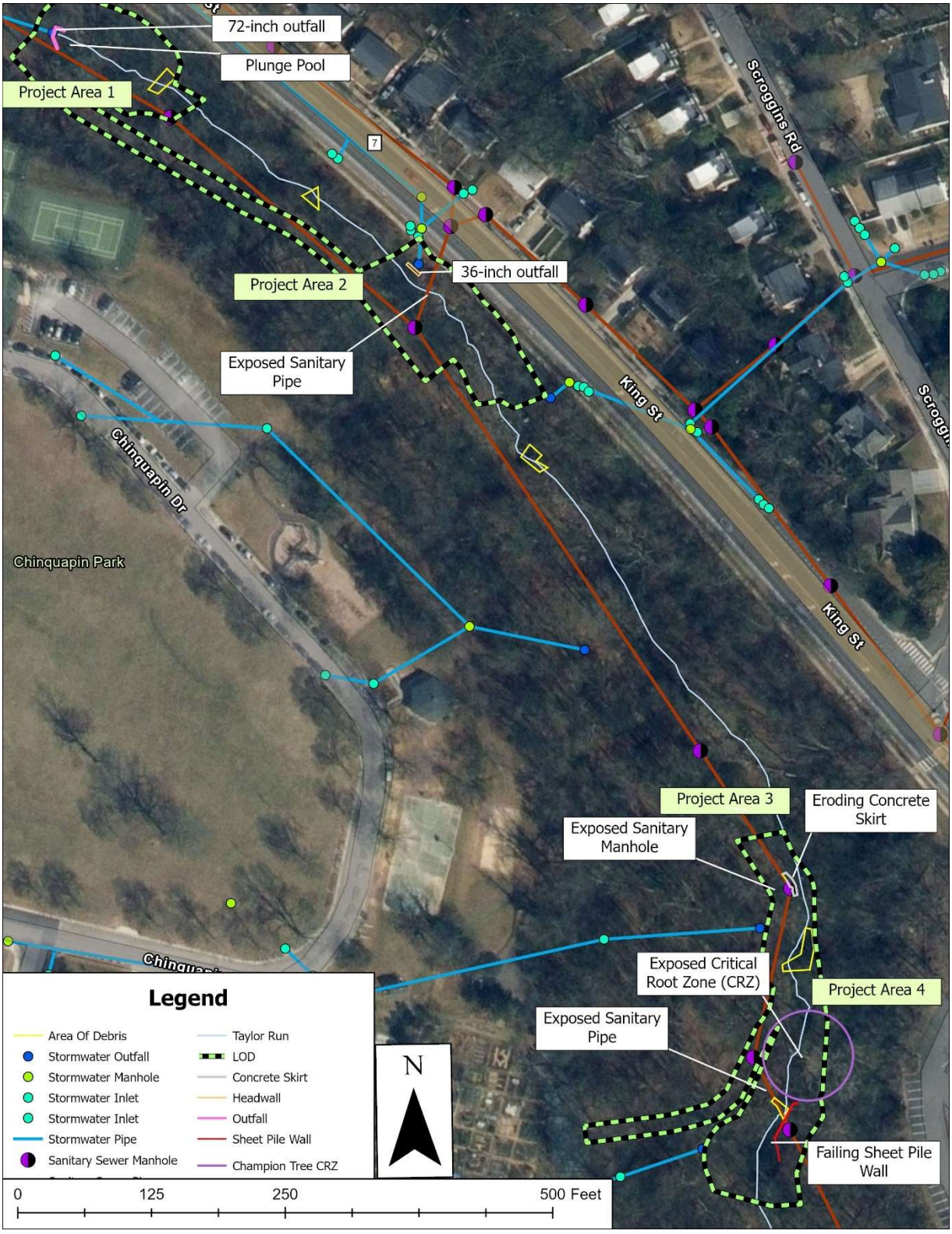


Figure 1: Taylor Run Project Location Map and LOD

1.2 Project Goals and Objectives

The Project is guided by a set of clearly defined goals and supporting objectives. These elements shape the conceptual design and ensure alignment with the City of Alexandria's priorities, as outlined in the Request for Qualifications (RFQ). The goals represent the overarching outcomes the project seeks to achieve, while the objectives define the specific actions and deliverables that support those goals.

1.2.1 Project Goals

The primary goals of the project are to:

1. Protect critical at-risk infrastructure from erosion and damage, including exposed sanitary sewer lines and stormwater outfalls.
2. Preserve and protect ecological features, such as the existing wetlands and mature trees within the park.
3. Stabilize streambanks to reduce excessive sedimentation and improve hydraulic function.
4. Minimize environmental and community impacts during construction and implementation.
5. Ensure cost-effective design and construction, aligned with budgetary and regulatory requirements.

1.2.2 Project Objectives

To achieve these goals, the project will:

- Develop fully engineered plans that meet all applicable regulatory and technical standards.
- Ensure design and construction costs remain within the awarded budget, maintaining fiscal responsibility throughout the project lifecycle.
- Create a phased construction plan that minimizes disruption to surrounding residential neighborhoods, schools, and public spaces.
- Design with minimal limits of disturbance, including access routes, to reduce vegetation removal and preserve site integrity.
- Implement stabilization measures that provide long-term protection for exposed infrastructure and sensitive ecological features.

The final design will deliver a balanced and sustainable solution that stabilizes the hydraulic function of Taylor Run, protects vulnerable infrastructure, and preserves the ecological integrity of the site. These goals and objectives collectively support the City's environmental, fiscal, and community engagement priorities.

2 Data Collection and Review

2.1 Topographic Survey and LiDAR

AECOM conducted a detailed topographic survey of approximately 1,450 linear feet of stream within an approximate 1.84-acre investigation area. The survey data was processed using Autodesk Civil 3D to generate 1-foot contour intervals, providing a high-resolution representation of existing site conditions.

The horizontal datum used for the survey is the Virginia State Plane Coordinate System (NAD83) in U.S. Survey Feet, and the vertical datum is the North American Vertical Datum of 1988 (NAVD88), also in U.S. Survey Feet.

To supplement the field-collected data and support the Hydrologic and Hydraulic (H&H) analysis, previously surveyed data from 2019 and Light Detection and Ranging (LiDAR) data was obtained from the U.S. Geological Survey (USGS). This additional data provided broader topographic context and enhanced the accuracy of watershed delineation and hydraulic modeling.

2.2 Soils

To characterize the soil conditions within the Project and contributing watershed, AECOM utilized data from the NRCS Web Soil Survey, developed by the U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS).

Within the immediate project area, the dominant soil type is the Sassafras-Neabsco complex, which accounts for 100% of the surveyed area. These soils are typically well-drained and are commonly found on slopes, shoulders, and summits of marine terraces, making them suitable for stabilization efforts with minimal concern for poor drainage or high runoff.

To evaluate the broader drainage area, soils were classified into Hydrologic Soil Groups (HSGs), which provide an index of runoff potential based on infiltration characteristics:

- Group A soils (e.g., sand, loamy sand, sandy loam) have low runoff potential and high infiltration rates.
- Group D soils (e.g., clay, clay loam, silty clay) have high runoff potential and low infiltration rates.

The Taylor Run watershed is predominantly composed of Group B soils, which have moderate infiltration rates and low runoff potential, indicating favorable conditions for infiltration and reduced stormwater impacts.

The percent composition for each hydrologic soil group within the drainage basin is summarized in **Table 1** below. The results show that soils within the Project area are predominantly classified as hydrologic soil group B, or soils with a low runoff potential.

Table 1: Project Watershed Hydrologic Soil Group Summary

Percent Composition (%)			
HSG A	**HSG B**	**HSG C**	**HSG D**
0%	99.8%	0.2%	0%

This soil composition supports the selection of a ‘minimal stabilization’ approach, as the low runoff potential reduces the likelihood of severe erosive flows, allowing for targeted interventions focused on infrastructure protection and streambank stability.

2.3 FEMA Effective Data

Taylor Run is designated as a regulatory Zone AE stream, originally studied as part of the Cameron Run watershed analysis conducted by the Federal Emergency Management Agency (FEMA) in 2014. The most recent FEMA Flood Insurance Study (FIS) for the area was published on January 11, 2024, incorporating updated hydrologic and hydraulic data.

To support the design and regulatory compliance of the Project, a comprehensive hydrologic and hydraulic (H&H) assessment was performed. The hydrologic analysis was conducted using the U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center – Hydrologic Modeling System (HEC-HMS) version 3.1.1, while the hydraulic modeling was completed using HEC-River Analysis System (HEC-RAS) version 3.1.1.

As part of the 2024 FIS update, flood hazard boundaries were re-delineated in 2020, reflecting changes in land use, hydrology, and topography. These updates are critical to ensure that proposed stabilization measures do not result in adverse impacts, such as increased water surface elevations downstream.

The effective Flood Insurance Rate Map (FIRM), illustrating the Taylor Run floodplain and regulatory boundaries, is provided in **Figure 2**.

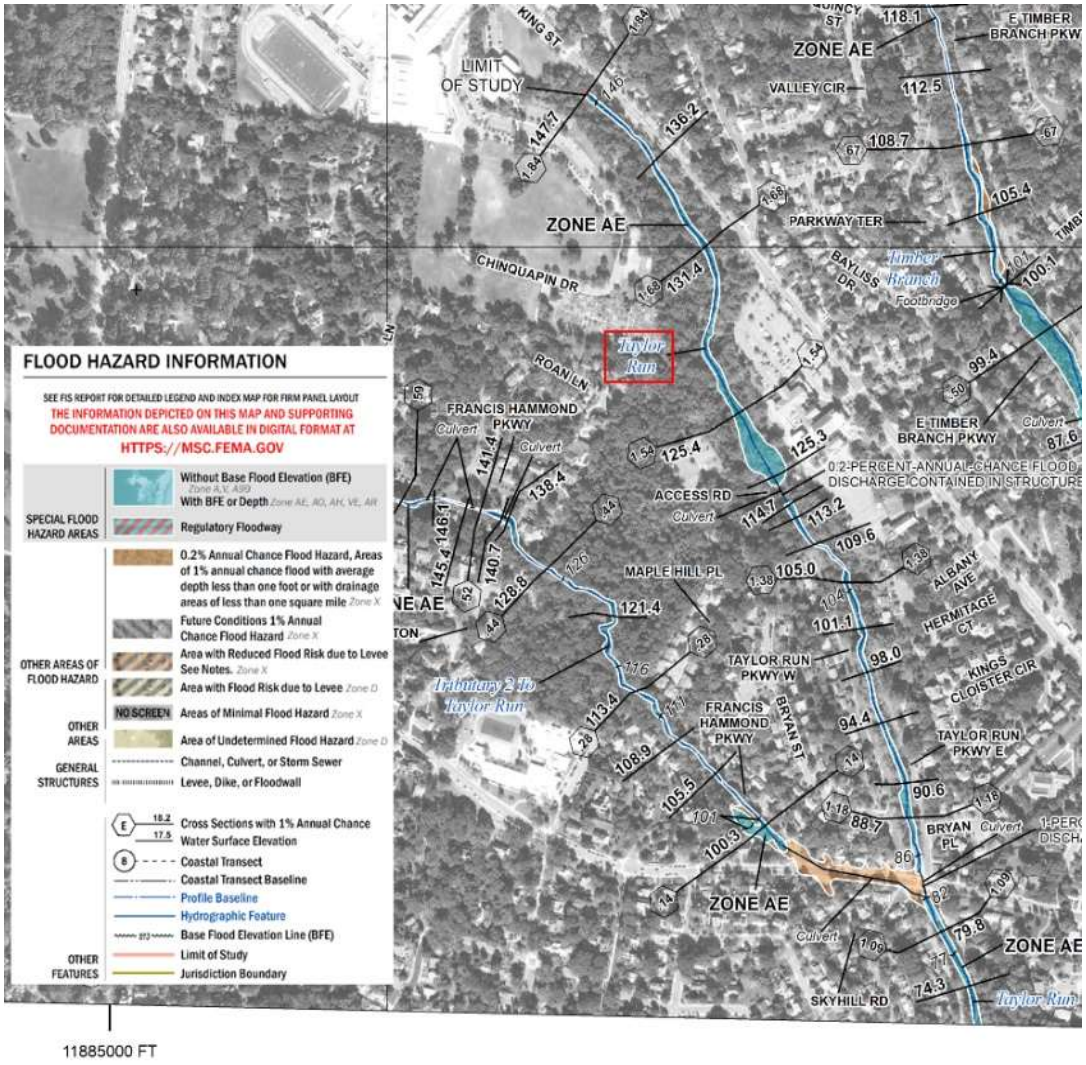


Figure 2: Effective FIRM of Taylor Run

2.4 Tree Inventory

Between May and July 2025, AECOM conducted field investigations to update and verify the existing tree inventory within the Project. The purpose of this effort was to identify any changes since the previous survey, including trees that had grown to significant size, fallen or died, and to ensure accurate documentation of current site conditions.

During the field survey, AECOM confirmed species identification, diameter at breast height (DBH) measurements, and health conditions of existing trees. Any new trees with a DBH of 12 inches or greater that were not included in the previous inventory were assigned unique identification numbers and geolocated using GPS technology.

A total of 749 trees were documented, of which 629 (approximately 84%) were living and 120 (approximately 16%) were dead. The most common species was Red Maple, with 152 trees recorded — 145 living and 7 dead. Other dominant species included Tulip tree (123 trees), Black Locust (80

trees), and Slippery Elm (54 trees), all of which contribute significantly to the canopy cover and ecological function of the stream corridor.

While the overall health of the tree population appears stable, certain species exhibited higher mortality rates. Notably, Black Locust had a mortality rate of approximately 32.5%. Additionally, 63 trees were classified as either Unknown Snag (24) or Unknown Tree (39), all of which were dead and in too poor of a condition to accurately identify. Although they may be outside the removal areas of any project impacts these trees may pose safety risks to the public while using the park and future considerations should be made to investigate if removal of these trees would improve park safety.

The inventory reflects a high diversity of tree species, with over 40 distinct types identified. This diversity enhances the ecological resilience of the area and contributes to the overall environmental value of the stream corridor.

The updated tree inventory provides critical data to inform design decisions, particularly in minimizing vegetation disturbance and protecting significant ecological features. Results from the survey are summarized in **Table 2** and further discussed in the Tree Inventory Memo (**Appendix A**).

Table 2: Tree Inventory Summary

Tree Type (Common Name)	Number of Trees	Status (Living | Dead)
American Beech	3	3 | 0
American Elm	31	30 | 1
American Holly	4	4 | 0
American Sycamore	4	4 | 0
Black Cherry	56	51 | 5
Black Locust	80	54 | 26
Black Oak	1	1 | 0
Black Walnut	10	10 | 0
Black gum	9	9 | 0
Boxelder	3	3 | 0
Chestnut Oak	6	6 | 0
Common Hackberry	1	1 | 0
Common Persimmon	3	3 | 0
Eastern Cottonwood	2	2 | 0

Tree Type (Common Name)	Number of Trees	Status (Living | Dead)
Green Ash	10	10 | 0
Hickory Species	2	2 | 0
Honey locust	1	1 | 0
Littleleaf Linden	1	1 | 0
Mimosa	1	1 | 0
Norway Maple	5	5 | 0
Pin Oak	1	1 | 0
Red Maple	152	145 | 7
Red Mulberry	2	1 | 1
Royal Paulownia	4	4 | 0
Sassafras	14	12 | 2
Scarlet Oak	1	1 | 0
Silver Maple	27	27 | 0
Slippery Elm	54	54 | 0
Southern Red Oak	3	3 | 0
Sugar Maple	2	2 | 0
Sweet Cherry	3	2 | 1
Sweet Gum	3	3 | 0
Tree of Heaven	25	21 | 4
Tuliptree	123	117 | 6
Unknown Snag	24	0 | 24
Unknown Tree	39	0 | 39
Virginia Pine	2	2 | 0
While Mulberry	25	25 | 0

Tree Type (Common Name)	Number of Trees	Status (Living | Dead)
White Oak	10	7 | 3
Willow Oak	2	1 | 1
Total	**749**	**629 | 120**

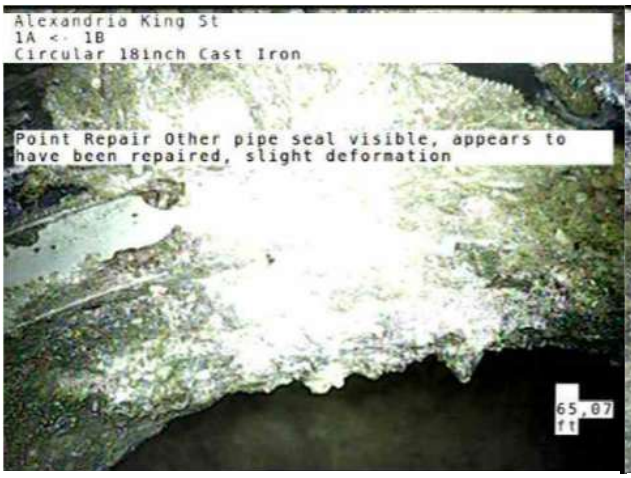
2.5 CCTV Condition Assessment

In July 2025 AECOM performed a CCTV inspection of the exposed sanitary sewer crossings in Project Area 2 and 4. Closed circuit video recording equipment was utilized to inspect the interior condition and generally, both pipe sections are in fair condition. The 12-inch, circular Reinforced Concrete Pipe (RCP) sanitary sewage pipe in Project Area 2 was assessed for approximately 97 linear feet between manhole ID 00047 and ID 00041. Sediment and rocks were present throughout the pipe and light cleaning is recommended. Observations of note include delaminating and discoloration of lining feature, and surface damage from spalling.

Spalling damage of pipe surface

Sediment and rock obstructions and discoloration of pipe lining.

The 18-inch circular cast iron sanitary sewage pipe in Project Area 4 was assessed for approximately 67 linear feet from manhole ID 007531 to ID 006571. There was evidence of a crown repair within the first foot of the upstream manhole (007531). The area shows minor deformation but there was no active infiltration observed during investigation. Additionally, medium joint separation and surface damage corrosion were noted. The CCTV Inspection reports can be found in **Appendix B**.



Point repair of pipe crown but has slight deformation

Pipe joint separation

2.6 Geotechnical Investigation

Between September and October 2025, AECOM conducted a geotechnical subsurface investigation. Four geotechnical soil borings were collected using the Standard Penetration Test (SPT). The surface fill (extending approximately 6 feet deep) is characterized as medium stiff to sandy clay and sandy silt with varying amounts of gravel. The underlying native soil (extending the maximum depth of the borings of 45 feet deep), consists of predominantly medium stiff to very stiff Potomac clay and thin embedded layers of well-graded sands. Very stiff Potomac clay soils are known to be susceptible to slope instability issues and are also known to have high shrink-swell properties. Collected materials from the borings were sent for laboratory testing to define material properties. Refer to **Appendix C** for the Geotechnical Investigation Memo.

2.7 Landscape Architect Site Assessment

2.8 Wetland Delineation

3 Existing Stream Assessment

In May and August 2025, AECOM stream specialists conducted field investigations along approximately 1,500 linear feet of Taylor Run, with a focused assessment of approximately 590 linear feet within the four designated project areas. The purpose of these investigations was to evaluate previously identified impairments and determine appropriate minimal stabilization remedies for each area. Photographs documenting existing site conditions and photo descriptions can be found in **Appendix D.**

3.1 Project Area Descriptions

Four distinct project areas were identified for stabilization along Taylor Run. For clarity and consistency, each area has been assigned a unique identifier (Project Areas 1–4), ordered sequentially from upstream to downstream. The total stream length within these areas is summarized in **Table 3**.

Table 3: Project Area Name and Lengths

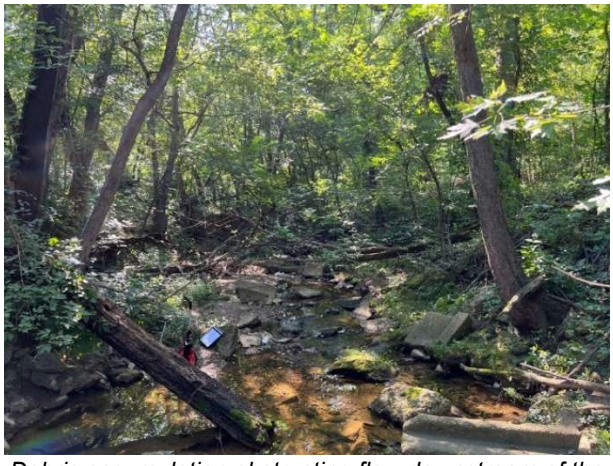
	Length (ft)
Project Area 1	129
Project Area 2	130
Project Area 3	70
Project Area 4	260
Total Length	589

3.1.1 Project Area 1

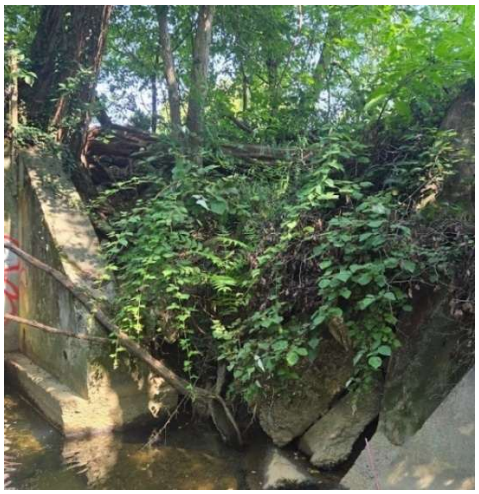
Project Area 1 originates from a 72-inch reinforced concrete pipe (RCP) outfall that conveys flow from Chinquapin Park, Alexandria City High School, surrounding residential neighborhoods, and a portion of Braddock Road.

Bank erosion has undermined many trees along the streambank slopes, causing them to fall into the channel and producing debris blockages. Evidence of stream head cut was noted next to the outfall right wingwall (looking upstream) where a gully has developed, contributing to the outfall being unstable. The plunge pool does not meet the most recent Virginia Department of Transportation (VDOT) standards. Large concrete debris was observed in the plunge pool and the immediate downstream section of stream.

Recently downed trees on the left bank, immediately downstream of the outfall



Debris accumulation obstructing flow downstream of the outfall



Erosion observed behind the right wingwall of the outfall (viewed looking upstream)

Deteriorating outfall and concrete debris in plunge pool

3.1.2 Project Area 2

Project Area 2 originates approximately 290 linear feet downstream of Project Area 1. Vertical and lateral erosion has lowered the streambed elevation, exposing an existing sanitary sewer putting the existing City infrastructure at-risk of damage. The exposed sanitary sewer line has no concrete encasement and acts as an inline weir for the upstream plunge pool. The exterior of the sewer line is undamaged, but with no concrete encasement it is susceptible to damage as debris has already accumulated on the crossing from fallen limbs and trees. Refer to **Section 2.5** for details on interior conditions.

Immediately downstream of the rock cascade, the left bank shows signs of significant erosion, including raw, vertical banks that exceed 6 feet in height. Lateral erosion of the left bank has exposed a dense clay layer and tree roots, which will cause the trees to fall into the channel and produce debris blockages. The erosion extends upstream where a 36-inch RCP outfall has an approximate 18-inch undercut that is eroding the headwall. Construction of the gravity wall may be more difficult where it intersects with dense clay layer. Extensive concrete and woody debris were noted in the channel, contributing to the development of mid-channel bars, increasing near bank stress and accelerating stream bank erosion rates.

Exposed sanitary sewer line vulnerable to erosion and structural damage

Severely eroded streambank with visible tree root exposure

36-inch stormwater outfall showing significant undercutting and headwall deterioration

Accumulation of woody debris contributing to channel instability and bank erosion

3.1.3 Project Area 3

Project Area 3 originates approximately 520 feet downstream of Project Area 2. On the right stream bank there is an exposed sanitary sewer manhole that sits on a concrete skirt. The concrete skirt has an undercut of approximately 24 inches. A large accumulation of woody debris in the channel has contributed to channel migration, bank stress and erosion which can cause root erosion and more trees to fall into the channel and compromise the park's trail network as a portion of the trail has collapsed into the stream.

Exposed sanitary sewer manhole with undercut concrete base, indicating potential structural vulnerability

Significant accumulation of woody debris contributing to channel migration and increased streambank erosion

3.1.4 Project Area 4

Project Area 4 originates approximately 25 feet downstream of the large accumulation of woody debris within Project Area 3. An undercut on the left bank has exposed the root mass of a large tulip poplar tree putting it at risk of falling. Mid-channel bars are evident as the main flow path has migrated directly under the exposed roots.

Directly downstream, the existing sheet pile retaining wall is failing from erosion and hydrostatic pressure. A sanitary sewer manhole behind the sheet pile wall risks damage once the wall collapses. The distance of the center of the manhole to the top of the wall is approximately 3 feet and the edge of the manhole is approximately 10 inches. The exposed sewer pipe crossing the channel has no concrete encasement, making it susceptible to damage. The exterior of the sanitary sewer pipe is intact and has accumulated leafy and woody debris behind the structure, acting as a channel blockage. Refer to **Section 2.5** for details on interior conditions.

Exposed sanitary pipe adjacent to a deteriorating sheet pile wall (left), with a riprap-lined channel bank providing erosion control on the right.

Sanitary sewer manhole behind failing sheet pile wall

Lateral and vertical erosion of the channel banks is evident, exposing tree roots, causing them to fall into the channel and producing debris. There is evidence of bank stabilization efforts on the right bank, downstream of the sanitary sewer pipe.

3.2 Permitting Considerations

A pre-application meeting was had on December 12, 2025 to verify permitting considerations with the U.S. Army Corps of Engineers (USACE). For wetlands and streams, the project is expected to meet the General and Regional Conditions of the U.S. Army Corps of Engineers (USACE).

- Nationwide Permit (NWP) 3 for maintenance of sewer crossings, and
- NWP 13 for bank stabilization, and
- NWP 18 for minor discharges related to the boulder cascades.

The USACE indicated that the sewer crossings, associated encasements, and boulder cascades should be permitted under separate NWPs as they are in distinct maintenance areas. The bank stabilization efforts are to be permitted under one NWP 13.

Exposed roots of large tulip poplar tree, looking upstream

4 Hydrology and Hydraulics

Effective FEMA hydrologic flows at Janneys Lane were utilized for the 10-, 50-, and 100-year, 24-hour storm events. Flows to be applied are provided in **Table 4**.

Table 4: Existing Conditions Peak Discharge at Outlet Point of Project Area

Scenario	Peak Discharge (cfs)
10-year	343
50-year	538
100-year	672

A previously completed one-dimensional Hydrologic Engineering Center River Analysis System (HEC-RAS) model from Task Order No 22 was reviewed and updated with recent survey data (Refer to **Section 2.1**). The existing conditions hydraulic analysis was performed to analyze changes in water surface elevations and shear stresses for the 10-, 50-, and 100-year storms using HEC River Analysis System (RAS) version 6.5. One-dimensional steady-state models were developed.

The HEC-RAS model includes areas outside of our Project. Stations 2304-1805 encompass the upstream portion of study (Project Area 1 and Project Area 2) and stations 1209-925 encompass the downstream protion of our study (Project Area 3 and Project Area 4). A comparison of results between the existing conditions and proposed conditions models at relevant cross sections are shown in **Table 5**, 6, and 7 for each storm event.

Table 5: HEC-RAS Models Water Surface Elevation Comparison

Existing Station	Proposed Station	Existing Water Surface Elevation (ft)			Proposed Water Surface Elevation (ft)		
		10-year	50-year	100-year	10-year	50-year	100-year
2248	2264	147.49	147.46	148.14	147.46	148.14	148.09
2131	2148	144.67	144.88	145.42	144.88	145.42	145.81
2065	2082	144.02	144.59	144.76	144.59	144.76	145.63
2021	2038	143.71	144.40	144.46	144.40	144.46	145.41
1904	1916	141.20	143.41	141.89	143.41	141.89	144.01
1862	1878	135.03	138.00	137.83	138.00	137.83	138.42
1820	1834	136.31	136.53	137.04	136.53	137.04	137.93
1766	1795	134.44	135.89	135.50	135.89	135.50	137.38
1697	1710	132.29	131.33	133.30	131.33	133.30	131.82
1642	1655	131.94	131.87	132.97	131.87	132.97	132.90
1585	1598	131.67	131.60	132.69	131.60	132.69	132.68
1466	1479	130.74	130.11	131.80	130.11	131.80	131.32
1425	1438	130.31	129.99	131.44	129.99	131.44	131.33
1391	1404	129.97	129.95	131.18	129.95	131.18	131.40
1320	1333	129.51	129.66	130.94	129.66	130.94	131.27
1235	1248	128.45	128.43	129.59	128.43	129.59	129.54
1228	1241	128.46	128.40	129.61	128.40	129.61	129.53
1214	1228	128.33	128.46	129.39	128.46	129.39	129.61
1198	1211	126.97	128.25	128.12	128.25	128.12	129.40
1178	1191	126.95	128.27	128.16	128.27	128.16	129.43
1164	1177	126.95	128.24	128.16	128.24	128.16	129.39
1129	1142	126.81	128.25	128.01	128.25	128.01	129.42
1106	1119	126.55	128.16	127.78	128.16	127.78	129.32
1085	1099	126.46	128.14	127.74	128.14	127.74	129.27
1060	1073	125.59	128.00	126.32	128.00	126.32	129.03
1044	1056	125.66	128.02	126.57	128.02	126.57	129.06
1023	1046	126.91	127.86	127.71	127.86	127.71	128.85
1007	1020	124.44	125.23	125.36	125.23	125.36	125.96
996	1008	124.36	123.47	125.36	123.47	125.36	124.24
964	974	123.51	124.21	124.37	124.21	124.37	125.35
953	962	123.22	123.07	123.98	123.07	123.98	123.95
925	925	122.40	122.40	123.21	122.40	123.21	123.21

Table 6: HEC-RAS Models Shear Stress Comparison

Existing Station	Proposed Station	Existing Shear Stress (lb/sq ft)			Proposed Shear Stress (lb/sq ft)		
		10-year	50-year	100-year	10-year	50-year	100-year
2248	2264	2.34	2.18	2.78	2.18	2.78	2.67
2131	2148	1.83	1.53	2.45	1.53	2.45	1.88
2065	2082	1.60	0.96	2.17	0.96	2.17	1.16
2021	2038	1.35	0.88	1.83	0.88	1.83	1.18
1904	1916	2.82	3.41	3.40	3.41	3.40	4.91
1862	1878	11.36	12.06	1.66	12.06	1.66	14.35
1820	1834	3.63	0.50	4.89	0.50	4.89	0.74
1766	1795	3.78	0.93	4.48	0.93	4.48	1.03
1697	1710	1.59	4.45	1.85	4.45	1.85	6.11
1642	1655	1.30	1.21	1.62	1.21	1.62	1.44
1585	1598	1.10	1.00	1.43	1.00	1.43	1.21
1466	1479	2.66	2.08	3.35	2.08	3.35	2.24
1425	1438	1.96	1.34	2.36	1.34	2.36	1.42
1391	1404	1.75	0.90	1.95	0.90	1.95	0.87
1320	1333	1.05	0.78	0.94	0.78	0.94	0.67
1235	1248	1.17	2.98	1.53	2.98	1.53	3.98
1228	1241	0.85	2.20	1.12	2.20	1.12	2.96
1214	1228	0.77	0.85	1.02	0.85	1.02	1.12
1198	1211	2.52	0.92	2.58	0.92	2.58	1.14
1178	1191	0.69	0.30	0.83	0.30	0.83	0.43
1164	1177	0.37	0.33	0.46	0.33	0.46	0.47
1129	1142	0.48	0.21	0.57	0.21	0.57	0.30
1106	1119	0.98	0.34	1.04	0.34	1.04	0.45
1085	1099	0.96	0.35	0.95	0.35	0.95	0.49
1060	1073	2.22	0.51	3.17	0.51	3.17	0.79
1044	1056	1.48	0.41	1.89	0.41	1.89	0.63
1023	1046	4.14	0.31	4.97	0.31	4.97	0.43
1007	1020	1.55	10.44	2.18	10.44	2.18	10.91
996	1008	1.57	9.70	1.95	9.70	1.95	11.17
964	974	2.82	0.70	3.43	0.70	3.43	1.00
953	962	2.46	4.57	2.98	4.57	2.98	5.53
925	925	1.97	1.97	2.38	1.97	2.38	2.38

Table 7: HEC-RAS Models Velocity Comparison

Existing Station	Proposed Station	Velocity (ft/s)			Velocity (ft/s)		
		10-year	50-year	100-year	10-year	50-year	100-year
2248	2264	7.65	7.68	8.75	7.68	8.75	8.91
2131	2148	7.41	6.82	8.94	6.82	8.94	7.96
2065	2082	6.95	5.46	8.43	5.46	8.43	6.32
2021	2038	6.46	5.43	7.83	5.43	7.83	6.56
1904	1916	7.90	7.80	9.13	7.80	9.13	9.71
1862	1878	12.68	13.05	5.85	13.05	5.85	15.00
1820	1834	8.31	3.52	10.06	3.52	10.06	4.42
1766	1795	9.76	5.58	11.16	5.58	11.16	6.19
1697	1710	6.90	10.75	7.85	10.75	7.85	13.13
1642	1655	6.49	6.10	7.59	6.10	7.59	7.01
1585	1598	6.01	5.59	7.19	5.59	7.19	6.46
1466	1479	5.88	8.13	6.90	8.13	6.90	8.92
1425	1438	5.34	6.60	6.16	6.60	6.16	7.19
1391	1404	5.46	5.32	6.07	5.32	6.07	5.57
1320	1333	5.91	4.94	5.93	4.94	5.93	4.93
1235	1248	6.39	7.90	7.60	7.90	7.60	9.51
1228	1241	5.45	6.72	6.53	6.72	6.53	8.13
1214	1228	5.22	5.45	6.24	5.45	6.24	6.53
1198	1211	8.91	5.63	9.52	5.63	9.52	6.53
1178	1191	4.88	3.36	5.59	3.36	5.59	4.14
1164	1177	3.64	3.54	4.23	3.54	4.23	4.34
1129	1142	4.01	2.82	4.56	2.82	4.56	3.45
1106	1119	5.66	3.52	6.12	3.52	6.12	4.20
1085	1099	5.69	3.60	5.94	3.60	5.94	4.42
1060	1073	8.39	4.42	10.40	4.42	10.40	5.70
1044	1056	6.81	3.96	8.04	3.96	8.04	5.09
1023	1046	8.53	4.80	9.83	4.80	9.83	5.95
1007	1020	7.19	12.72	8.87	12.72	8.87	13.82
996	1008	6.95	12.87	8.14	12.87	8.14	14.55
964	974	9.24	3.93	10.68	3.93	10.68	4.87
953	962	8.42	9.29	9.73	9.29	9.73	10.69
925	925	8.64	8.64	9.99	8.64	9.99	9.99

Results from the existing condition model reflect observations made during site investigations. As shown in **Table 5** the stream experiences high shear stress throughout the reach, with average calculated shear stresses of 6.78, 7.67 and 8.6 lb/sq ft for the 2-, 10- and 100-year storm events respectively. Increases in shear stress occur at both sewer sanitary sewer crossings within Project Area 2 (Station 1925-1871) and Project Area 4 (Station 10060-981). The results coincide with observed eroded stream banks and highlight the risk to the sanitary sewer infrastructure.

Comparison between existing and proposed conditions results in an average reduction in velocity across the project reach for all storm events. Localized increases can be noted in the proposed boulder cascades. A water surface elevation rise is noted at all storm events, with an average rise of 0.7 feet across the project reach during the 100-year storm. A maximum rise of 2.85 feet was noted at proposed cross section 1073, located directly upstream of design area 4, due to backwater conditions. This rise is located entirely on City of Alexandria property and does not affect adjoining properties. Hydraulic conditions downstream of the project area remain the same in the existing and proposed conditions. See **Appendix F** for current model parameters and detailed results.

5 Proposed Minimal Intervention

The proposed design was guided by the Project goals and objectives, including long-term stream and bank stability, and protecting compromised infrastructure. The design implements a ‘minimal stabilization’ approach to reduce disturbance to the trees and community.

5.1 Outfall Stabilization

Project Areas 1 and 2 exhibit signs of outfall instability due to erosion. In Project Area 1, the right wingwall of the existing 72-inch reinforced concrete pipe (RCP) outfall will be replaced to match the specifications of the left wingwall, with minor modifications proposed to meet the elevations of the proposed gravity walls. In Project Area 2, the existing 36-inch RCP outfall will be replaced with a new cast-in-place endwall constructed in accordance with Virginia Department of Transportation (VDOT) standards. To mitigate future erosion during high-flow events, riprap will be installed around the headwall perimeter. The outfalls will feature a rock façade finish to match the gravity walls and blend with the natural environment.

Example of rock façade finish for outfalls

5.2 Channel Bank Stabilization

Gravity walls will be installed throughout the design areas to stabilize channel banks. This solution was selected over other alternatives due to its minimal disturbance footprint, ease of material handling, and expedited construction timeline, which collectively reduce tree clearing and minimize disruption to park activities. Sheet piles will be installed along the toe of the gravity walls to prevent erosion-related undermining from risk of excessive bed scour. These were chosen over deeper wall embedment depths due to the scour potential at the base of the boulder cascades and cost considerations. Specific embedment depths and sheet pile locations will be provided in future submissions. All gravity walls will feature a rock façade finish to blend with the natural environment. A one-foot freeboard above the proposed 100-year water surface elevation has been incorporated, as the walls are not intended to meet FEMA flood wall or load bearing wall accreditation standards, which would require a three-foot freeboard. This will allow for a shorter wall to be constructed in some areas reducing project costs. Due to the proximity of the high school and frequent community use, vertical gravity walls will be implemented in Project Areas 1, 2, 3, and 4 to discourage climbing or sitting, thereby reducing the risk of injury and improving safety to the community. To further enhance safety, a railing will be constructed along the top of each gravity wall to prevent falls from elevated wall sections. This addition is especially important in areas with high pedestrian activity, such as near the high school, park trails, or sidewalks and bike lanes.

Example of gravity retaining wall with safety railing

In Project Area 1, gravity walls will be constructed on both banks, tying into the existing headwall at elevation 155.0 feet. On the left bank, the wall will reach a maximum height of approximately 7.5 feet over 38 linear feet, then taper down to elevation 150.5 feet over 30 linear feet. On the right bank, the wall will maintain elevation 155.0 feet over 38 linear feet, with wall heights ranging from 7.5 to 10.5 feet. The tallest section, at 10.5 feet, spans 13.5 linear feet, followed by a tapering segment over 34 linear feet, tying into existing grade at elevation 150.5 feet.

In Project Area 2, the gravity wall will tie into the proposed headwall upstream at elevation 146.0 feet, with wall heights ranging from 9 to 15 feet over 95 linear feet. The wall will then transition to elevation 143 feet over 28 linear feet, with a maximum height of 12 feet spanning 69 linear feet.

In Project Area 3, following the removal of large woody debris, the banks will be stabilized using native plantings. Rock packing will be used to reinforce undercut roots and will extend through the critical root zone of the large tulip poplar tree in Project Area 4. Additionally, 3'x2'x2' boulders will be placed at the toe of the bank to prevent future erosion beneath the tree.

Example of rock pack to support tree at the toe of the bank

In Project Area 4, the existing sheet pile wall on the left bank will be replaced with a gravity wall that ties into existing grade at elevation 133.0 feet. Wall heights vary from 3 to 19feet over 38 linear feet, with the tallest section (9 feet) spanning 6 linear feet. The wall will then taper over 31 linear feet to tie into existing grade at elevation 131.5 feet, with wall heights ranging from 6 to 7.5 feet depending on base elevation.

5.3 Stream Bed Stabilization

Channel blockages, consisting mostly of woody and concrete debris, occur throughout the stream and were created from erosion of the City infrastructure and channel banks. Removal of the large debris blockages in Project Areas 2 through 4 will require the realignment of the thalweg towards the center of the channel and performing grading to stabilize the channel.

Example of plunge pool downstream of outfall

The plunge pool immediately downstream of the 72-inch outfall in Project Area 1 will be modified to meet National Resource Conservation Service (NRCS) design note 6. This plunge pool design was selected over the Virginia Department of Environmental Quality (VDEQ) Type I or II plunge pool due to the size requirements and current scour pattern from the self-formed plunge pool. This detail utilizes flow rate to size the plunge pool. AECOM

Example of boulder cascade following Regenerative Step Pool Convevance Design Guidelines

analyzed multiple different flow and tailwater conditions to determine the plunge pool footprint and substrate sizing. Immediately downstream of the plunge pool, a boulder cascade (approximately 13 linear feet) will be used to quickly drop the stream down multiple feet (approximately 2 feet) to tie into the existing stream elevation at 146.54'. Downstream of the 36-inch outfall in Project Area 2, a similar cascade will be implemented over approximately 95 linear feet. The stream elevation will rapidly drop 8.5 feet to tie into the existing stream elevation at 132.5'. A third boulder cascade will be installed in Project Area 4, downstream of the sanitary sewer pipe crossing. The cascade will extend approximately 20 feet and will lower the stream elevation 3.4 feet to tie into existing ground at elevation 120.66'. Boulder cascades will be constructed of strategically placed imbricated rocks, following Regenerative Step Pool Conveyance Design Guidelines, developed for the Anne Arundel County, Maryland Public Works Department.

5.4 Sanitary Sewer Infrastructure Protection

Portions of sanitary sewer pipes cross Taylor Run in Project 2 and Project 4. Both pipes will be encased in concrete. The boulder cascades, described in **Section 5.3**, will provide protection. No cover will be placed on top of the concrete encasements. The gravity walls, described in **Section 5.2**, will stabilize the banks and protect the sanitary manhole behind the existing sheet pile wall.

Example of sanitary sewer manhole protection

A gravity wall will be used to protect the exposed sanitary sewer manhole in Project Area 3. To meet the minimum radius recommended for convex curves (14.5 feet), the wall extends up and downstream of the sanitary sewer manhole. The wall ties into existing bank grade at elevations 133' for approximately 38.5 linear feet, wall heights ranging from 5-9 feet. The maximum height of the wall is 9 feet for approximately 7.7 linear feet. The wall height steps down to tie into existing grade at elevation 131.5', with wall heights ranging from 1.5-7.5 feet.

5.5 Cost Estimate

The estimated total cost for the Project is approximately $1,794,401. This figure reflects the scope and complexity of the stream stabilization work, including anticipated grading, material requirements, and site-specific conditions. The estimate incorporates a 20% contingency to account for unforeseen conditions and design refinements. Additionally, a 4.3% escalation factor has been applied to account for inflation between the present and the projected midpoint of construction in February 2027.

It is important to note that stream stabilization project costs can vary significantly based on factors such as project length, location, access constraints, and design complexity. The detailed cost breakdown is provided in **Appendix F**.

5.6 Construction Access and Scheduling

Multiple access points will be required for the project as the project areas span over 1,500 linear feet of stream. The Project will not be creating new paths for construction access to limit vegetation clear and disturbance to the community and park. Project Area 1 has access from the existing earthen park trail at most upstream extent of Taylor Run, at the 72-inch outfall. Minimal clearing will be required as many trees in this area have already died and fallen due to bank erosion or storm damage. Within Project Area 1 a total of 18 living trees will be impacted. Project Area 2 has access from the existing park trail and King Street with some moderate clearing of vegetation required. Within Project Area 2 a total of 2 living trees will be impacted. Project Areas 3 and 4 have access from the trail entrance near the community garden. Moderate clearing of vegetation will be required, for both of these areas a total of 5 living trees will be impacted.

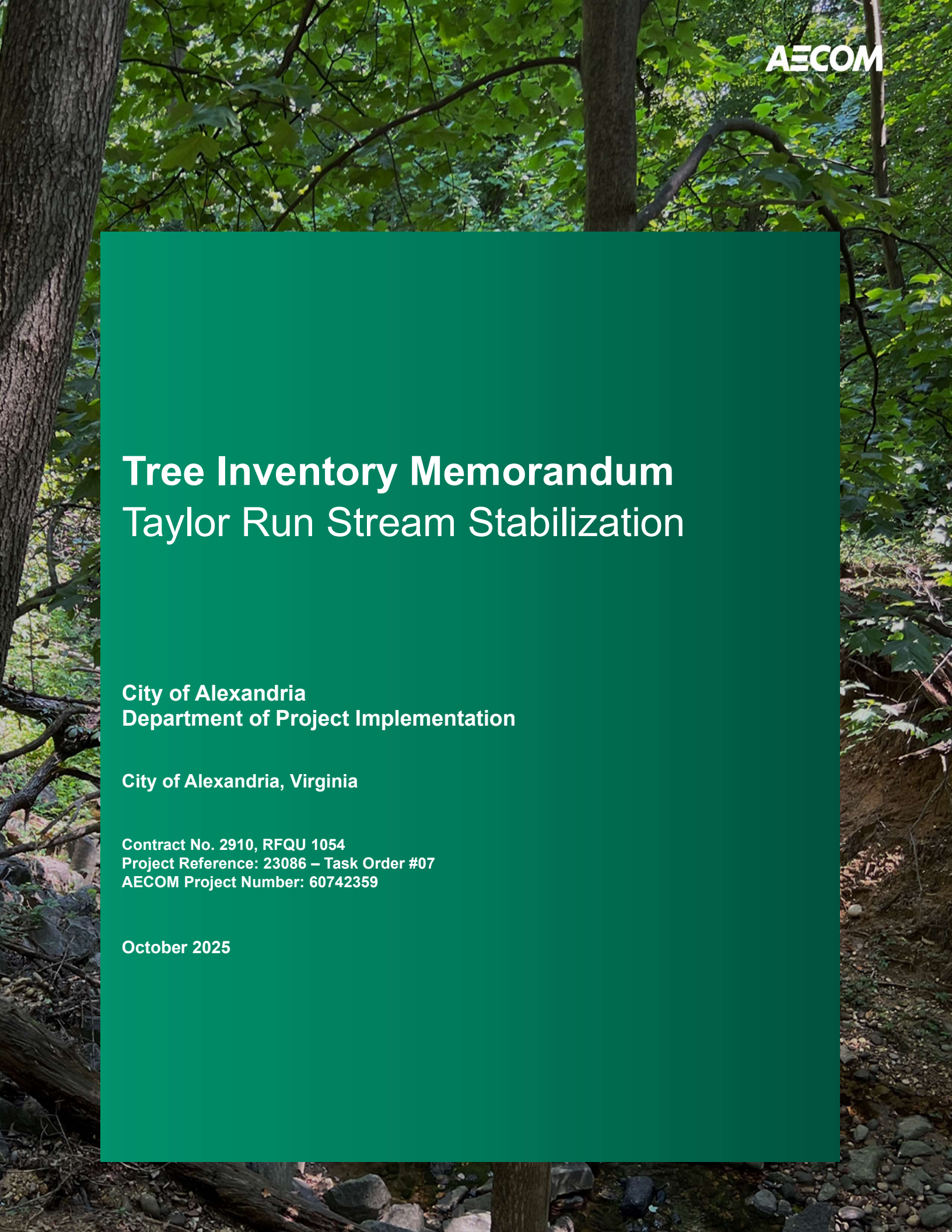
The Virginia Department of Wildlife Resources (DWR) has designated no instream work between March 1 – June 30 due to general cold water species time of year restrictions. for DWR. Existing open areas adjacent to the stream have been identified for contractor stockpiling and staging to reduce vegetation impacts.

Although stream stabilization requires detail-oriented construction, implementation costs may be kept low by having contractors who specialize in gravity wall installation construct the Project. Experienced construction contractors can avoid mistakes that may compromise project function and extend the Project schedule. AECOM recommends that the City requires contractors to have an appropriate amount of experience in stream stabilization, wall construction, and utility protection for bid qualification or to be deemed the responsible bidder. AECOM also recommends that a stream restoration professional or engineer of record is also recommended to be on site during construction (full time or at minimum during Project critical times) to provide supervision and timely oversite to ensure a quality product.

6 Conclusion

The Project is designed to protect vulnerable infrastructure long-term while minimizing disturbance to surrounding trees and the local community. The project encompasses four distinct areas, each targeting specific stabilization needs, including exposed sanitary sewer infrastructure, deteriorating stormwater outfalls, actively eroding stream banks, a critical root zone of large tulip poplar tree, and a degraded plunge pool. The total estimated cost for the stabilization effort is $1,794,401, which includes a 20% contingency and a 4.3% inflation escalation factor based on a projected construction midpoint of February 2027.

Appendix A Tree Inventory



Tree Inventory Memorandum
Taylor Run Stream Stabilization

City of Alexandria
Department of Project Implementation

City of Alexandria, Virginia

Contract No. 2910, RFQU 1054
Project Reference: 23086 – Task Order #07
AECOM Project Number: 60742359

October 2025

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1 Methods

A Tree Inventory was conducted on the Taylor Run Survey Area during the months of June and July of 2025 to visually verify a previously completed tree inventory from 2019. Additional trees with a size of 12” diameter at breast height (DBH) or greater, were also surveyed, if not previously included in the original inventory. Tree species, geographic location, and health, including the status of the tree as alive or dead, were verified for the previously inventoried trees; the DBH of each species were not re-measured. The same information plus species size was collected for newly inventoried trees. All newly located trees were recorded using a Geographic Information System (GPS) device with sub-meter accuracy. **Figure 1** illustrates the limits of the 2025 survey area.

Figure 1: Survey Extents Map

2 Results

Results of the 2025 tree inventory reveal a total of 749 trees, largely within a mid-successional deciduous riparian forest surrounding Taylor Run. The dominant two tree species identified were *Liriodendron tulipifera* (tulip poplar) and *Acer rubrum* (red maple). Additional co-dominant species include *Prunus serotina* (black cherry), *Robinia pseudoacacia* (black locust), and *Ulmus rubra* (slippery elm). Twenty-six trees were identified as specimen trees (trees with greater than or equal to 30" DBH); 13 of which were tulip poplar. Of the total 749 trees inventoried, 120 trees were listed as dead, many of which the tree species could not be identified. However, of the dead species that could be identified, black locust was the most common. A total of 269 trees inventoried are proposed for removal. As the inventory would suggest, tulip poplar and red maple are the most common. **Figure 2** provides a summary of the combined inventory data updated from 2019 and newly collected in 2025, with the identified survey limits illustrated in **Figure 1**. The full tree inventory maps and tables can be found in **Appendix A**.

Figure 2: Tree Inventory Summary

SPECIES SUMMARY - TAYLOR RUN

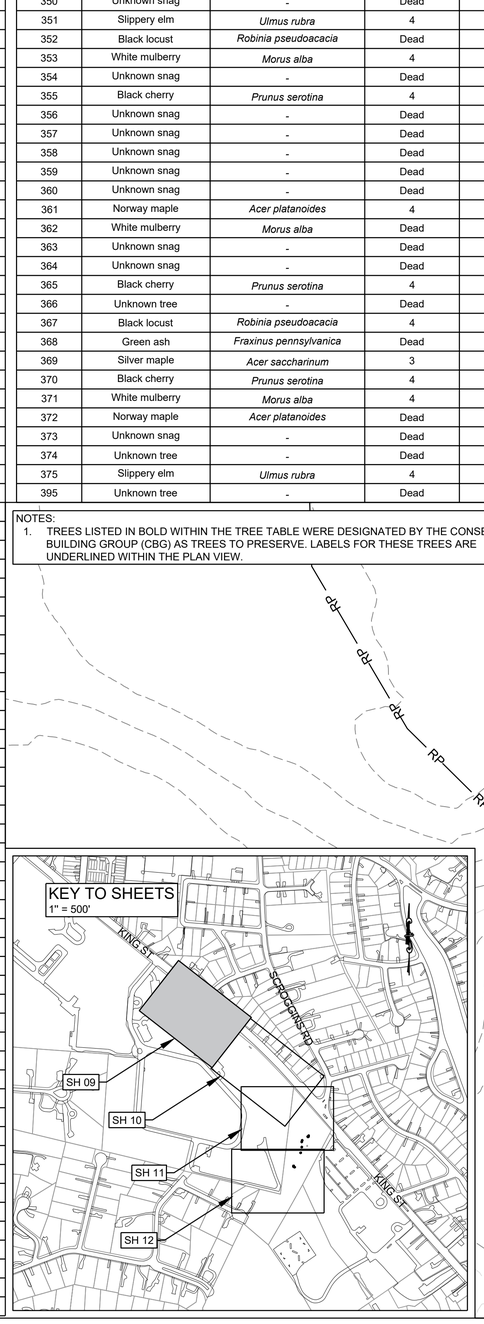
COMMON NAME	<6" (SAPLING)				6-17" (SMALL)				18-29" (MEDIUM)				30"+ (LARGE)				TOTAL			
	Living	Dead	Total	TBR	Living	Dead	Total	TBR	Living	Dead	Total	TBR	Living	Dead	Total	TBR	Living	Dead	Total	TBR
American Beech	---	---	---	---	2	---	2	---	1	---	1	---	---	---	---	---	3	---	3	---
American Elm	1	---	1	1	27	1	28	8	2	---	2	---	1	---	1	---	30	1	31	9
American Holly	---	---	---	---	4	---	4	---	---	---	---	---	---	---	---	---	4	---	4	---
American Sycamore	---	---	---	---	---	---	---	---	3	---	3	---	1	---	1	---	4	---	4	---
Black Cherry	---	---	---	---	36	4	40	12	14	1	15	4	1	---	1	---	51	5	56	16
Black Locust	---	---	---	---	33	20	53	20	21	6	27	10	---	---	---	---	54	26	80	30
Black Oak	---	---	---	---	---	---	---	---	1	---	1	---	---	---	---	---	1	---	1	---
Black Walnut	---	---	---	---	8	---	8	1	2	---	2	1	---	---	---	---	10	---	10	2
Blackgum	---	---	---	---	9	---	9	---	---	---	---	---	---	---	---	---	9	---	9	---
Boxelder	---	---	---	---	3	---	3	3	---	---	---	---	---	---	---	---	3	---	3	3
Chestnut Oak	---	---	---	---	2	---	2	---	2	---	2	---	2	---	2	---	6	---	6	---
Common Hackberry	---	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	1	---	1	---
Common Persimmon	---	---	---	---	3	---	3	1	---	---	---	---	---	---	---	---	3	---	3	1
Eastern Cottonwood	---	---	---	---	---	---	---	---	2	---	2	---	---	---	---	---	2	---	2	---
Green Ash	---	---	---	---	9	---	9	4	1	---	1	---	---	---	---	---	10	---	10	4
Hickory Species	---	---	---	---	2	---	2	---	---	---	---	---	---	---	---	---	2	---	2	---
Honeylocust	---	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	1	---	1	---
Littleleaf Linden	---	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	1	---	1	---
Mimosa	---	---	---	---	1	---	1	1	---	---	---	---	---	---	---	---	1	---	1	1
Norway Maple	---	---	---	---	5	---	5	2	---	---	---	---	---	---	---	---	5	---	5	2
Pin Oak	---	---	---	---	1	---	1	---	---	---	---	---	---	---	---	---	1	---	1	---
Red Maple	---	---	---	---	118	7	125	53	23	---	23	15	4	---	4	2	145	7	152	70
Red Mulberry	---	---	---	---	1	1	2	---	---	---	---	---	---	---	---	---	1	1	2	---
Royal Paulownia	---	---	---	---	4	---	4	---	---	---	---	---	---	---	---	---	4	---	4	---
Sassafras	---	---	---	---	12	2	14	2	---	---	---	---	---	---	---	---	12	2	14	2
Scarlet Oak	---	---	---	---	---	---	---	---	1	---	1	---	---	---	---	---	1	---	1	---
Silver Maple	---	---	---	---	16	---	16	6	9	---	9	2	2	---	2	---	27	---	27	8
Slippery Elm	---	---	---	---	46	---	46	15	7	---	7	3	1	---	1	---	54	---	54	18
Southern Red Oak	---	---	---	---	1	---	1	1	1	---	1	---	1	---	1	---	3	---	3	1
Sugar Maple	---	---	---	---	2	---	2	---	---	---	---	---	---	---	---	---	2	---	2	---
Sweet Cherry	---	---	---	---	2	1	3	2	---	---	---	---	---	---	---	---	2	1	3	2
Sweet Gum	---	---	---	---	2	---	2	1	1	---	1	---	---	---	---	---	3	---	3	1
Tree of Heaven	---	---	---	---	21	4	25	3	---	---	---	---	---	---	---	---	21	4	25	3
Tuliptree	---	---	---	---	53	2	55	25	51	1	52	19	13	3	16	4	117	6	123	48
Unknown Snag	---	---	---	---	---	22	22	15	---	2	2	---	---	---	---	---	---	24	24	15
Unknown Tree	---	---	---	---	---	38	38	21	---	1	1	---	---	---	---	---	---	39	39	21
Virginia Pine	---	---	---	---	---	---	---	---	2	---	2	---	---	---	---	---	2	---	2	---
White Mulberry	---	---	---	---	23	---	23	10	2	---	2	---	---	---	---	---	25	---	25	10
White Oak	---	---	---	---	5	3	8	1	2	---	2	1	---	---	---	---	7	3	10	2
Willow Oak	---	---	---	---	1	---	1	---	---	---	---	---	---	1	1	---	1	1	2	---
TOTAL	1	---	1	1	455	105	560	207	148	11	159	55	26	4	30	6	629	120	749	269

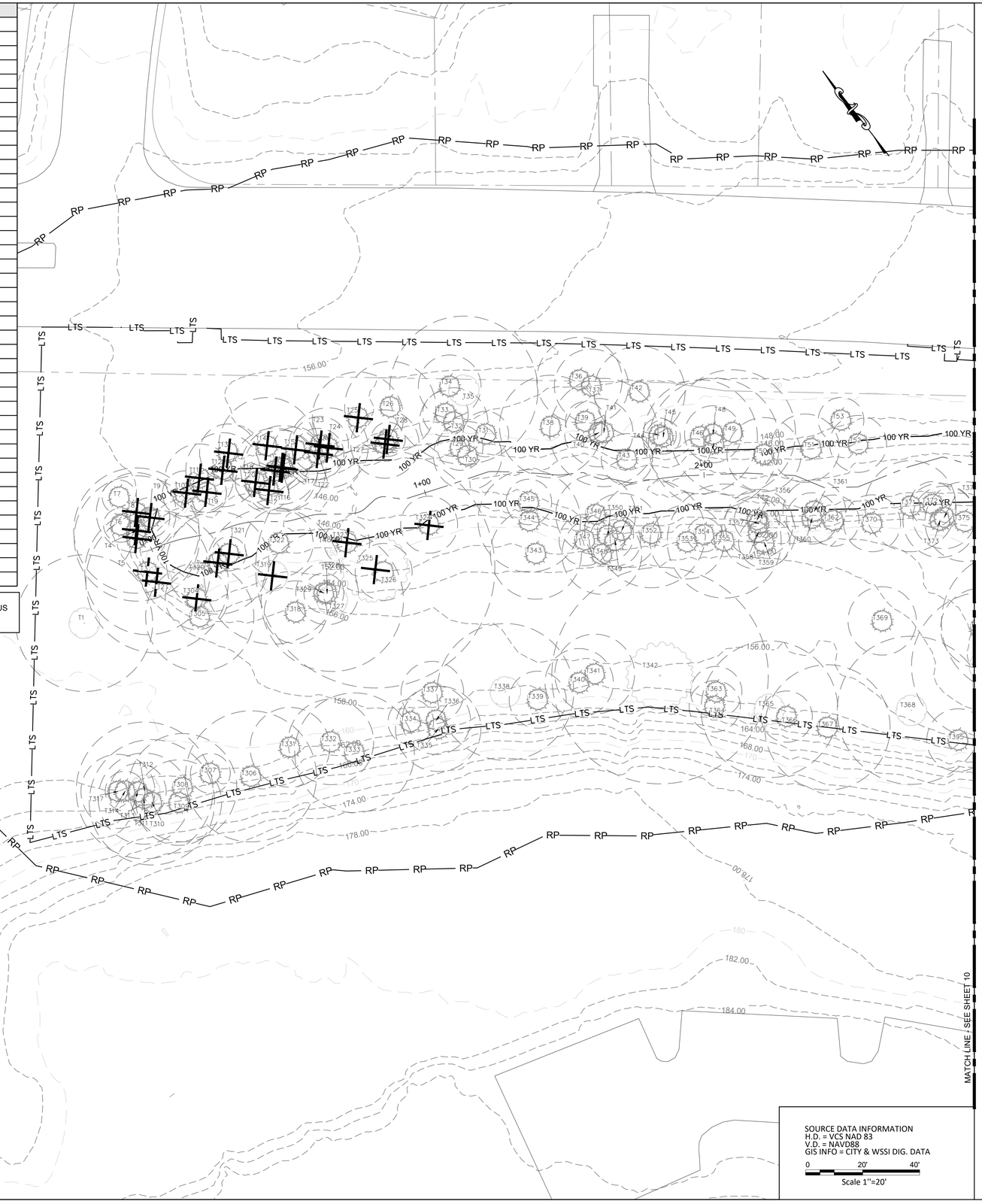
Appendix A: Tree Inventory Sheets

Tree #	Common Name	Scientific Name	Condition	DBH
1	Black locust	*Robinia pseudoacacia*	2	24
2	Black locust	*Robinia pseudoacacia*	4	25
3	White mulberry	*Morus alba*	Dead	22
4	Black locust	*Robinia pseudoacacia*	Dead	22
5	Black locust	*Robinia pseudoacacia*	Dead	22
6	Black locust	*Robinia pseudoacacia*	4	6
7	Black locust	*Robinia pseudoacacia*	2	6
8	Unknown tree	-	Dead	14
9	American elm	*Ulmus americana*	4	7
10	White mulberry	*Morus alba*	Dead	8
11	White mulberry	*Morus alba*	4	12
12	Black locust	*Robinia pseudoacacia*	4	13
13	White mulberry	*Morus alba*	4	10
14	Tree of heaven	*Ailanthus altissima*	4	17
15	Green ash	*Fraxinus pennsylvanica*	4	8
16	Tree of heaven	*Ailanthus altissima*	Dead	13
17	Tree of heaven	*Ailanthus altissima*	4	15
18	Tree of heaven	*Ailanthus altissima*	Dead	15
19	White mulberry	*Morus alba*	4	7
20	Box elder	*Acer negundo*	4	7
21	Box elder	*Acer negundo*	4	7
22	Black cherry	*Prunus serotina*	Dead	9
23	Littleleaf linden	*Tilia cordata*	3	10
24	Black locust	*Robinia pseudoacacia*	3	14
25	Tree of heaven	*Ailanthus altissima*	4	16
26	Black locust	*Robinia pseudoacacia*	4	16
27	Red maple	*Acer rubrum*	3	12
28	Red maple	*Acer rubrum*	3	6
29	Mimosa	*Albizia julibrissin*	4	8
30	American elm	*Ulmus americana*	4	12
31	Box elder	*Acer negundo*	4	8
32	Black locust	*Robinia pseudoacacia*	4	12
33	Unknown tree	-	Dead	8
34	White mulberry	*Morus alba*	4	11
35	White mulberry	*Morus alba*	4	26
36	Black locust	*Robinia pseudoacacia*	3	15
37	Black locust	*Robinia pseudoacacia*	4	13
38	Black locust	*Robinia pseudoacacia*	4	18
39	Sweet cherry	*Prunus avium*	3	7
40	Black locust	*Robinia pseudoacacia*	Dead	12
41	Black locust	*Robinia pseudoacacia*	3	19
42	Black locust	*Robinia pseudoacacia*	3	16
43	American elm	*Ulmus americana*	4	9
44	American holly	*Ilex opaca*	3	6
45	American holly	*Ilex opaca*	3	6
46	Black locust	*Robinia pseudoacacia*	Dead	20
47	Black locust	*Robinia pseudoacacia*	Dead	23
48	Red maple	*Acer rubrum*	4	10
49	Black cherry	*Prunus serotina*	4	22
50	Silver maple	*Acer saccharinum*	3	13
51	Black locust	*Robinia pseudoacacia*	Dead	12
52	Black cherry	*Prunus serotina*	Dead	10
53	White mulberry	*Morus alba*	4	8
304	Slippery elm	*Ulmus rubra*	Dead	11
305	Slippery elm	*Ulmus rubra*	Dead	19
306	Black locust	*Robinia pseudoacacia*	4	23
307	Slippery elm	*Ulmus rubra*	3	7
308	Black locust	*Robinia pseudoacacia*	Dead	19
309	White mulberry	*Morus alba*	4	15
310	Black locust	*Robinia pseudoacacia*	Dead	22
311	White mulberry	*Morus alba*	Dead	16
312	Black locust	*Robinia pseudoacacia*	Dead	24,12
313	White mulberry	*Morus alba*	Dead	10
314	Unknown tree	-	Dead	7,6
317	White mulberry	*Morus alba*	Dead	13,12
318	Unknown tree	-	Dead	11
319	Silver maple	*Acer saccharinum*	4	24
320	Slippery elm	*Ulmus rubra*	Dead	18
321	Silver maple	*Acer saccharinum*	4	6
322	Silver maple	*Acer saccharinum*	4	12
323	Unknown tree	-	Dead	8
324	White mulberry	*Morus alba*	4	10
325	Silver maple	*Acer saccharinum*	4	42
326	Unknown tree	-	Dead	10
327	Black locust	*Robinia pseudoacacia*	Dead	25
328	White mulberry	*Morus alba*	Dead	11,7
329	Unknown tree	-	Dead	7
331	Green ash	*Fraxinus pennsylvanica*	Dead	14
332	Silver maple	*Acer saccharinum*	Dead	15
333	Black cherry	*Prunus serotina*	Dead	21
334	Unknown tree	-	Dead	8
335	White mulberry	*Morus alba*	4	15
336	Unknown tree	-	Dead	12

Tree #	Common Name	Scientific Name	Condition	DBH
337	Unknown tree	-	Dead	11
338	Silver maple	*Acer saccharinum*	4	24
339	Unknown tree	-	Dead	10
340	White mulberry	*Morus alba*	Dead	12
341	Norway maple	*Acer platanoides*	Dead	14
342	Silver maple	*Acer saccharinum*	4	38
343	Mulberry	*Morus sp.*	Dead	16
344	Black walnut	*Juglans nigra*	4	18
345	Slippery elm	*Ulmus rubra*	3	8
346	Black locust	*Robinia pseudoacacia*	Dead	14
347	Unknown snag	-	Dead	9
348	Black locust	*Robinia pseudoacacia*	Dead	14
349	Unknown snag	-	Dead	9
350	Unknown snag	-	Dead	9
351	Slippery elm	*Ulmus rubra*	4	13
352	Black locust	*Robinia pseudoacacia*	Dead	19
353	White mulberry	*Morus alba*	4	13
354	Unknown snag	-	Dead	6
355	Black cherry	*Prunus serotina*	4	20
356	Unknown snag	-	Dead	8
357	Unknown snag	-	Dead	12
358	Unknown snag	-	Dead	13
359	Unknown snag	-	Dead	9
360	Unknown snag	-	Dead	9
361	Norway maple	*Acer platanoides*	4	11
362	White mulberry	*Morus alba*	Dead	9
363	Unknown snag	-	Dead	9
364	Unknown snag	-	Dead	9
365	Black cherry	*Prunus serotina*	4	24
366	Unknown tree	-	Dead	9
367	Black locust	*Robinia pseudoacacia*	4	22
368	Green ash	*Fraxinus pennsylvanica*	Dead	26
369	Silver maple	*Acer saccharinum*	3	12
370	Black cherry	*Prunus serotina*	4	10
371	White mulberry	*Morus alba*	4	16
372	Norway maple	*Acer platanoides*	Dead	8
373	Unknown snag	-	Dead	13
374	Unknown tree	-	Dead	11
375	Slippery elm	*Ulmus rubra*	4	14
395	Unknown tree	-	Dead	11

NOTES:
1. TREES LISTED IN BOLD WITHIN THE TREE TABLE WERE DESIGNATED BY THE CONSENSUS BUILDING GROUP (CBG) AS TREES TO PRESERVE. LABELS FOR THESE TREES ARE UNDERLINED WITHIN THE PLAN VIEW.





SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

DATE	REVISIONS BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
TI-01
SCALE:
1:20
SHEET:
09 OF 24

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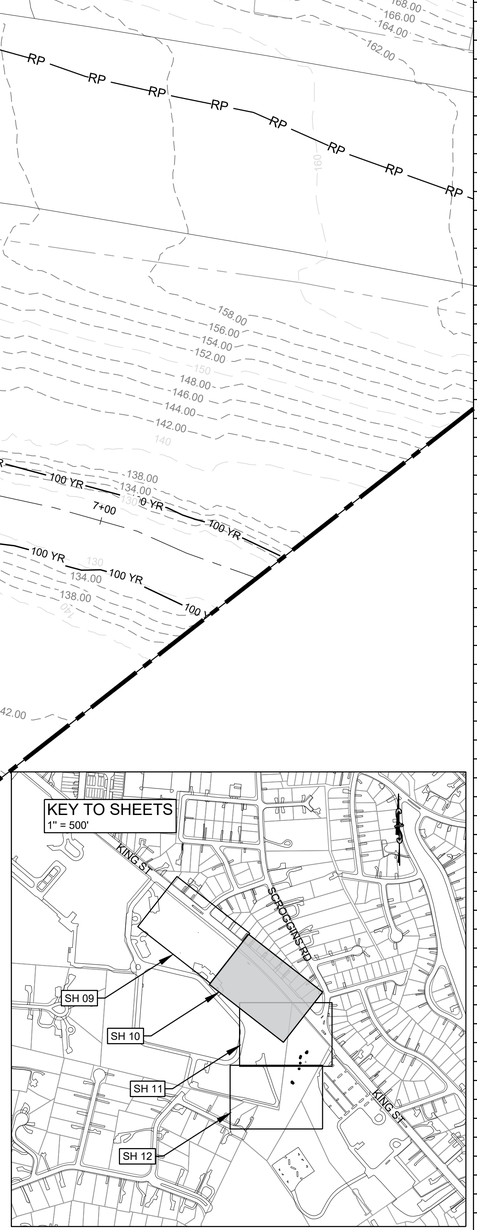
Tree #	Common Name	Scientific Name	Condition	DBH
54	Unknown tree	-	Dead	6
55	Unknown tree	-	Dead	6
56	Black locust	*Robinia pseudoacacia*	Dead	10
57	Black locust	*Robinia pseudoacacia*	4	12
58	Black cherry	*Prunus serotina*	4	15,14
60	American elm	*Ulmus americana*	4	10
61	Black walnut	*Juglans nigra*	4	11
62	Chestnut oak	*Quercus montana*	3	12
63	Black locust	*Robinia pseudoacacia*	Dead	13
64	Tree of heaven	*Ailanthus altissima*	4	8
65	Black locust	*Robinia pseudoacacia*	4	25

NOTES:
1. TREES LISTED IN BOLD WITHIN THE TREE TABLE WERE DESIGNATED BY THE CONSENSUS BUILDING GROUP (CBG) AS TREES TO PRESERVE. LABELS FOR THESE TREES ARE UNDERLINED WITHIN THE PLAN VIEW.

Tree #	Common Name	Scientific Name	Condition	DBH
376	Black locust	*Robinia pseudoacacia*	Dead	19
377	Black locust	*Robinia pseudoacacia*	Dead	15
378	Sweet cherry	*Prunus avium*	Dead	8
379	Unknown snag	-	Dead	8
380	Green ash	*Fraxinus pennsylvanica*	4	6
381	Silver maple	*Acer saccharinum*	4	15
382	White mulberry	*Morus alba*	Dead	9
383	White mulberry	*Morus alba*	Dead	10
384	Silver maple	*Acer saccharinum*	4	7
385	Black cherry	*Prunus serotina*	4	10
386	Slippery elm	*Ulmus rubra*	4	14
387	Unknown snag	-	Dead	9
388	Norway maple	*Acer platanoides*	Dead	11
389	Black cherry	*Prunus serotina*	4	14
390	Black locust	*Robinia pseudoacacia*	4	23
391	American sycamore	*Platanus occidentalis*	3	25
392	Silver maple	*Acer saccharinum*	4	14
393	Silver maple	*Acer saccharinum*	4	26
394	Silver maple	*Acer saccharinum*	3	16
396	Sassafras	*Sassafras albidum*	4	10
397	Sassafras	*Sassafras albidum*	3	11
398	Red maple	*Acer rubrum*	3	16
399	Sassafras	*Sassafras albidum*	3	7
400	Sassafras	*Sassafras albidum*	3	10
401	Tulip poplar	*Liriodendron tulipifera*	4	25
402	Tulip poplar	*Liriodendron tulipifera*	Dead	20,20
404	Tulip poplar	*Liriodendron tulipifera*	3	20
405	Tulip poplar	*Liriodendron tulipifera*	3	12
406	Tulip poplar	*Liriodendron tulipifera*	3	19
407	Red maple	*Acer rubrum*	4	7
408	Tulip poplar	*Liriodendron tulipifera*	3	22
409	Tulip poplar	*Liriodendron tulipifera*	4	23
410	Tulip poplar	*Liriodendron tulipifera*	4	26
411	Maple	*Acer sp.*	4	20
412	Tulip poplar	*Liriodendron tulipifera*	4	26,23
414	Tulip poplar	*Liriodendron tulipifera*	Dead	17
415	Silver maple	*Acer saccharinum*	3	9
416	Slippery elm	*Ulmus rubra*	Dead	13
417	Silver maple	*Acer saccharinum*	4	19
418	Silver maple	*Acer saccharinum*	Dead	15
419	Red maple	*Acer rubrum*	4	9
420	Silver maple	*Acer saccharinum*	4	9
421	Slippery elm	*Ulmus rubra*	4	14
422	Green ash	*Fraxinus pennsylvanica*	Dead	7
423	Silver maple	*Acer saccharinum*	4	21
424	Slippery elm	*Ulmus rubra*	4	8
425	Slippery elm	*Ulmus rubra*	4	10
426	Slippery elm	*Ulmus rubra*	4	10
427	Silver maple	*Acer saccharinum*	4	14
428	Unknown snag	-	Dead	12
429	Red maple	*Acer rubrum*	4	9
430	Slippery elm	*Ulmus rubra*	4	6
431	Silver maple	*Acer saccharinum*	3	16
432	Silver maple	*Acer saccharinum*	4	21
433	Silver maple	*Acer saccharinum*	4	9
434	Unknown tree	-	Dead	16
436	Unknown tree	-	Dead	10
437	Slippery elm	*Ulmus rubra*	4	15
438	Willow oak	*Quercus alba*	3	7
439	American elm	*Ulmus americana*	4	8
440	Black cherry	*Prunus serotina*	Dead	6
441	Black locust	*Robinia pseudoacacia*	Dead	12
442	Unknown snag	-	Dead	6
443	White mulberry	*Morus alba*	4	9
444	Black cherry	*Prunus serotina*	Dead	16
445	Unknown tree	-	Dead	10
446	Red maple	*Acer rubrum*	4	13
447	Slippery elm	*Ulmus rubra*	4	19
448	Unknown tree	-	Dead	6
450	Red maple	*Acer rubrum*	4	8
452	American elm	*Ulmus americana*	Dead	8
453	Slippery elm	*Ulmus rubra*	4	10
454	Slippery elm	*Ulmus rubra*	Dead	12
455	American elm	*Ulmus americana*	Dead	6
456	Tulip poplar	*Liriodendron tulipifera*	3	27
457	Red maple	*Acer rubrum*	4	15
458	American beech	*Fagus grandifolia*	3	8
459	American beech	*Fagus grandifolia*	3	18
460	American beech	*Fagus grandifolia*	3	8
461	Unknown snag	-	Dead	11
464	Unknown snag	-	Dead	21
466	Black oak	*Quercum velutina*	3	27
465	Chestnut oak	*Quercus montana*	2	32



SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

MATCH LINE - SEE SHEET 09

MATCH LINE - SEE SHEET 11

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
TI-02
SCALE:
1:20
SHEET:
10 OF 24

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Tree #	Common Name	Scientific Name	Condition	DBH
131	Chestnut oak	*Quercus montana*	Dead	30
134	Chestnut oak	*Quercus montana*	Dead	22
135	Common hackberry	*Celtis occidentalis*	Dead	6
136	Tulip poplar	*Liriodendron tulipifera*	3	28
137	Unknown tree	-	Dead	11
138	**Tulip poplar**	***Liriodendron tulipifera***	**3**	**35**
139	**American elm**	***Ulmus americana***	**3**	**7**
141	**Tulip poplar**	***Liriodendron tulipifera***	**3**	**20,16**
142	**Green ash**	***Fraxinus pennsylvanica***	**Dead**	**11**
143	**Green ash**	***Fraxinus pennsylvanica***	**Dead**	**16**
144	Red maple	*Acer rubrum*	3	7
145	Red maple	*Acer rubrum*	3	9
146	American elm	*Ulmus americana*	4	7
147	American elm	*Ulmus americana*	4	8
148	Tulip poplar	*Liriodendron tulipifera*	2	19
149	American elm	*Ulmus americana*	3	6
150	Tulip poplar	*Liriodendron tulipifera*	3	14
151	Tulip poplar	*Liriodendron tulipifera*	3	9
583	Red maple	*Acer rubrum*	1	44
584	Red maple	*Acer rubrum*	3	6,14
585	Red maple	*Acer rubrum*	3	14
586	American holly	*Ilex opaca*	3	6
587	Black cherry	*Prunus serotina*	Dead	8
588	Scarlet oak	*Quercus coccinea*	2	24
589	Tulip poplar	*Liriodendron tulipifera*	3	34
590	Tulip poplar	*Liriodendron tulipifera*	3	14
591	Tulip poplar	*Liriodendron tulipifera*	1	44
592	White oak	*Quercus alba*	1	21
593	Hickory species	*Carex sp.*	3	11
594	Tulip poplar	*Liriodendron tulipifera*	2	24
595	Red maple	*Acer rubrum*	3	7
596	Red maple	*Acer rubrum*	3	15
597	Tulip poplar	*Liriodendron tulipifera*	3	29
598	Red maple	*Acer rubrum*	3	14
599	Red maple	*Acer rubrum*	3	19
600	Red maple	*Acer rubrum*	3	15
601	Red maple	*Acer rubrum*	Dead	13
602	Red maple	*Acer rubrum*	3	13,8,7
603	Red maple	*Acer rubrum*	3	16
604	Red maple	*Acer rubrum*	3	26
605	Red maple	*Acer rubrum*	3	12
606	Unknown tree	-	Dead	6
607	Tulip poplar	*Liriodendron tulipifera*	3	12
608	**Red maple**	***Acer rubrum***	**3**	**20**
609	**Red maple**	***Acer rubrum***	**3**	**16**
610	Red maple	*Acer rubrum*	Dead	6
611	Red maple	*Acer rubrum*	3	15
612	Black locust	*Robinia pseudoacacia*	Dead	15
613	**Tulip poplar**	***Liriodendron tulipifera***	**3**	**17**
614	Red maple	*Acer rubrum*	3	18
615	Maple	*Acer sp.*	4	7
620	Red maple	*Acer rubrum*	3	12
621	Red maple	*Acer rubrum*	3	15
622	Red maple	*Acer rubrum*	Dead	8
623	Tulip poplar	*Liriodendron tulipifera*	4	25
624	Red maple	*Acer rubrum*	3	14
625	Willow oak	*Quercus alba*	Dead	37
627	Red maple	*Acer rubrum*	3	7
628	Red maple	*Acer rubrum*	3	8
629	Tulip poplar	*Liriodendron tulipifera*	1	21,28,42
630	Unknown tree	-	Dead	7
631	Black cherry	*Prunus serotina*	3	19
632	Red maple	*Acer rubrum*	3	10
633	Red maple	*Acer rubrum*	3	9
634	Black cherry	*Prunus serotina*	Dead	16

NOTES:
1. TREES LISTED IN BOLD WITHIN THE TREE TABLE WERE DESIGNATED BY THE CONSENSUS BUILDING GROUP (CBG) AS TREES TO PRESERVE. LABELS FOR THESE TREES ARE UNDERLINED WITHIN THE PLAN VIEW.

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
TI-03
SCALE:
N/A
SHEET:
11 OF 24

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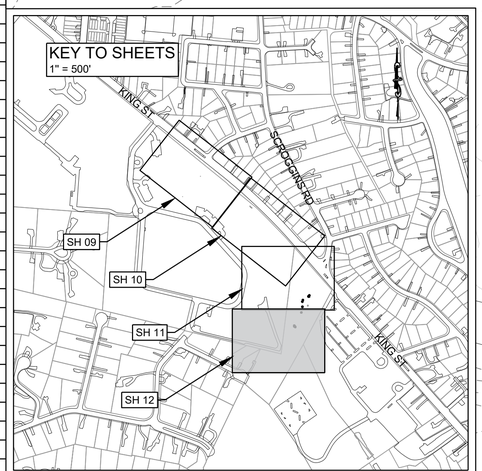
Tree #	Common Name	Scientific Name	Condition	DBH
152	Tulip poplar	*Liriodendron tulipifera*	2	17
153	Tulip poplar	*Liriodendron tulipifera*	3	11
154	Red maple	*Acer rubrum*	3	18
155	Tulip poplar	*Liriodendron tulipifera*	2	42
156	Honeylocust	*Gleditsia triacanthos*	Dead	8
157	Tulip poplar	*Liriodendron tulipifera*	2	7
158	Eastern cottonwood	*Populus deltoides*	3	28
159	American elm	*Ulmus americana*	3	6
160	American elm	*Ulmus americana*	3	10
161	Black locust	*Robinia pseudoacacia*	4	17
162	Tulip poplar	*Liriodendron tulipifera*	3	18
163	White mulberry	*Morus alba*	4	7
164	Unknown tree	-	Dead	15
165	Tulip poplar	*Liriodendron tulipifera*	3	14
166	Tulip poplar	*Liriodendron tulipifera*	2	20
167	Unknown tree	-	Dead	6
168	Slippery elm	*Ulmus rubra*	3	6
169	Tulip poplar	*Liriodendron tulipifera*	3	20
170	Red maple	*Acer rubrum*	2	7
171	Slippery elm	*Ulmus rubra*	3	9
172	Slippery elm	*Ulmus rubra*	3	6
173	American sycamore	*Platanus occidentalis*	2	22
174	Red maple	*Acer rubrum*	2	7
175	Black cherry	*Prunus serotina*	4	6
176	Red maple	*Acer rubrum*	3	6
177	Black cherry	*Prunus serotina*	Dead	16
178	Red maple	*Acer rubrum*	3	8
179	Red maple	*Acer rubrum*	2	10
180	Red maple	*Acer rubrum*	2	12
181	Tulip poplar	*Liriodendron tulipifera*	2	6
182	Red maple	*Acer rubrum*	2	11
183	Red maple	*Acer rubrum*	3	8
184	Black cherry	*Prunus serotina*	Dead	19
185	Tulip poplar	*Liriodendron tulipifera*	2	6
186	Red maple	*Acer rubrum*	3	6
187	Tulip poplar	*Liriodendron tulipifera*	3	19
188	Red maple	*Acer rubrum*	Dead	18
189	Unknown tree	-	4	7
616	Black locust	*Robinia pseudoacacia*	Dead	11
617	Red maple	*Acer rubrum*	3	17
618	Black locust	*Robinia pseudoacacia*	Dead	8
619	**Black cherry**	***Prunus serotina***	**4**	**14**
635	Sassafras	*Sassafras albidum*	Dead	8
636	Tulip poplar	*Liriodendron tulipifera*	2	28,30
637	Common persimmon	*Diospyros virginiana*	3	17
638	Red maple	*Acer rubrum*	3	16
639	Red maple	*Acer rubrum*	3	18
640	Red maple	*Acer rubrum*	3	17
641	Red maple	*Acer rubrum*	Dead	17
642	Red maple	*Acer rubrum*	3	9,15
643	Tulip poplar	*Liriodendron tulipifera*	Dead	19
644	Tulip poplar	*Liriodendron tulipifera*	2	24,31,24
645	Red maple	*Acer rubrum*	3	24
646	**White oak**	***Quercus alba***	**3**	**14**
647	**Hickory species**	***Carya sp.***	**3**	**8,6**
648	**Post oak**	***Quercus stellata***	**3**	**14**
649	Southern red oak	*Quercus falcata*	2	27
650	Slippery elm	*Ulmus rubra*	3	7
651	Red maple	*Acer rubrum*	3	7
652	Tulip poplar	*Liriodendron tulipifera*	Dead	32,13
653	Slippery elm	*Ulmus rubra*	3	8
654	Unknown tree	-	Dead	6
655	White oak	*Quercus alba*	Dead	6
656	Black gum	*Nyssa sylvatica*	3	12
657	Red maple	*Acer rubrum*	3	14
658	Tulip poplar	*Liriodendron tulipifera*	Dead	46
659	Red maple	*Acer rubrum*	Dead	9
660	Red maple	*Acer rubrum*	3	11
661	Southern red oak	*Quercus falcata*	3	12
662	Tulip poplar	*Liriodendron tulipifera*	3	6
663	Virginia pine	*Pinus virginiana*	Dead	23
664	Black cherry	*Prunus serotina*	3	10
665	Red maple	*Acer rubrum*	3	7
666	Tulip poplar	*Liriodendron tulipifera*	2	24
667	Red maple	*Acer rubrum*	3	13
668	Sweet gum	*Liquidambar styraciflua*	4	8
669	Sassafras	*Sassafras albidum*	Dead	12
670	Virginia pine	*Pinus virginiana*	Dead	18
671	White oak	*Quercus alba*	3	12
672	Tulip poplar	*Liriodendron tulipifera*	1	26
673	Slippery elm	*Ulmus rubra*	3	7
674	Tulip poplar	*Liriodendron tulipifera*	3	7
675	Red maple	*Acer rubrum*	3	7

MATCH LINE - SEE SHEET 11



Tree #	Common Name	Scientific Name	Condition	DBH
676	Tulip poplar	*Liriodendron tulipifera*	3	6
677	Red maple	*Acer rubrum*	3	8
679	Black gum	*Nyssa sylvatica*	3	8,9
680	Red maple	*Acer rubrum*	3	9
1001	Red maple	*Acer rubrum*	2	21
1002	Willow oak	*Quercus alba*	2	11
1004	American elm	*Ulmus americana*	3	8
1006	American elm	*Ulmus americana*	3	23
1087	Red maple	*Acer rubrum*	2	24
1109	Black gum	*Nyssa sylvatica*	3	12
1110	Black cherry	*Prunus serotina*	3	6
1111	Sassafras	*Sassafras albidum*	3	46
1115	American elm	*Ulmus americana*	2	8
1116	American elm	*Ulmus americana*	2	8
1117	Tulip poplar	*Liriodendron tulipifera*	3	47
1118	Black cherry	*Prunus serotina*	4	10
1119	Sweet gum	*Liquidambar styraciflua*	3	8
1120	American elm	*Ulmus americana*	2	7
1121	Red maple	*Acer rubrum*	1	13
1122	River Berch	*Betula nigra*	3	21
1123	American elm	*Ulmus americana*	1	10
1150	Black cherry	*Prunus serotina*	4	17
1157	Maple	*Acer sp.*	4	12

Tree #	Common Name	Scientific Name	Condition	DBH
1162	Red maple	*Acer rubrum*	1	18
1163	Black cedar	*Juniperus nigra*	4	16
1173	American elm	*Ulmus americana*	4	9
1174	Sweet gum	*Liquidambar styraciflua*	2	11
1176	Red maple	*Acer rubrum*	1	9
1177	Tulip poplar	*Liriodendron tulipifera*	2	8
1178	American elm	*Ulmus americana*	2	16
1179	American elm	*Ulmus americana*	2	15
1180	Swamp white oak	*Quercus bicolor*	1	14
1181	Black locust	*Robinia pseudoacacia*	4	17
1182	American elm	*Ulmus americana*	4	10
1183	American elm	*Ulmus americana*	3	11
1184	American elm	*Ulmus americana*	1	28
1185	American elm	*Ulmus americana*	3	7
1186	Willow oak	*Quercus alba*	1	51
1187	Red maple	*Acer rubrum*	1	9

Tree #	Common Name	Scientific Name	Condition	DBH
1188	Black gum	*Nyssa sylvatica*	4	10
1189	Black gum	*Nyssa sylvatica*	4	10
1190	American elm	*Ulmus americana*	1	28
1191	Honey or Black locust spa.	-	3	18
1192	American elm	*Ulmus americana*	3	7
1193	Red maple	*Acer rubrum*	3	15
1194	Tulip poplar	*Liriodendron tulipifera*	1	32
1195	Red maple	*Acer rubrum*	1	8 | 13
1196	Tulip poplar	*Liriodendron tulipifera*	1	8
1197	White oak	*Quercus alba*	1	13
1198	Swamp white oak	*Quercus bicolor*	2	35
1199	American elm	*Ulmus americana*	3	12

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOTES:
1. TREES LISTED IN BOLD WITHIN THE TREE TABLE WERE DESIGNATED BY THE CONSENSUS BUILDING GROUP (CBG) AS TREES TO PRESERVE. LABELS FOR THESE TREES ARE UNDERLINED WITHIN THE PLAN VIEW.

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
TI-04
SCALE:
N/A
SHEET:
12 OF 24

C:\Users\BernheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\810 CAD\20 - SHEETS\60742359-SHT-20-C-0005_TREE INVENTORY.dwg Plotted: 10/15/2025 5:50 PM by Bernheisel, Sean

AECOM
12420 Milestone Center Drive
Suite 150
Germantown, Maryland 20876
aecom.com

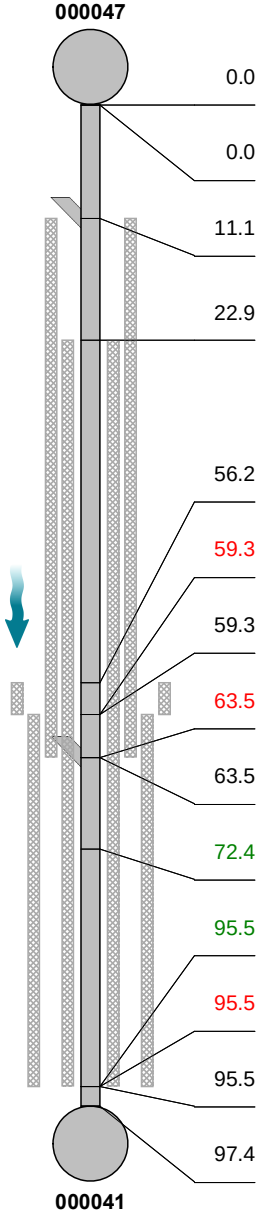
Appendix B CCTV Assessment Report

AECOM

Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
7/14/2025			**Walker**	**U0218070300337**	**000047-000041**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	**Downstream**		**97.4 '**	**97.4 '**

City:	**Alexandria**	Drainage Area:		Upstream MH:	**000047**
Street:	**King St**	Media Label:		Up Rim to Invert:	
Location Code:	Secondary roads, non-numbered suburban/rural	Flow Control:		Downstream MH:	**000041**
Location Details:		Sheet Number:		Down Rim to Invert:	
Pipe shape:	**Circular**	Sewer Use:	**Sanitary Sewage Pipe**	Total gallons used:	**0.0**
Pipe size:	**12 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Reinforced Concrete Pipe**	Purpose:		Joints failed:	**0**
Lining Method:		Owner:			
Additional Info:	**Pipe has been lined**				



1:735	Distance		Code	Observation	Counter	Photo	Grade
	0.0		AMH	Manhole / 000047	00:00:00	1	
	0.0		MWL	Water Level, 5% of the vertical dimension	00:00:12	2	
	11.1	S01	LFDL	Lining Feature Delaminating at 3 o'clock, Start	00:01:12	3	
	22.9	S02	DSGV	Deposits Settled Gravel, 5% of cross sectional area at 6 o'clock, Start	00:02:15	4	
	56.2	S03	SSS	Surface Damage Spalling from 7 o'clock to 5 o'clock, Start	00:04:05	5	
	59.3	F03	SSS	Surface Damage Spalling from 7 o'clock to 5 o'clock, Finish	00:04:36		S2
	59.3	S04	LFDC	Lining Feature Discoloration from 7 o'clock to 5 o'clock, Start	00:04:39	6	
	63.5	F01	LFDL	Lining Feature Delaminating at 3 o'clock, Finish	00:05:03		S3
	63.5		MWL	Water Level, 20% of the vertical dimension	00:05:07	7	
	72.4		OBR	Obstruction Rocks, 5% of cross sectional area at 6 o'clock	00:05:38	8	M2
	95.5	F02	DSGV	Deposits Settled Gravel, 5% of cross sectional area at 6 o'clock, Finish	00:06:44		M2
	95.5	F04	LFDC	Lining Feature Discoloration from 7 o'clock to 5 o'clock, Finish	00:06:48		S3
	95.5		MWL	Water Level, 5% of the vertical dimension	00:06:53	9	
	97.4		AMH	Manhole / 000041	00:07:19	10	

QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
3B21	2B00	3B2B	53.0	32.0	85.0	2.9	2.0	2.5

Section Pictures - 7/14/2025 - 000047-000041

City	Street	Date	Lateral Segment Reference	Section No.
Alexandria	**King St**	**7/14/2025**	**000047-000041**	**2**

1, 00:00:00, 0.00ft
Manhole / 000047

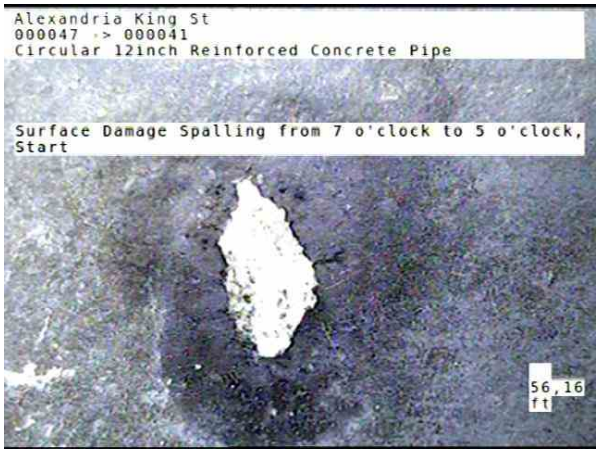
2, 00:00:12, 0.00ft
Water Level, 5% of the vertical dimension

3, 00:01:12, 11.09ft
Lining Feature Delaminating at 3 o'clock, Start

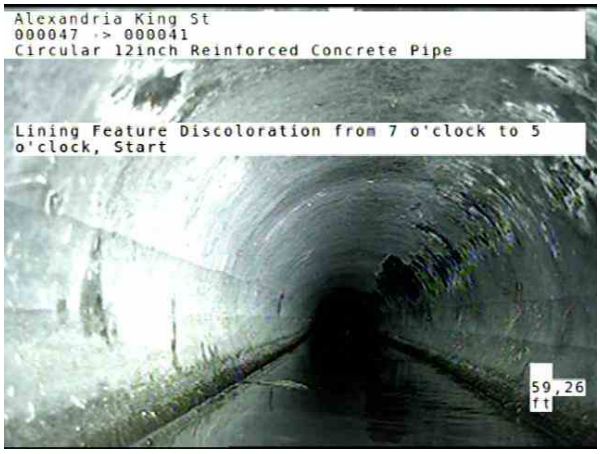
4, 00:02:15, 22.91ft
Deposits Settled Gravel, 5% of cross sectional area at 6 o'clock, Start

Section Pictures - 7/14/2025 - 000047-000041

City	Street	Date	Lateral Segment Reference	Section No.
Alexandria	**King St**	**7/14/2025**	**000047-000041**	**2**

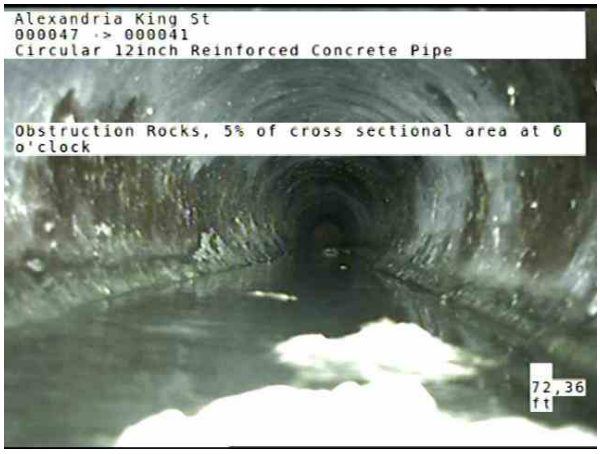


5, 00:04:05, 56.17ft
Surface Damage Spalling from 7 o'clock to 5 o'clock, Start



6, 00:04:39, 59.26ft
Lining Feature Discoloration from 7 o'clock to 5 o'clock, Start

7, 00:05:07, 63.47ft
Water Level, 20% of the vertical dimension



8, 00:05:38, 72.36ft
Obstruction Rocks, 5% of cross sectional area at 6 o'clock

Section Pictures - 7/14/2025 - 000047-000041

City	Street	Date	Lateral Segment Reference	Section No.
Alexandria	**King St**	**7/14/2025**	**000047-000041**	**2**

9, 00:06:53, 95.46ft
Water Level, 5% of the vertical dimension

10, 00:07:19, 97.38ft
Manhole / 000041

AECOM

Inspection report

Date:	Work Order:	Weather:	Surveyed By:	Certificate Number:	Pipe Segment Ref.:
7/14/2025			**Walker**	**U0218070300337**	**007531-006571**
Year laid:	Pre-cleaning:	Direction:	Pipe Joint Length:	Total Length:	Length Surveyed:
	No Pre-Cleaning	**Upstream**		**66.7 '**	**66.7 '**

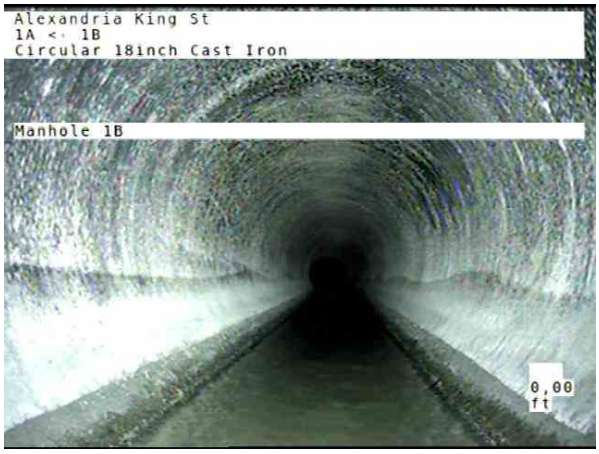
City:	**Alexandria**	Drainage Area:		Upstream MH:	**007531**
Street:	**King St**	Media Label:		Up Rim to Invert:	
Location Code:	Secondary roads, non-numbered suburban/rural	Flow Control:		Downstream MH:	**006571**
Location Details:		Sheet Number:		Down Rim to Invert:	
Pipe shape:	**Circular**	Sewer Use:	**Sanitary Sewage Pipe**	Total gallons used:	**0.0**
Pipe size:	**18 "**	Sewer Category:	**SEC**	Joints passed:	**0**
Pipe material:	**Cast Iron**	Purpose:		Joints failed:	**0**
Lining Method:		Owner:			
Additional Info:					

1:504	Distance	Code	Observation	Counter	Photo	Grade
	0.0	AMH	Manhole / 1B	00:00:00	1	
	0.0	MWL	Water Level, 5% of the vertical dimension	00:00:11	2	
	39.7	JSM	Joint Separated Medium	00:02:34	3	S3
	59.8	SCP	Surface Damage Corrosion from 12 o'clock to 12 o'clock, within 8 inch	00:03:32	4	S3
	65.1	RPZ	Point Repair Other / pipe seal visible, appears to have been repaired, slight deformation	00:04:24	5	
	66.7	AMH	Manhole / 1A	00:05:03	6	

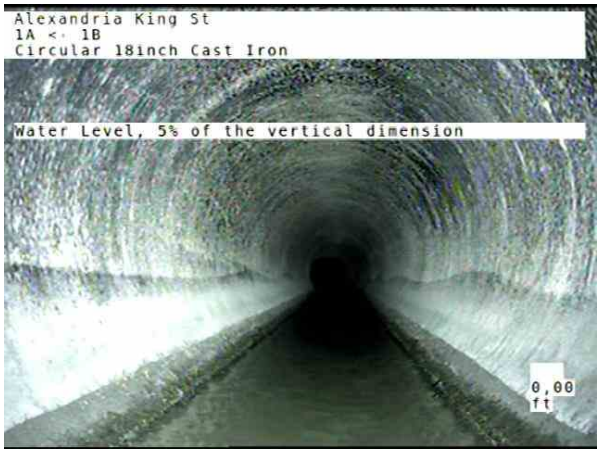
QSR	QMR	QOR	SPR	MPR	OPR	SPRI	MPRI	OPRI
3200	0000	3200	6.0	0.0	6.0	3.0	0.0	3.0

Section Pictures - 7/14/2025 - 007531-006571

City	Street	Date	Lateral Segment Reference	Section No.
Alexandria	**King St**	**7/14/2025**	**007531-006571**	**1**

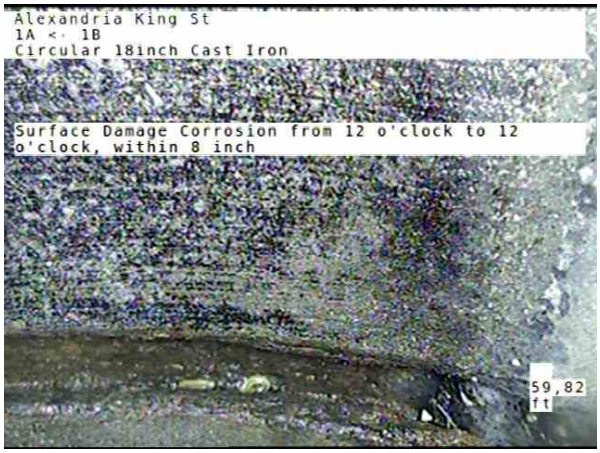


1, 00:00:00, 0.00ft
Manhole / 1B



2, 00:00:11, 0.00ft
Water Level, 5% of the vertical dimension

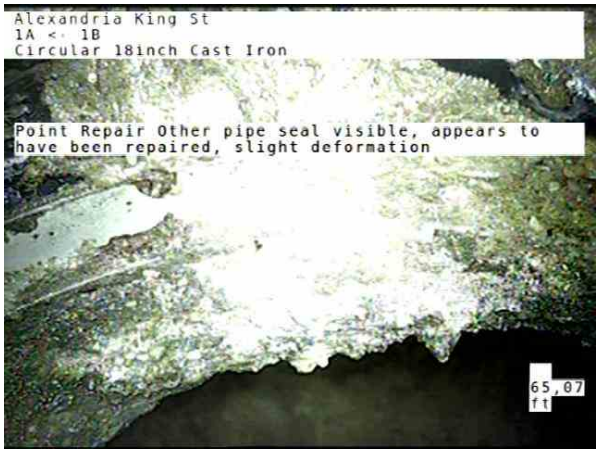
3, 00:02:34, 39.74ft
Joint Separated Medium



4, 00:03:32, 59.82ft
Surface Damage Corrosion from 12 o'clock to 12 o'clock, within 8 inch

Section Pictures - 7/14/2025 - 007531-006571

City	Street	Date	Lateral Segment Reference	Section No.
Alexandria	**King St**	**7/14/2025**	**007531-006571**	**1**



5, 00:04:24, 65.07ft
Point Repair Other / pipe seal visible, appears to have been repaired, slight deformation

6, 00:05:03, 66.67ft
Manhole / 1A

Appendix C Geotechnical Assessment Report

Taylor Run Stream Stabilization Design –Geotechnical 60% submittal City of Alexandria, VA

Draft Geotechnical Engineering Report

Draft

Draft Geotechnical Engineering Report

April 16, 2026

Prepared for: City of Alexandria, Virginia – Department of Transportation and Environmental Services

Prepared by: AECOM

AECOM Project Number: 60742359

Draft

draft

Quality information

Document name	Ref	Prepared for	Prepared by	Date	Reviewed by
Draft Geotechnical Engineering Report	Draft submittal	City of Alexandira, VA	Mohammed Alhacahmi, PE	04/16/2026	Victor Omelchenko, PE, D.GE

Revision history

Revision	Revision date	Details	Name	Position

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Figure 2 – Testing Location Plan (1 sheet)

Appendix A –Soil Boring Logs (8 sheets)

Appendix B – Soil Profiles (1 sheets)

Appendix C – Soil Engineering Property Test Results (56 sheets)

Draft

1 INTRODUCTION AND SCOPE OF WORK

1.1 Introduction

The purpose of the project is to provide design and engineering services to support the City of Alexandria, Virginia in correcting impairments related to erosion and degradation of stream function, providing stormwater management, and protecting compromised infrastructure within the project area. The project will implement a minimal intervention approach to address critical areas of exposed sanitary sewer infrastructure that are at risk of damage, a deteriorated stormwater outfall, a plunge pool at the upstream daylight location, and two sections of eroding streambank that contain a sanitary sewer line. Improvements to the plunge pool will include the construction of a rock façade and the removal of existing concrete rubble previously placed in the area.

1.2 Scope of Work

The City of Alexandria is planning to conduct a minimal stabilization approach for areas of stream bank and infrastructure stabilization from concept to develop full design and construction documents for the project. This project will be a design project to protect and stabilize the stream and stream embankments at the Taylor Run area.

AECOM was requested to provide geotechnical design recommendations in an area proposed for the planned stabilization by utilizing a geotechnical site characterization that includes a field testing and laboratory testing program. AECOM's scope of work for the project included drilling four soil borings, installing one temporary groundwater well, performing geotechnical laboratory testing, performing engineering analyses, and preparation of this geotechnical engineering report.

2 EXISTING SITE CONDITIONS AND PROPOSED CONSTRUCTION

2.1 Existing Site Conditions

We performed a site visit on October 02, 2025. During our site visit we observed various damage across the designated areas. The limits of the different design areas are shown in Figure 1 of this report. Three to four feet of bank erosion was observed within the site. The observations are summarized below:

Design Area 1:

- Localized erosion observed behind the wingwall.
- Presence of concrete debris within the channel.
- Erosion along both channel banks.

Design Area 2:

- Visible deterioration of the wingwall structure.
- Approximately 2 feet of bank erosion has resulted in the exposure of 12 inches of a ductile iron pipe.
- Bank erosion presents along the left bank of the channel.

Design Area 3:

- Exposed sanitary sewer manhole within the channel.
- Undermining observed beneath the concrete skirt beneath the manhole.
- Accumulation of wood debris that is obstructing flow within the channel.

Design Area 4:

- Channel erosion that has exposed root masses along the channel bank.
- Significant sheet pile retaining wall lateral movement of about 3 to 5 inches.
- Approximately 3 feet of bank erosion that has resulted in the exposure of 18 inches of ductile iron pipe.
- Wood debris is presented within the channel.
- Erosion that was observed along both channel banks.

We did not observe any slope failures or other evidence that would suggest that slope failures have occurred at the site.

2.2 Proposed Construction

This project involves the design of a “minimal stabilization” approach to provide targeted stream stabilization measures aimed at protecting at-risk infrastructure along Taylor Run in the City of Alexandria. The work focuses on four priority areas, each containing vulnerable infrastructure such as degraded outfalls, exposed sanitary sewer manholes, and sanitary sewer stream

crossings. All focus areas and potential construction access points are located within City-owned property. Additionally, the project area is situated within or adjacent to Chinquapin Park.

We understand that the proposed construction involves the installation of gravity retaining walls across all designated design areas to mitigate potential failure of slopes due to slope stability and erosion. The gravity walls are to be underlain by sheet piles. As-built drawings indicate that the existing steel sheet piles extend about 4.5 ft beneath the current ground surface in the stream areas. We also understand that the scour depth is estimated to be about 8 to 10 feet below the current ground surface in the stream channels.

3 RECENT FIELD EXPLORATION

3.1 Regional Geology

The soil borings indicate that the subject site is underlain predominately by Alluvium soils deposited within the current river valleys of the Potomac and its tributaries. These Quaternary deposits consist of interbedded sedimentary deposits of clay, silt, sand, and gravel, with varying amounts of organic materials, including peat and wood fragments. These soils were deposited by rivers and tributary streams in channels, bars, floodplains, terraces, estuaries, and alluvial fans. In the geologic literature, the Quaternary deposits are commonly subdivided into distinct units, such as fine-grained alluvium present at low elevations and various levels of predominantly coarse-grained Quaternary river terraces.

Below the alluvium soils, soils belonging to the Potomac Group were encountered. The Potomac Group sediments are the oldest sedimentary deposits in the aforementioned area. These soils are known to be highly over-consolidated as a result of the weight of a substantial thickness of overlying soils that have since been eroded away. As a result of over-consolidation, Potomac Group soils have been pre-loaded and are capable of supporting substantial loads. However, the Potomac Group clays are well documented with problems associated with slope instability and excessive shrink/swell characteristics.

3.2 Subsurface Explorations

AECOM conducted a subsurface investigation program to investigate the subsoil conditions at the site. Four soil borings were performed and one temporary monitoring well was installed in the field. Due to site access constraints, the borings were drilled along the stream alignment adjacent to King Street. The soil boring locations are illustrated on the Testing Location Plan included as Figure 2. The soil boring logs are included in Appendix A.

3.2.1 Boring Stakeout and Subsurface Utility Clearance

The boring locations were field located and staked by AECOM based on GPS coordinates prior to drilling the borings. Virginia 811 and the VDOT Right of Way and Utility Division were contacted by our drilling subcontractor to mark the existing underground public utilities around the staked boring locations. The ground surface elevations at the testing locations and near the proposed construction layout were determined based on an AECOM topographic survey that was completed for the 30% design.

3.2.2 Drilling Methodology and Sampling

Soil and Land Use Technology, Inc (SaLUT) of Glen Burnie, Maryland drilled the soil test borings to a depth of 30 to 45 ft below the ground surface (bgs) between September 23rd and October 3rd, 2025. The borings were drilled using a Diedrich D-50 Truck-Mounted Drill Rig in general accordance with ASTM D1586 using hollow stem (ASTM D6151) and mud rotary techniques. Representative soil samples were obtained using a two-inch outside diameter split-barrel spoon sampler in general accordance with ASTM D1586 standards. Standard penetration tests (SPTs) were performed by driving the split-spoon sampler into the soil a distance of 24 inches over four six-inch intervals, by means of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler through the second and third six-inch intervals (i.e., the N-values) for each sample are indicated on the soil test boring logs included in Appendix A. A Shelby Tube sampler was used in cohesive material at select depths in order to obtain relatively undisturbed samples for advanced testing. Soil samples were obtained continuously throughout the depth of the borings. The N-values provide an indication of the in-place density (granular materials) and consistency (cohesive materials) of the soils. A temporary monitoring well was installed at boring location B-4 after drilling completion and water measurements were conducted after 24 hours. The borings were backfilled with cuttings and grout after the last groundwater readings.

Representative portions of the soil samples were sealed in glass jars and retained for further review. The visual classifications were based on texture and plasticity, in accordance with the Unified Soil Classification System (USCS). A brief description of the USCS is also included in Appendix A.

3.2.3 Temporary Groundwater Monitoring Well

One temporary groundwater monitoring well was installed within borehole B-4. Within the borehole, a 2-inch diameter PVC pipe with a 10-foot well screen at the bottom end was installed to the bottom of the borehole to obtain a stabilized groundwater reading. The PVC pipe had 2 feet of stick-up above the ground surface. The borehole annulus was backfilled with filter sand to 12 inches above the well screen and sealed with bentonite pellets. A groundwater level reading was collected from the temporary groundwater well after 24 hours. Groundwater level readings from the temporary well are included on the boring log in Appendix A.

4 SUBSURFACE EXPLORATION RESULTS

4.1 Subsurface Conditions

The subsurface materials encountered in the testing locations are described below for the purposes of our discussions in this report. It should be noted that these descriptions do not imply the continuity of the materials encountered in the borings. The descriptions of the materials have been established to characterize similar subsurface conditions based on material gradations and parent geology. The subsurface materials encountered in the soil borings, along with the range of Standard Penetration Test (SPT) N-Values are described below.

Approximately 5 inches of topsoil was encountered at the soil boring locations B-1 and B-2. A subsurface soil profile illustrating subsurface soil conditions is presented in Appendix A.

- Stratum A (Uncontrolled Fill)

Borings B-1 and B-2 indicated the presence of uncontrolled fill soils below the surficial soil. The uncontrolled fill extended to about 4.0 feet below ground surface or to about EL +145 ft and consist of lean clay (CL) and Sandy Silt (ML). Standard Penetration Test N-values for the uncontrolled fill soils vary between 6 to 18 blows per foot bpf.

- Stratum B (Cohesive Native Soils)

Native, highly plastic and medium stiff fat clay soils were encountered below the existing fill at boring location B-1 to a depth of approximately 9 feet or to about EL +141 ft. Stratum B soil contains minor amounts of sand and gravel. The N-values ranged from 5 to 8 blows per foot.

- Stratum C (Granular Alluvium Soils)

Below the uncontrolled fill soils and the native cohesive soils, native alluvium soils were encountered to a depth of 12 feet bgs or to about EL +138 ft. The Stratum C soils consisted of medium dense to dense, Well Graded Sand with Clay (SW), Silty Sand with Gravel (SM), and Clayey Sand (SC). The N-values ranged from 5 to 35 blows per foot.

- Stratum D (Cohesive Potomac Formation Soils)

Below the alluvium soils, native sandy fine-grained soils were encountered. These fine-grained soils extended to the bottom of the exploration, which was terminated at 45 ft bgs or to about EL +87 ft. These soils consisted of soft to very stiff Sandy Lean Clay (CL) and Sandy Fat Clay (CH) The N-values ranged from 4 to 29 blows per foot (bpf).

4.2 Groundwater

Groundwater readings obtained from the soil borings during drilling, immediately after, and in the stabilized reading in the temporary groundwater well are summarized below. The temporary well was abandoned and grouted prior to field work completion and demobilizing from the project site.

The 24-hour groundwater reading within the temporary monitoring well indicated groundwater at a depth of 8 feet bgs or at about EL +143 ft. Groundwater readings are also included in the soil borings logs included in Appendix A.

Seasonal perched water conditions may be encountered during construction due to the presence of fine-grained soils interbedded with free-draining sandy soils. It is possible that stabilized groundwater levels are higher than those obtained from the soil borings. The water level is assumed to be at approximately 100 years' flood elevation in all design areas. It should be noted that fluctuations in groundwater levels may occur as a result of seasonal variations in rainfall, evaporation, construction activity, surface runoff, and other site-specific factors.

4.3 Soil Engineering Property Test Results

Select split-spoon and Shelby tube soil samples were delivered to the SaLUT soil laboratory to determine the physical and engineering properties of the soils encountered in the borings. The soil laboratory tests were conducted in general accordance with applicable ASTM criteria. The testing included moisture content determinations (ASTM D2216), Atterberg Limits tests (ASTM D4318), grain size analyses (ASTM D6913/D7928), and USCS Classification (ASTM D2487). Direct Shear Testing (ASTM D3080), Unconfined Compressive Testing (ASTM D2166), Consolidated Undrained triaxial test ASTM D4767 and One-Dimensional Consolidation Test (ASTM D-2435) were performed on a Shelby tube sample. The soil laboratory test results are included in Appendix C.

4.4 Expected Variations in Subsurface Conditions

Interpretation of general subsurface soil conditions presented herein are based on the soil and groundwater conditions obtained from four soil borings drilled at the site. The subsurface conditions may vary between the exploration locations and the proposed wall locations along the stream alignment. If conditions are found to be different from those observed in the borings, recommendations contained in this report should be re-evaluated by AECOM and confirmed in writing. Since the groundwater level is expected to fluctuate with rainfall, season, temperature, climate, construction in the area, etc., groundwater conditions at the time of construction may be different from those found during the time of the recent exploration.

5 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

Gravity walls in conjunction with steel sheet piles are proposed to reduce the potential for global slope instability and potential erosion adjacent to Taylor Run. Recommended design parameters for the walls and sheet piles, along with the analysis results are presented in the following sections of this report.

5.1 Gravity Walls

The following recommended soil parameters may be used for design of Redi-Rock or similar type gravity retaining wall systems:

Table 5.1 Lateral Earth Pressure Soil Parameters

Wall Type	Backfill Materials Type	Backfill Moist Unit Weight (pcf)	Backfill Internal Friction Angle (degrees)	Active Earth Pressure Coefficient	Passive Earth Pressure Coefficient
Redi-Rock Wall or Similar Gravity Wall	Imported Fill[1]	120	30	0.33	3.0
	AASHTO No. 57 Crushed Stone	100	36	0.26	3.85

[1]Imported granular fill should classify SC, or more granular per UFC-3-220

The recommended lateral earth pressure values do not include hydrostatic pressures resulting from infiltrating surface water or groundwater that may accumulate behind the retaining walls. Therefore, wall backfill materials should be free-draining, and appropriate measures should be implemented to prevent the buildup of excess water behind the walls. Backfill requirements are presented in Table 5.3 of this report.

A perforated 4-inch diameter drainage pipe should be installed at the base of each retaining wall and should be surrounded by a minimum of 6 inches of AASHTO No. 57 crushed stone, wrapped in a geotextile filter fabric. The drainage system should be designed to drain water by gravity to a suitable discharge location away from the wall. As an alternative, weep holes may be provided in lieu of a continuous subdrain system. Weep holes should consist of 3-inch diameter PVC pipes installed at 10-foot intervals along the wall and should be covered on the backfill side with a permeable geotextile filter fabric to prevent migration of fines into the stone.

It is understood that the proposed retaining wall base elevations are approximately EL +144 feet in Design Areas 1 and 2, and EL +124 feet in Design Areas 3 and 4. At these proposed elevations, granular fill soils of Stratum A consisting primarily of sand were encountered in Soil Boring B-2, while native cohesive clay soils were encountered in the remaining borings. Based on these

subsurface conditions, we recommend that the retaining walls be designed for a maximum allowable soil bearing pressure of up to 1,500 psf when founded on the existing materials.

Retaining wall bases should be embedded a minimum of 24 inches below the adjacent stream channel elevation in accordance with Fairfax County frost depth requirements. All foundation excavations should be dewatered and cleaned of loose, soft, or otherwise deleterious materials prior to wall placement. The exposed subgrades should be evaluated and approved by the geotechnical engineer prior to construction. Subgrade preparation recommendations are provided in Section 6.1 of this report.

Based on the 30% design drawings dated October, 2025 for Redi-Rock or similar gravity walls, we recommend that VDOT No. 57 stone l be placed at least 1 foot behind the gravity retaining walls and at least 2 feet below the base of the walls.to reduce erosion potential and improve drainage. Alternatively, VDOT No. 21A stone may be used at the base of the walls and should be compacted to at least 95 percent of the maximum dry density, in accordance with ASTM D698, (Standard Proctor.) In general, the moisture content of the fill materials should be maintained within 2 percent of the optimum moisture content per ASTM D698.

Based on subsurface conditions encountered in Soil Borings B-1 through B-4, total settlement of the retaining walls is estimated to be on the order of 1 inch or less. However, due to the variable and potentially uncontrolled nature of existing fill materials, loose or unsuitable fill materials of Stratum A may be encountered during excavation of retaining walls. If loose or unsuitable materials are encountered, they should be removed and replaced with properly compacted structural fill, crushed stone or gravel wrapped in geotextile fabric. The need for special undercutting should be evaluated by a qualified geotechnical engineer during construction.

Excavations exceeding 4 feet in depth must comply with Occupational Safety and Health Administration (OSHA) requirements, including the implementation of appropriate protective systems such as sloping, shoring, or bracing. Groundwater is expected to be encountered at or above the proposed footing elevations. Therefore, the contractor should be prepared to implement localized dewatering measures, such as submersible pumps in sump pits, trench drains, or well points. The selection of dewatering methods shall be the responsibility of the contractor.

it is our understanding based on the provided information that the anticipated scour depth is approximately 8 feet below the existing streambed elevation. Global stability analyses were performed for Design Areas 1 through 4. The existing slopes were evaluated without gravity walls and with gravity walls. Minimum slope stability factors of safety of 1.25 were considered per the Fairfax County Public Facilities Manual for non-flood channel flow conditions. Rapid drawdown for global stability was performed following the Army Corps of Engineers 2 stages (1970) method of analysis. Analyses included a creek flow elevation that resulted in the lowest computed factor of safety and rapid drawdown for 100-year flood conditions. The creek slope is completely submerged during high flood events. Minimum slope stability factors of safety of 1.1 were considered per EM 1110-2-1902, October 31, 2003, for rapid drawdown conditions. Factors of safety of less than 1.25 were obtained for existing slopes without gravity walls or sheet piles, although acceptable factors of safety were obtained when gravity walls and sheet piles were

added. The results of our analyses and the minimum factors of safety obtained along with and the assumed soil parameters for the various scenarios are presented in Appendix D. Also, a summary of the most critical sections along the stream channel is presented in the table below. It is noted that the retaining wall designer should evaluate internal stability of the proposed walls.

Table 5.2 Global Stability Analysis

MINIMUM GLOBAL STABILITY FACTORS OF SAFETY		
Location	Existing Slope Conditions	Slope with Gravity Wall in conjunction with Sheet Pile
0 + 25	0.9	1.6
10 + 25	0.8	1.4
10 + 50	0.6	1.3
20 + 50	0.5	2.5
30 + 50	0.5	1.6

Table 5.3 Soil Properties

Soil Parameters			
Material Name	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Silt and Lean Clay)	120	0	28
Native Clay	120	0	18
Potomac Clay	120	0	14
Sand with Gravel	120	0	32
AASHTO No. 57 Crushed Stone	100	0	36

5.2 Sheet Piles

The use of steel sheet pile walls in conjunction with the proposed gravity retaining wall system is recommended to mitigate slope stability and erosion/scour potential at the site. Sheet piles were evaluated for unsupported conditions using CT-Shoring software (Version 8.22). The results indicate that a minimum embedment depth of 16 feet below the estimated scour depth is required to achieve stability. An estimated scour depth of 8 feet was assumed in the analysis,

resulting in a total required pile length of approximately 24 feet. The corresponding estimated sheet pile tip elevations are approximately EL 120 feet for Design Areas 1 and 2, and EL 100 feet for Design Areas 3 and 4.

Subsurface conditions encountered in soil borings performed in the vicinity of the proposed walls indicate the presence of very stiff Potomac clay, within the anticipated pile length. Based on these conditions, driving the sheet piles the planned embedment depth of 24 feet could be difficult and it is our opinion that there is a high probability that sheet piles may refuse well above estimated tip elevations. Therefore, we recommend that a deadman anchor system at the top of the sheet pile walls be considered to reduce the required embedment. Additional analysis to assess the depth requirements for sheet piles with deadman anchors can be provided upon request.

In addition to very stiff Potomac Clay soils, a dense sand and gravel layer about 3 ft thick and about 9 ft below existing grades is present at the site. Due to the possibility of pile refusal during driving of sheet piles in the material, consideration can be given to supplemental installation methods such as pre-drilling or proprietary systems such as PileClaw, etc. may be considered. If desired, the Contractor can initially attempt to advance the piles to the specified embedment depths using conventional driving methods and pre-drilling or other methods through the upper dense strata may be performed to facilitate pile advancement, if needed.

In accordance with guidance from the North American Steel Sheet Pile Association, minimum section modulus requirements for steel sheet piles are approximately 25 in^3/ft for low-yield steel and 20 in^3/ft for high-yield steel when driving through soils with SPT N-values in the range of 26 to 30. These values do not account for corrosion considerations, which should be evaluated separately.

The contractor should be responsible for selecting appropriate installation equipment and procedures and should adhere to accepted driving practices. The means and methods of installation should remain the responsibility of the contractor.

6 CONSTRUCTION CONSIDERATIONS

6.1 Subgrade Preparation

Proposed site grades were provided in the 30% submittal. At the onset of any site grading, the entire area should be stripped of organic surficial soil, vegetation, roots, asphalt, construction debris, and any deleterious materials. The geotechnical engineer should be present to verify the suitability of the subgrades to support the wall foundation or to receive stone base course material.

6.2 Fill Placement and Compaction

All new compacted structural fill and backfill should be placed in loose lifts not exceeding 8 inches in thickness and should be compacted to at least 95 percent of the maximum dry density, in accordance with ASTM D698. In general, the moisture content of the fill materials should be

maintained within 3 percent of the optimum moisture content per ASTM D 698. Materials to be used as compacted fill should be classified as SC, or more granular, and should have a Liquid Limit (LL) and Plasticity Index (PI) of less than 40 and 20, respectively.

6.3 Safe Excavation Slopes

Temporary excavations above the groundwater table must be sloped or must be benched safely according to the Occupational Safety and Health Administration (OSHA) guidelines and local code requirements. Plastic covering may be used to cover the temporary slopes to prevent moisture changes and to maintain stability. Due to the presence of cohesionless soils and groundwater in the excavation, sloughing or caving may occur that could create unstable conditions. The contractor should be prepared to provide trench boxes or other adequate bracing or shoring systems along with localized construction dewatering consisting of submersible pumps in gravel sumps or collector trenches. Deep excavations, if necessary, may need well-points to adequately dewater the excavations. The actual means and methods of excavation support and dewatering should be left up to the contractor. All excavations should be performed in accordance with OSHA and local requirements.

6.4 Construction Monitoring

Monitoring of the construction is strongly recommended to address quality control/quality assurance issues and to promptly address non-conforming construction. Full-time construction monitoring should be provided during foundation construction as well as earthwork installation by a qualified geotechnical engineering firm that is familiar with the design and construction criteria for the project. The monitoring should include observation of the undercut excavation operations, foundation bearing materials, subgrade conditions, subgrade preparation, compaction testing of fill and backfill, etc.

7 LIMITATIONS

Interpretation of general subsurface soil conditions presented herein is based on our understanding of the proposed project as described in this report, soil and groundwater conditions encountered in the soil borings performed and other data discussed in this report. Although representative portions of the samples taken were tested, subsurface conditions may vary between the exploration location and the proposed wall locations. This report does not reflect any variations that may occur across the site in areas not sampled. The nature and extent of such variations may not become evident until construction. Groundwater conditions during construction may be different from the observations made in the borings. If variations occur, it will be necessary to reevaluate the recommendations in this report.

This report has been prepared for the specific project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranty, express or implied, is provided. In the event that any changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed, and the conclusions of this report are modified or verified in writing by AECOM.

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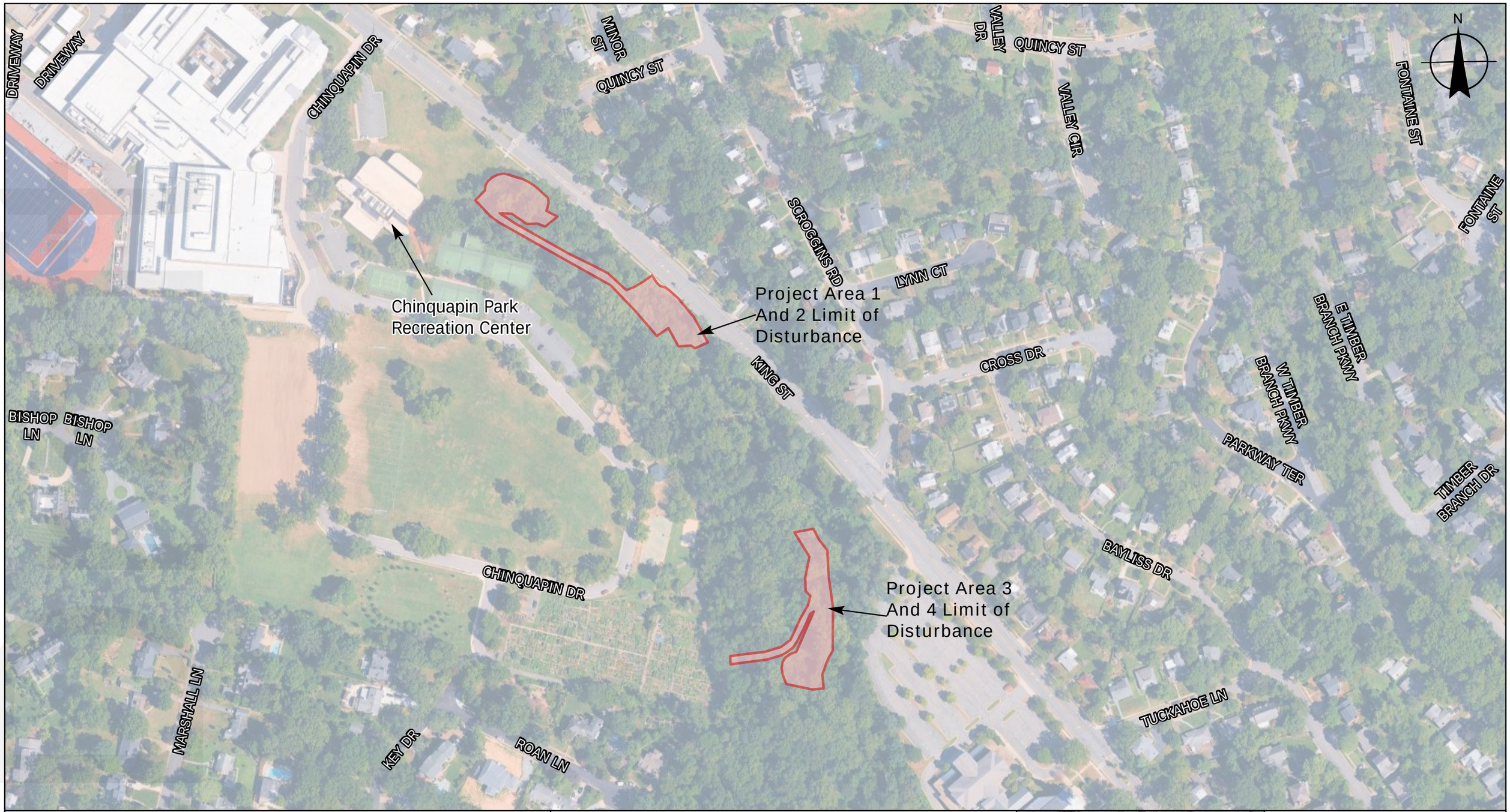
Figure 1 - Site Vicinity Map (1 sheet)



Taylor Run Stream
Alexandria, VA

Site Vicinity Plan

DATE - 4/16/2026	DRAWN BY - TMM	CHECKED BY - MA	Project Num. - 60742359	REV - 1

Figure 1

0 300 600 900 Feet

Legend

Project Locations

Notes:
1. Basemap imagery provided by Google
2. Coordinate System NAD 1983 StatePlane 2011 Virginia North
3. Inset map provided by ESRI

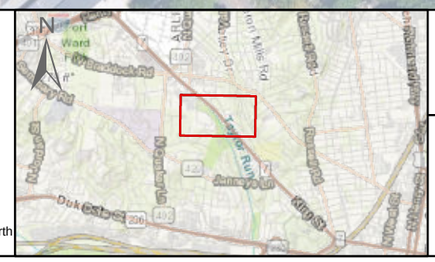


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Figure 2 – Testing Location Plan (1 sheet)

Taylor Run Stream
Alexandria, VA

Exploration Location Plan

DATE - 4/16/2026	DRAWN BY - TM	CHECKED BY - MA	Project Num. - 60742359	REV - 1

Figure 2

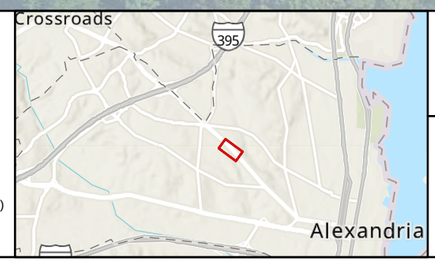
0 100 200 300 400 500 US Feet

Legend

Explorations

Approximate Boring Location

Notes:
1. Basemap imagery provided by Google (2025)
2. Street Names provided by City of Alexandria (2025)
3. Inset Map Provided by ESRI
4. Coordinate System NAD 1983 StatePlane Virginia North



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Appendix A –Soil Boring Logs (8 sheets)

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Log of Boring B-1

AECOM

PROJECT: **Taylor Run Stream Stabilization**

PROJECT LOCATION: **Taylor Run, Alexandria, VA**

PROJECT NUMBER: **60742359** COORDINATES: **N 6985731.794 E 11887162.335**

DATE STARTED: **9/23/2025**
DATE COMPLETED: **9/23/2025**
LOGGED BY: **P.Mahato**
CHECKED BY: **M.Alhachami**
DRILLING CONTRACTOR: **SaLUT**
DRILL RIG: **CME-45 (Truck)**
DRILLER: **M. Stawas**

DRILL METHOD: **3-1/4" I.D. Hollow Stem Auger**
HAMMER TYPE/WEIGHT: **Auto Hammer/140lbs**
CASING TYPE: **N/A**
CASING SIZE: **N/A**
BIT TYPE/SIZE: **NA/NA**
BOREHOLE DEPTH: **30.0 FT**
SURFACE ELEVATION: **151.00 FT**

Groundwater Observations

Event	Date	Time	Depth (ft)	Cave in Depth (ft)
During Drilling ▽	09-23-2025		10.0	
Completion	09-23-2025		Dry	23.2
24-hour ▼	09-24-2025		7.9	

DEPTH (FT) / ELEV. (FT)	DESCRIPTION	USCS	GRAPHIC	STRATUM	SAMPLES NUMBER	TYPE	BLOWS	REC (IN) (%)	Moisture Content (%)	Liquid Limit	Plastic Limit	Pocket Pen.(tsf)	Fines Content (%)	Dry Density (pcf)	REMARKS AND TESTS
150	0.0 - 0.4 ft: TOPSOIL	Topsoil													
	0.4 - 2.0 ft: (FILL) Sampled as Moist, very stiff, dark brown, Sandy Silt, with gravel and roots	ML			S-1		9- 10- 7- 7 (N=17)	6 (25%)							
	2.0 - 4.0 ft: (FILL) Sampled as Moist, medium stiff, grayish brown to dark brown, medium plasticity, Lean Clay, with sand, gravel, and trace roots	CL		A	S-2		3- 3- 3- 4 (N=6)	6 (25%)	18	33	15				
5 145	4.0 - 9.5 ft: Moist, medium stiff, grayish brown to dark brown, high plasticity, FAT CLAY, with sand and gravel	CH		B	S-3		3- 4- 4- 5 (N=8)	12 (50%)	14.1					112.4	
					S-4		2- 2- 3- 2 (N=5)	8 (33%)							
▼	8.0 ft: changes to soft				S-5		1- 1- 3- 17 (N=4)	12 (50%)	20.3	52	15				
10 ▽ 140	9.5 - 12.5 ft: Moist to wet, dense, brown, coarse, WELL GRADED SAND WITH GRAVEL	SW		C	S-6		10- 16- 19- 23 (N=35)	2 (8%)	9.3						
	12.5 - 30.0 ft: Moist, soft, light brown and gray, medium plasticity, LEAN CLAY, with silt				S-7		8- 1- 3- 3 (N=4)	16 (67%)	33.4					87.6	
	14.0 ft: changes to very stiff				S-8		16- 12- 11- 5 (N=23)	12 (50%)							
15 135	16.0 ft: changes to with clay and fine sand				S-9		4- 6- 10- 11 (N=16)	19 (79%)	28.7				84.4		
	18.0 ft: changes to stiff	CL		D	S-10		3- 5- 6- 7 (N=11)	18 (75%)	27.3	44	17				
20	20.0 ft: changes to with silt														
130					S-11		4- 5- 8- 7 (N=13)	24 (100%)							
					S-12		3- 6- 7- 10 (N=13)	24 (100%)							
25	24.0 ft: changes to very stiff						5- 7- 11- 12	24							

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Germantown, MD 20876

B = Bulk Sample S = Split Spoon Sample P = Pitcher Sample
G = Geoprobe T = Shelby Tube Sample RC = Rock Core
PS = Piston Sample H = Hand Auger Sample SC = Sonic Core

AECOM SOIL_ROCK AECOM-GEOTECH_TAYLOR_RUN_STREAM.GPJ AECOM-GEOTECH_PROJECT-DESIGN.GDT 4/10/26 REV-

Log of Boring B-1

PROJECT: **Taylor Run Stream Stabilization**

PROJECT LOCATION: **Taylor Run, Alexandria, VA**

PROJECT NUMBER: **60742359** COORDINATES: **N 6985731.794 E 11887162.335**

DEPTH (FT) / ELEV. (FT)	DESCRIPTION	USCS	GRAPHIC	STRATUM	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS	SAMPLES REC (IN) (%)	Moisture Content (%)	Liquid Limit	Plastic Limit	Pocket Pen.(tsf)	Fines Content (%)	Dry Density (pcf)	REMARKS AND TESTS
125	26.0 ft: changes to stiff, with sand from 26-28ft	CL		D	S-13		(N=18)	(100%)	26.9						
					S-14		4- 7- 8- 11 (N=15)	24 (100%)	28.6	40	18				
					S-15		5- 6- 9- 12 (N=15)	24 (100%)							
30	Boring completed at 30.0 FT on 9/23/2025 at - HOURS. Boring backfilled with cement/bentonite grout upon completion. Boring was offset 8.6' towards King Street due to underground utilities														

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G = Geoprobe T = Shelby Tube Sample RC = Rock Core
PS = Piston Sample H = Hand Auger Sample SC = Sonic Core

Log of Boring B-2

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PROJECT: **Taylor Run Stream Stabilization**

PROJECT LOCATION: **Taylor Run, Alexandria, VA**

PROJECT NUMBER: **60742359** COORDINATES: **N 6985719.598 E 11887174.491**

DATE STARTED: **9/23/2025**
DATE COMPLETED: **9/24/2025**
LOGGED BY: **P.Mahato**
CHECKED BY: **M.Alhachami**
DRILLING CONTRACTOR: **SaLUT**
DRILL RIG: **CME-45 (Truck)**
DRILLER: **M. Stawas**

DRILL METHOD: **3-1/4" I.D. Hollow Stem Auger**
HAMMER TYPE/WEIGHT: **Auto Hammer/140lbs**
CASING TYPE: **N/A**
CASING SIZE: **N/A**
BIT TYPE/SIZE: **NA/NA**
BOREHOLE DEPTH: **30.0 FT**
SURFACE ELEVATION: **151.00 FT**

Groundwater Observations

Event	Date	Time	Depth (ft)	Cave in Depth (ft)
During drilling ▽	09-23-2025		11.0	
Completion	09-24-2025		Dry	14.7

DEPTH (FT) / ELEV. (FT)	DESCRIPTION	USCS	GRAPHIC	STRATUM	SAMPLES NUMBER	TYPE	BLOWS	REC (IN) (%)	Moisture Content (%)	Liquid Limit	Plastic Limit	Pocket Pen.(tsf)	Fines Content (%)	Dry Density (pcf)	REMARKS AND TESTS
150	0.0 - 0.3 ft: TOPSOIL	Topsoil													
	0.3 - 2.0 ft: (FILL) Sampled as Moist, medium stiff, dark brown, Sandy Silt, contains gravel and roots	ML			S-1		3- 4- 4- 7 (N=8)	6 (25%)							
	2.0 - 6.0 ft: (FILL) Sampled as Moist, very stiff, dark brown to brown, medium plasticity, Sandy Lean Clay, with gravel			A	S-2		3- 13- 5- 4 (N=18)	10 (42%)	15.4						
	4.0 ft: changes to medium stiff	CL													
5 145					S-3		3- 3- 4- 9 (N=7)	6 (25%)	20.4	38	17				
	6.0 - 10.0 ft: Moist, loose, brown and gray, fine to medium, SILTY SAND				S-4		5- 3- 4- 2 (N=7)	14 (58%)							
		SM													
				C	S-5		2- 3- 2- 4 (N=5)	14 (58%)	27.1	NP	NP		44.4		
10															
▽ 140	10.0 - 12.0 ft: Wet, medium dense, brown, coarse, CLAYEY SAND, contains gravel	SC			S-6		5- 12- 12- 12 (N=24)	10 (42%)	13.1					118.3	
	12.0 - 24.0 ft: Wet, soft, brown, high plasticity, FAT CLAY WITH SAND, coarse sand, coarse gravel				S-7		2- 2- 2- 4 (N=4)	12 (50%)	42.9	54	21			80	
	14.0 ft: changes to Moist, brown and gray														
15					T-1			24 (100%)	32.5	68	23				
135	16.0 ft: changes to stiff				S-8		3- 5- 8- 11 (N=13)	24 (100%)	33						
		CH		D	S-9		5- 7- 8- 10 (N=15)	24 (100%)							
20															
130					S-10		3- 5- 7- 9 (N=12)	24 (100%)							
					T-2			24 (100%)	28	62	20		79		
	24.0 - 26.0 ft: Moist, stiff, brown and gray, medium plasticity, LEAN CLAY, coarse sand,	CL					5- 6- 7- 9	24							
25															

AECOM SOIL ROCK AECOM-GEOTECH_TAYLOR_RUN_STREAM.GPJ AECOM-GEOTECH_PROJECT-DESIGN.GDT 4/10/26 REV-

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B = Bulk Sample S = Split Spoon Sample P = Pitcher Sample
G = Geoprobe T = Shelby Tube Sample RC = Rock Core
PS = Piston Sample H = Hand Auger Sample SC = Sonic Core

Log of Boring B-2

PROJECT: **Taylor Run Stream Stabilization**

PROJECT LOCATION: **Taylor Run, Alexandria, VA**

PROJECT NUMBER: **60742359** COORDINATES: **N 6985719.598 E 11887174.491**

DEPTH (FT) / ELEV. (FT)	DESCRIPTION	USCS	GRAPHIC	STRATUM	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS	SAMPLES REC (IN) (%)	Moisture Content (%)	Liquid Limit	Plastic Limit	Pocket Pen.(tsf)	Fines Content (%)	Dry Density (pcf)	REMARKS AND TESTS
125	coarse gravel	CL			S-11		(N=13)	(100%)	26.1	40	17				
	26.0 - 30.0 ft: Moist, stiff, brown and gray, high plasticity, FAT CLAY, coarse sand, coarse gravel	CH		D	S-12		4- 8- 7- 10 (N=15)	24 (100%)							
	28.0 ft: changes to very stiff, with silt				S-13		6- 7- 10- 12 (N=17)	24 (100%)							
30															

Boring completed at 30.0 FT on 9/24/2025 at - HOURS.
Boring backfilled with cement/bentonite grout upon completion.
Boring was offset 9.6' towards King Street due to underground utilities

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AECOM SOIL ROCK AECOM-GEOTECH_TAYLOR_RUN_STREAM.GPJ AECOM-GEOTECH_PROJECT-DESIGN.GDT 4/10/26 REV-

Log of Boring B-3

PROJECT: **Taylor Run Stream Stabilization**

PROJECT LOCATION: **Taylor Run, Alexandria, VA**

PROJECT NUMBER: **60742359** COORDINATES: **N 6985161.823 E 11887344.454**

DATE STARTED: **10/3/2025**
DATE COMPLETED: **10/3/2025**
LOGGED BY: **P.Mahato**
CHECKED BY: **M.Alhachami**
DRILLING CONTRACTOR: **Emerson Harper**
DRILL RIG: **Diedrich D-50 (Track)**
DRILLER: **I.Hall**

DRILL METHOD: **3-1/4" I.D. Hollow Stem Auger**
HAMMER TYPE/WEIGHT: **Automatic/140lbs**
CASING TYPE: **N/A**
CASING SIZE: **N/A**
BIT TYPE/SIZE: **NA/NA**
BOREHOLE DEPTH: **45.0 FT**
SURFACE ELEVATION: **132.00 FT**

Groundwater Observations

Event	Date	Time	Depth (ft)	Cave in Depth (ft)
Completion	10-03-2025	13:26	Dry	3.0

DEPTH (FT) / ELEV. (FT)	DESCRIPTION	USCS	GRAPHIC	STRATUM	SAMPLES NUMBER	TYPE	BLOWS	REC (IN) (%)	Moisture Content (%)	Liquid Limit	Plastic Limit	Pocket Pen.(tsf)	Fines Content (%)	Dry Density (pcf)	REMARKS AND TESTS
130	0.0 - 2.0 ft: Moist, stiff, dark gray, medium plasticity, SANDY LEAN CLAY WITH GRAVEL, contains root fragments	CL			S-1		6- 8- 5- 5 (N=13)	9 (38%)							
	2.0 - 7.4 ft: Moist, soft, dark gray, medium plasticity, SANDY LEAN CLAY				S-2		2- 2- 1- 1 (N=3)	17 (71%)	39						
5		CL			S-3		2- 1- 1- 2 (N=2)	7 (29%)	39.3	39	26				
125	6.0 ft: changes to medium stiff				S-4		8- 5- 3- 3 (N=8)	15 (63%)							
	7.4 - 43.0 ft: Moist, medium stiff, reddish brown and yellowish brown, high plasticity, FAT CLAY				S-5		1- 2- 5- 6 (N=7)	17 (71%)	31.4	81	26				
10					T-1			17 (71%)	30.7	90	26		96		
120				D											
	13.0 ft: changes to stiff, dark reddish brown with greenish gray				S-7		3- 6- 8- 9 (N=14)	24 (100%)	28.8				99.4		
15		CH													
115															
	18.0 ft: changes to very stiff				S-8		3- 6- 11- 15 (N=17)	24 (100%)	23.4						
20															
110															
	23.0 ft: changes to stiff, reddish brown and greenish gray				S-9		3- 6- 8- 12 (N=14)	24 (100%)	21.1	53	19				
25															

AECOM SOIL ROCK AECOM-GEOTECH_TAYLOR_RUN_STREAM.GPJ AECOM-GEOTECH_PROJECT-DESIGN.GDT 4/10/26 REV-

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B = Bulk Sample S = Split Spoon Sample P = Pitcher Sample
G = Geoprobe T = Shelby Tube Sample RC = Rock Core
PS = Piston Sample H = Hand Auger Sample SC = Sonic Core

Log of Boring B-3

PROJECT: **Taylor Run Stream Stabilization**

PROJECT LOCATION: **Taylor Run, Alexandria, VA**

PROJECT NUMBER: **60742359** COORDINATES: **N 6985161.823 E 11887344.454**

DEPTH (FT) / ELEV. (FT)	DESCRIPTION	USCS	GRAPHIC	STRATUM	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS	SAMPLES REC (IN) (%)	Moisture Content (%)	Liquid Limit	Plastic Limit	Pocket Pen.(tsf)	Fines Content (%)	Dry Density (pcf)	REMARKS AND TESTS
105															
	28.0 - 43.0 ft: very stiff				S-10		3- 6- 11- 14 (N=17)	24 (100%)							
30															30.0ft: Driller lost Shelby tube in the hole. Driller mentioned they can't take more tube because of hard clay.
100															
		CH		D	S-11		6- 10- 14- 20 (N=24)	24 (100%)	20.9						
35															
95															
					S-12		6- 10- 18- 15 (N=28)	24 (100%)							
40															
90															
	43.0 - 45.0 ft: Moist, very stiff, reddish brown and greenish gray, high plasticity, FAT CLAY WITH SAND	CH			S-13		5- 8- 17- 28 (N=25)	24 (100%)	22.5	57	20				
45															
	Boring completed at 45.0 FT on 10/3/2025 at 13:24 HOURS. Boring backfilled with cement/bentonite grout upon completion.														

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PS = Piston Sample H = Hand Auger Sample SC = Sonic Core

Log of Boring B-4

PROJECT: **Taylor Run Stream Stabilization**

PROJECT LOCATION: **Taylor Run, Alexandria, VA**

PROJECT NUMBER: **60742359** COORDINATES: **N 6985101.375 E 11887361.219**

DATE STARTED: **10/2/2025**
DATE COMPLETED: **10/2/2025**
LOGGED BY: **P.Mahato**
CHECKED BY: **M.Alhachami**
DRILLING CONTRACTOR: **Emerson Harper**
DRILL RIG: **Diedrich D-50 (Track)**
DRILLER: **I.Hall**

DRILL METHOD: **3-1/4" I.D. Hollow Stem Auger**
HAMMER TYPE/WEIGHT: **Automatic/140lbs**
CASING TYPE: **N/A**
CASING SIZE: **N/A**
BIT TYPE/SIZE: **NA/NA**
BOREHOLE DEPTH: **45.0 FT**
SURFACE ELEVATION: **133.00 FT**

Groundwater Observations

Event	Date	Time	Depth (ft)	Cave in Depth (ft)
Completion	10-02-2025	16:15	Dry	12.6
24-hour	10-03-2025	12:51	Dry	12.6

DEPTH (FT)	ELEV. (FT)	DESCRIPTION	USCS	GRAPHIC	STRATUM	SAMPLES NUMBER	SAMPLES TYPE	BLOWS	REC (IN) (%)	Moisture Content (%)	Liquid Limit	Plastic Limit	Pocket Pen.(tsf)	Fines Content (%)	Dry Density (pcf)	REMARKS AND TESTS
		0.0 - 4.0 ft: Moist, medium dense, dark gray, fine to medium, SILTY SAND WITH GRAVEL, contains root fragments	SM		C	S-1		6- 8- 8- 12 (N=16)	4 (17%)	25.2						
	130					S-2		11- 9- 6- 10 (N=15)	1 (4%)							
5		4.0 - 7.3 ft: Moist, dense, light gray, fine to coarse, SILTY GRAVEL WITH SAND, angular to subrounded gravel	GM			S-3		19- 18- 17- 9 (N=35)	8 (33%)	4.2	NP	NP		16		
		6.0 ft: changes to loose				S-4		7- 3- 6- 6 (N=9)	15 (63%)	36	54	24				
	125	7.3 - 10.0 ft: Moist, stiff, light gray, high plasticity, FAT CLAY WITH SAND	CH			S-5		6- 4- 6- 9 (N=10)	4 (17%)							
10		10.0 - 23.0 ft: Moist, very stiff, dark gray and olive gray, high plasticity, FAT CLAY				S-6		7- 8- 8- 10 (N=16)	24 (100%)	34.4	81	27				
	120					T-1			0 (NR)							
15						T-2			24 (100%)	32.9	104	26		100		
			CH		D											
	115	18.0 ft: changes to reddish brown				S-8		5- 7- 9- 11 (N=16)	24 (100%)	28.8						
20																
	110	23.0 - 25.0 ft: Moist, very stiff, reddish brown with greenish gray, medium plasticity, LEAN CLAY	CL			S-9		4- 9- 11- 18 (N=20)	24 (100%)	20.7	49	18				
25																

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AECOM SOIL ROCK AECOM-GEOTECH_TAYLOR_RUN_STREAM.GPJ AECOM-GEOTECH_PROJECT-DESIGN.GDT 4/10/26 REV-

Log of Boring B-4

PROJECT: **Taylor Run Stream Stabilization**

PROJECT LOCATION: **Taylor Run, Alexandria, VA**

PROJECT NUMBER: **60742359** COORDINATES: **N 6985101.375 E 11887361.219**

DEPTH (FT) / ELEV. (FT)	DESCRIPTION	USCS	GRAPHIC	STRATUM	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS	SAMPLES REC (IN) (%)	Moisture Content (%)	Liquid Limit	Plastic Limit	Pocket Pen.(tsf)	Fines Content (%)	Dry Density (pcf)	REMARKS AND TESTS
	25.0 - 38.0 ft: Moist, stiff, reddish brown with greenish gray, high plasticity, FAT CLAY				T-3			24 (100%)	21.5	59	17		98		
105	28.0 ft: changes to very stiff				S-10		5- 7- 11- 16 (N=18)	24 (100%)							
30		CH													
100					S-11		6- 11- 17- 27 (N=28)	24 (100%)	19.6	56	19				
35				D											
95	38.0 - 45.0 ft: Moist, very stiff, reddish brown with greenish gray, high plasticity, FAT CLAY WITH SAND														
40		CH			S-12		7- 11- 18- 40 (N=29)	24 (100%)							
90															
45					S-13		4- 11- 15- 31 (N=26)	24 (100%)							
	Boring completed at 45.0 FT on 10/2/2025 at 13:24 HOURS. Boring backfilled with cement/bentonite grout upon completion.														

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G = Geoprobe T = Shelby Tube Sample RC = Rock Core
PS = Piston Sample H = Hand Auger Sample SC = Sonic Core

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Appendix B – Soil Profiles (1 sheets)

DISTANCE ALONG BASELINE (ft)

ELEVATION (ft)

150 140 130 120 110 100 90

B-1
G.S.E. 151.0 ft

17 A Top-soil
6 FILL
8
5 B FILL
4
35 C CH
4
23
16
11
13 D SW
13
18
15
15 CL

Boring completed at 30 ft.

Elv 141 to 144 ft

B-2
G.S.E. 151.0 ft

8 A Top-soil
18 FILL
7
7 C FILL
5
24 SM
4 SC
13
15 D CH
12
13 CL
15
17 CH

Boring completed at 30 ft.

B-3
G.S.E. 132.0 ft

13 CL
3
2 CL
8
7
14
17 D CH
14
17
24
28
25 CH

Boring completed at 45 ft.

Elv 120 to 124 ft

B-4
G.S.E. 133.0 ft

16 SM
15 C
35 GM
9
10 CH
16
16 CH
20 CL
D
18
28 CH
29
26 CH

Boring completed at 45 ft.

GROUNDWATER SYMBOLS

- During Drilling
- At Drilling Completion
- 24 hour after Drilling

BORING LEGEND

- Topsoil
- USCS Well-graded Sand
- USCS Silty Gravel
- Water
- USCS Low Plasticity Clay
- FILL
- USCS Silty Sand
- USCS High Plasticity Clay
- USCS Clayey Sand

Boring Name
Ground Surface Elevation
SPT N value | Soil/Rock Symbol
Recovery/RQD

AECOM TECHNICAL SERVICES, INC.
12420 Milestone Center Dr, Suite 150
Germantown, MD20876
Tel: (301) 820-3000

NOTES:

1. Subsurface profile is based on limited borings. Variations in conditions between boring locations should be expected.

2. Ground surface elevations at boring locations were estimated using existing topographical information.

Taylor Run Stream Stabilization

Taylor Run

SUBSURFACE PROFILE SECTION		SCALE: AS SHOWN	Appendix
DATE: 4/15/2026	CHECKED BY: MA	PROJECT NO.: 60742359	B

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Appendix C – Soil Engineering Property Test Results (56 sheets)

PROJECT :	Taylor Run Stream Stabilization
PROJECT No.:	25-0025
Date:	10/16/2025

SHELBY TUBE INSITU DENSITY AND MOISTURE CONTENT DETERMINATION

(CUTTING SHELBY-TUBE)

Tested By: Amit Neupane

Boring#	Sample#	Depth		Wt. Soil+ tube (g)	Wt. empty tube (g)	Moist Soil Wt. (lbs)	Length Measure of tube seg. (in)				I.Diameter Measure of tube seg. (in)				Inside Volume (CF)	Insitu Density (pcf)	Insitu Moisture Content Determination			
		From (ft)	To (ft)				1st	2nd	3rd	AVG	1st	2nd	3rd	AVG			Can Wt.	Wet+Can	Dry+Can	M.C %
B-3	T-1	10.0	12.0	1565.62	424.58	2.510	5.626	5.638	5.641	5.635	2.854	2.850	2.856	2.853	0.0209	**120.34**	27.17	82.02	69.16	**30.6**
B-4	T-2	14.0	16.0	1547.57	430.91	2.457	5.591	5.586	5.590	5.589	2.781	2.844	2.829	2.818	0.0202	**121.73**	32.41	204.54	161.90	**32.9**
B-4	T-3	25.0	27.0	1645.65	422.24	2.692	5.625	5.571	5.591	5.596	2.821	2.842	2.841	2.835	0.0204	**131.65**	32.63	139.73	121.29	**20.8**

SaLUT-TLB

Boring	S No.	Depth (ft)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% < #4 Sieve	% < #200 Sieve	Classification	AASHTO	Water Content (%)
B-2	T-1	14.0 - 16.0	68	23	45					32.5
B-2	T-2	22.0 - 24.0	62	20	42	100	79	CH	A-7-6	28.0
B-3	T-1	10.0 - 12.0	90	26	64	100	96	CH	A-7-6	30.7
B-4	T-2	14.0 - 16.0	104	26	78	100	100	CH	A-7-6	32.9
B-4	T-3	25.0 - 27.0	59	17	42	100	98	CH	A-7-6	21.5

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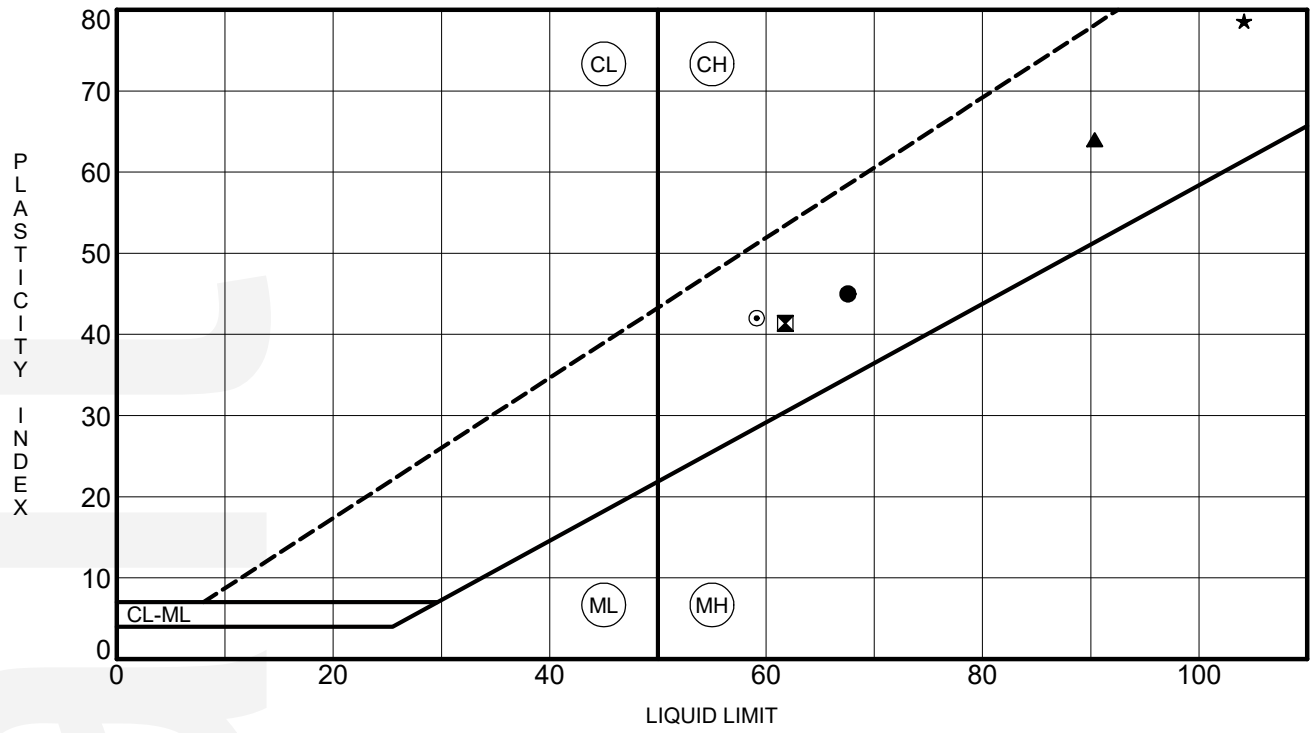
Summary of Laboratory Results

Taylor Run Stream

Alexandria, VA

Project Number: 25-0025



	Boring	Depth	LL	PL	PI	Fines	Classification	AASHTO
●	B-2	14.0 - 16.0	68	23	45			
⊠	B-2	22.0 - 24.0	62	20	42	79	FAT CLAY with SAND(CH)	A-7-6
▲	B-3	10.0 - 12.0	90	26	64	96	FAT CLAY(CH)	A-7-6
★	B-4	14.0 - 16.0	104	26	78	100	FAT CLAY(CH)	A-7-6
⊙	B-4	25.0 - 27.0	59	17	42	98	FAT CLAY(CH)	A-7-6

Test Method: ASTM D4318

Tested By: JM, JW Date: 10/16/2025

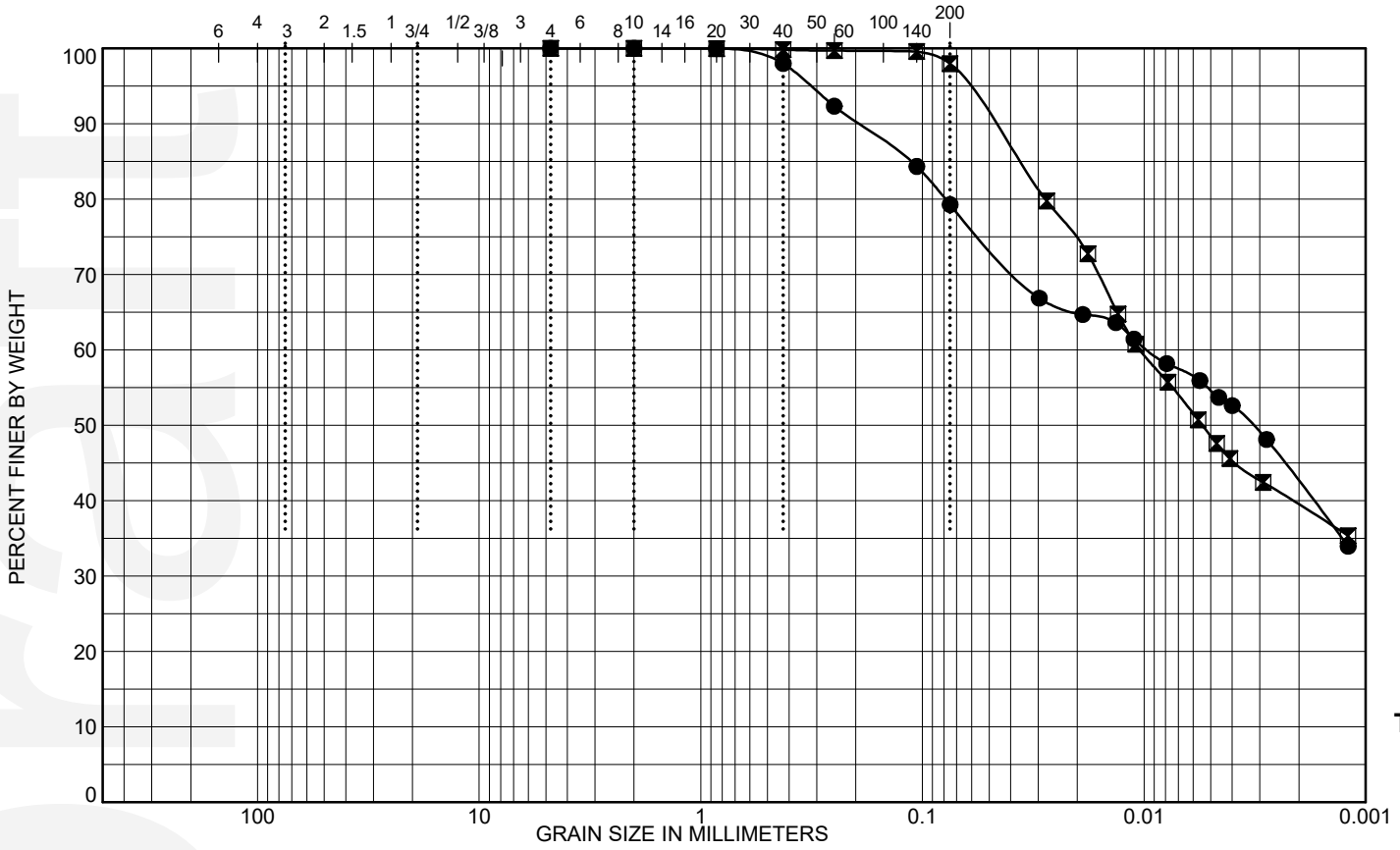
ATTERBERG LIMITS' RESULTS

Project: Taylor Run Stream

Location: Alexandria, VA

Project Number: 25-0025

TLB_ATTERBERG_LIMITS_TAYLOR RUN STREAM.GPJ_TLB2009.GDT_11/4/25



	D10	D30	D60	D100
●			0.01	4.76
⊠			0.01	4.76

Test Method: ASTM D422

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Tested By: JM Date: 10/20/2025

	Boring	S No.	Depth	%Gravel	%Sand	%Silt	%Clay	LL	PI	MC(%)	Classification	AASHTO
●	B-2	T-2	22.0 - 24.0	0.0	20.7	24.6	54.6	62	42	28.0	FAT CLAY with SAND(CH)	A-7-6
⊠	B-4	T-3	25.0 - 27.0	0.0	2.0	49.4	48.6	59	42	21.5	FAT CLAY(CH)	A-7-6

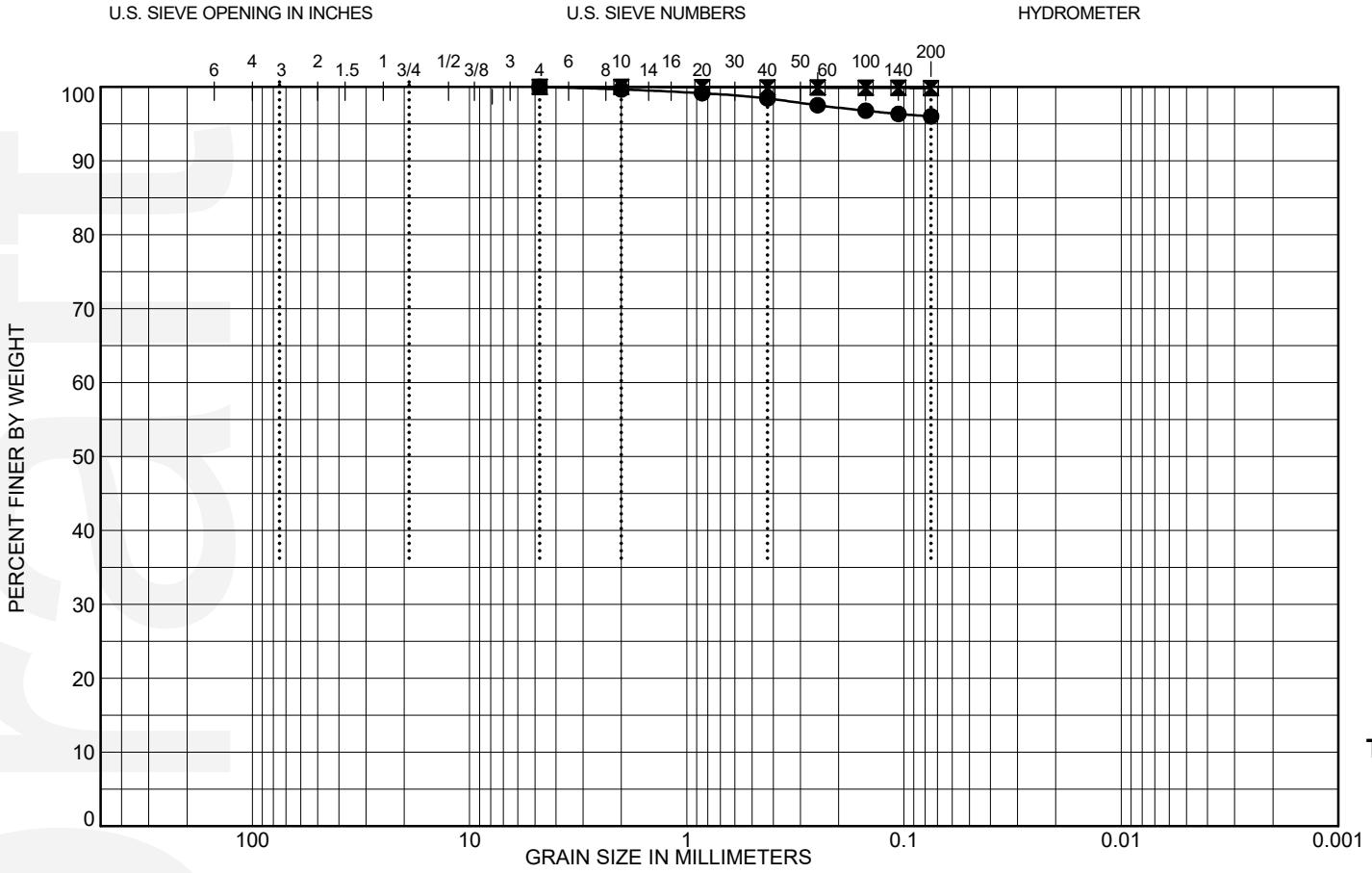
GRAIN SIZE DISTRIBUTION

Taylor Run Stream

Alexandria, VA

Project Number: 25-0025

TLB_GRAIN_SIZE_LANDSCAPE_USCS TAYLOR RUN STREAM.GPJ SALUT2014.GDT 11/4/25



	D10	D30	D60	D100
●				4.76
⊠				4.76

Test Method: ASTM D422

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Tested By: JW Date: 11/4/2025

	Boring	S No.	Depth	%Gravel	%Sand	%Silt	%Clay	LL	PI	MC(%)	Classification	AASHTO
●	B-3	T-1	10.0 - 12.0	0.0	4.0	96.0		90	64	30.7	FAT CLAY(CH)	A-7-6
⊠	B-4	T-2	14.0 - 16.0	0.0	0.2	99.8		104	78	32.9	FAT CLAY(CH)	A-7-6

GRAIN SIZE DISTRIBUTION

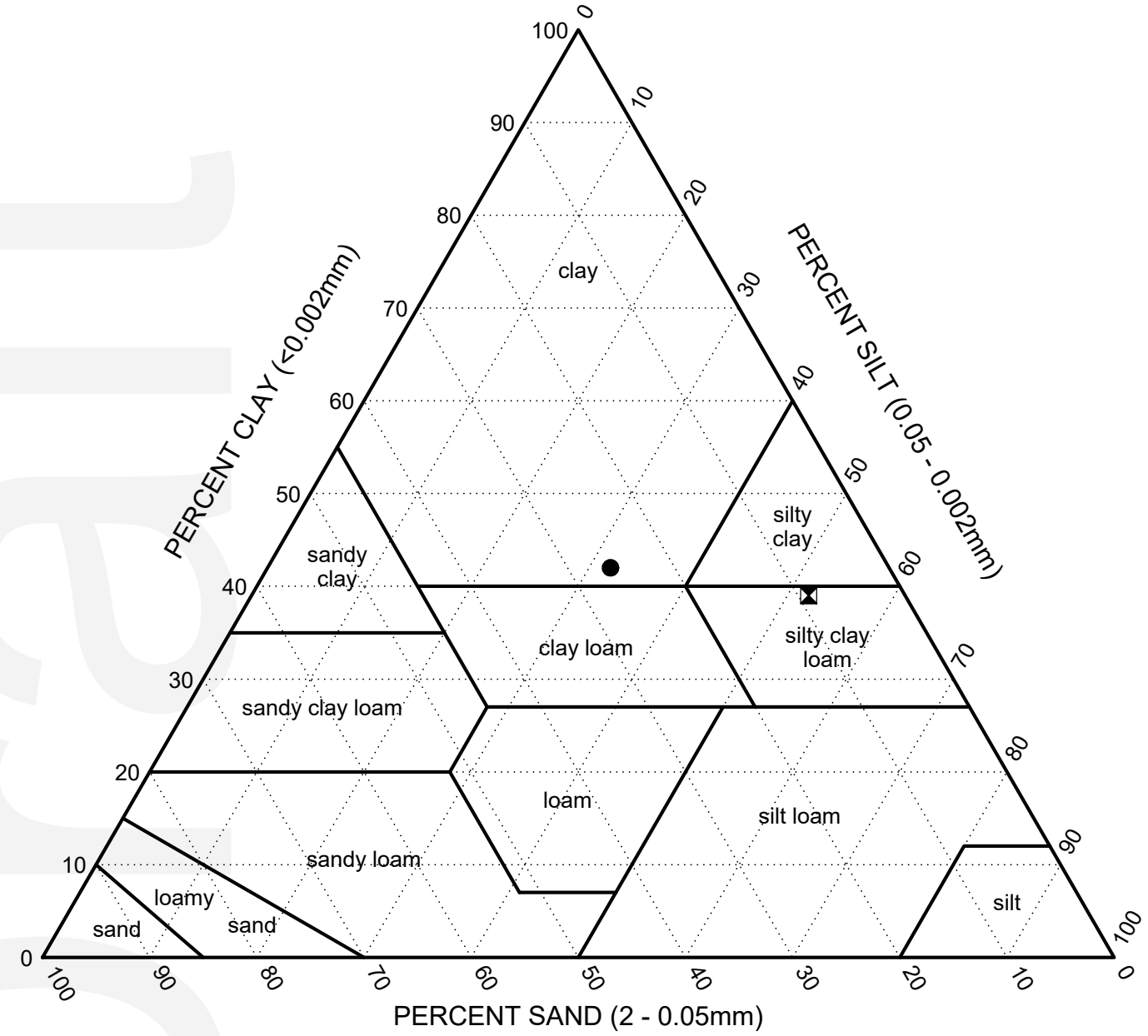
Taylor Run Stream

Alexandria, VA

Project Number: 25-0025

TLB_GRAIN_SIZE_LANDSCAPE_USCS_TAYLOR RUN STREAM.GPJ SALUT2014.GDT 11/4/25

Fractions normalized to 100% passing
the 2mm (#10) sieve



Test Method: ASTM D422

	Boring	Depth	Sand (%)	Silt (%)	Clay (%)	MC(%)	USDA Classification	Tested By	Date
●	B-2	22.0 - 24.0	26.2	31.4	42.5	28.0	CLAY	JM	10/20/2025
⊠	B-4	25.0 - 27.0	9.4	51.2	39.4	21.5	SILTY CLAY LOAM	JM	10/20/2025

USDA Textural Classification Chart

Project: Taylor Run Stream

Location: Alexandria, VA

Project Number: 25-0025

Draft

Project:	Taylor Run Stream	Client:	SaLUT
Project No.:	1628-01	Client Ref:	60742359
		Report Date:	10/27/2025

Boring No.:	Sample No.:	Depth (ft)	Moisture Content	Unit Weight/Dry Density, pcf	Liquid Limit	Plastic Limit	Wash #200
B-1	S-2	2-4	18.0%	--	33	15	--
B-1	S-3	4-6	14.1%	112.4	--		--
B-1	S-5	8-10	20.3%	--	52	15	--
B-1	S-6	10-12	9.3%	--	--	--	--
B-1	S-7	12-14	33.4%	87.6	--	--	--
B-1	S-9	16-18	28.7%	--	--	--	84.4%
B-1	S-10	18-20	27.3%	--	44	17	--
B-1	S-13	24-26	26.9%	--	--	--	--
B-1	S-14	26-28	28.6%	--	40	18	--
B-2	S-2	2-4	15.4%	--	--	--	--
B-2	S-3	4-6	20.4%	--	38	17	--
B-2	S-5	8-10	27.1%	--	NP	NP	44.4%
B-2	S-6	10-12	13.1%	118.3	--	--	--
B-2	S-7	12-14	42.9%	80.0	54	21	--
B-2	S-9	16-18	33.0%	--	--	--	--
B-2	S-11	20-22	26.1%	--	40	17	--
B-3	S-2	2-4	39.0%	--	--	--	--
B-3	S-3	4-6	39.3%	--	39	26	--
B-3	S-5	8-10	31.4%	--	81	26	--
B-3	S-7	13-15	28.8%	--	--	--	99.4%
B-3	S-8	18-20	23.4%	--	--	--	--
B-3	S-9	23-25	21.1%	--	53	19	--
B-3	S-11	33-35	20.9%	--	--	--	--
B-3	S-13	43-45	22.5%	--	57	20	--
B-4	S-1	0-2	25.2%	--	--	--	--
B-4	S-3	4-6	4.2%	--	NP	NP	16.0%
B-4	S-4	6-8	36.0%	--	54	24	--
B-4	S-6	10-12	34.4%	--	81	27	--
B-4	S-8	18-20	28.8%	--	--	--	--
B-4	S-9	23-25	20.7%	--	49	18	--
B-4	S-11	33-35	19.6%	--	56	19	--

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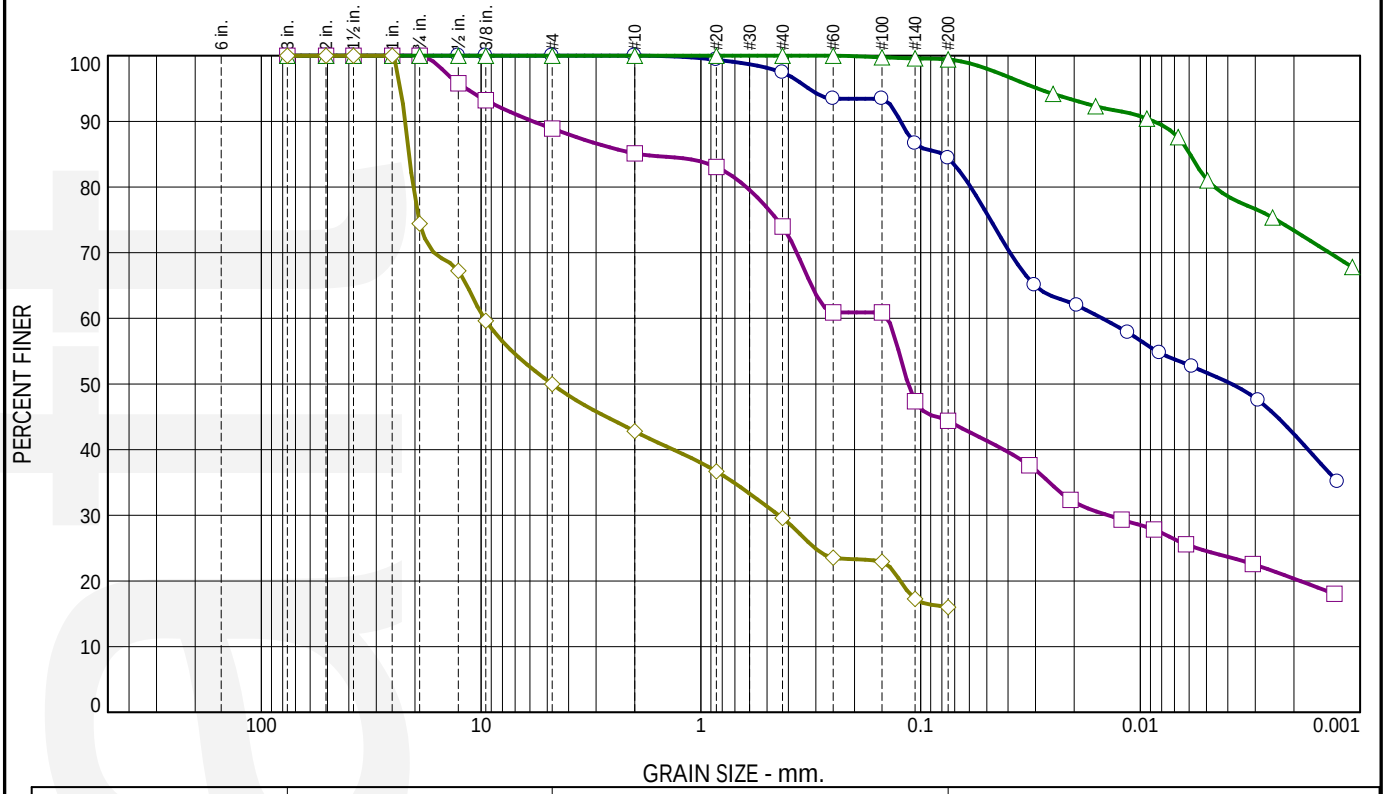
Particle Size Distribution Report

ASTM D6913 and D7928



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.0	2.6	13.0	32.7	51.7
□	0.0	0.0	11.1	3.8	11.1	29.6	19.8	24.6
△	0.0	0.0	0.0	0.0	0.0	0.6	18.2	81.2
◇	0.0	25.6	24.4	7.2	13.2	13.6	16.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.0791	0.0149	0.0038					
□	NP	NP	1.9028	0.1411	0.1140	0.0140				
△			0.0059							
◇	NP	NP	21.2928	9.6962	4.7542	0.4417				

Material Description	USCS	AASHTO
○ Visual classification: clay		
□ Silty sand	SM	A-4(0)
△ Visual classification: clay		
◇ Silty gravel with sand	GM	A-1-b

Project No. Client: SaLUT

Project: Taylor Run Stream

○ Source of Sample: B-1 Depth: 16'-18' Sample Number: S-9

□ Source of Sample: B-2 Depth: 8'-10' Sample Number: S-5

△ Source of Sample: B-3 Depth: 13'-15' Sample Number: S-7

◇ Source of Sample: B-4 Depth: 4'-6' Sample Number: S-3

Remarks:

○ Date tested: 10/23/25

□ 10/23/25

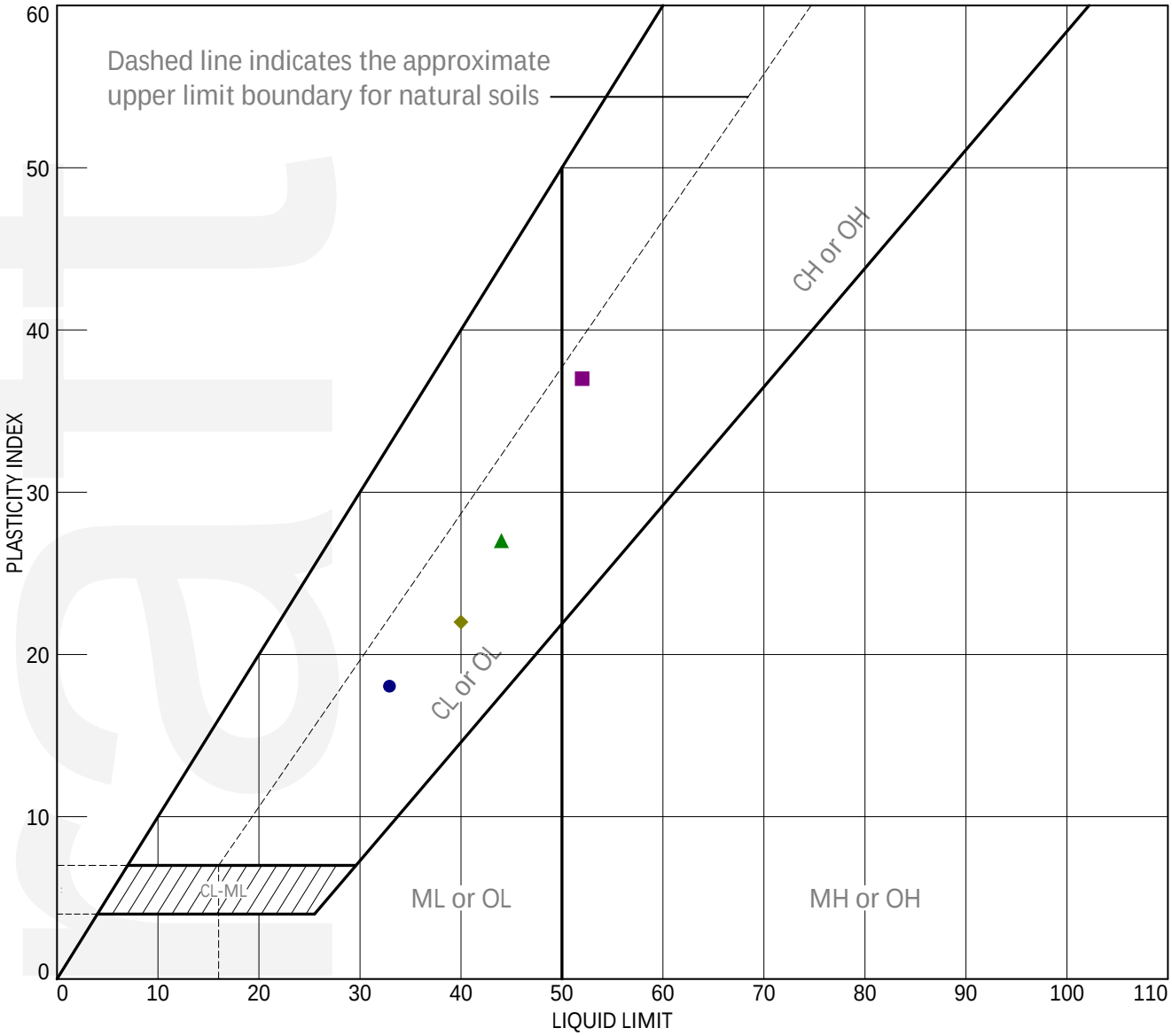
△ Date tested: 10/23/25

◇ Date tested: 10/16/25

Figure

Tested By: AS Checked By: SK

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-1	S-2	2'-4'	18.0	15	33	18	
■	B-1	S-5	8'-10'	20.3	15	52	37	
▲	B-1	S-10	18'-20'	27.3	17	44	27	
◆	B-1	S-14	26'-28	28.6	18	40	22	

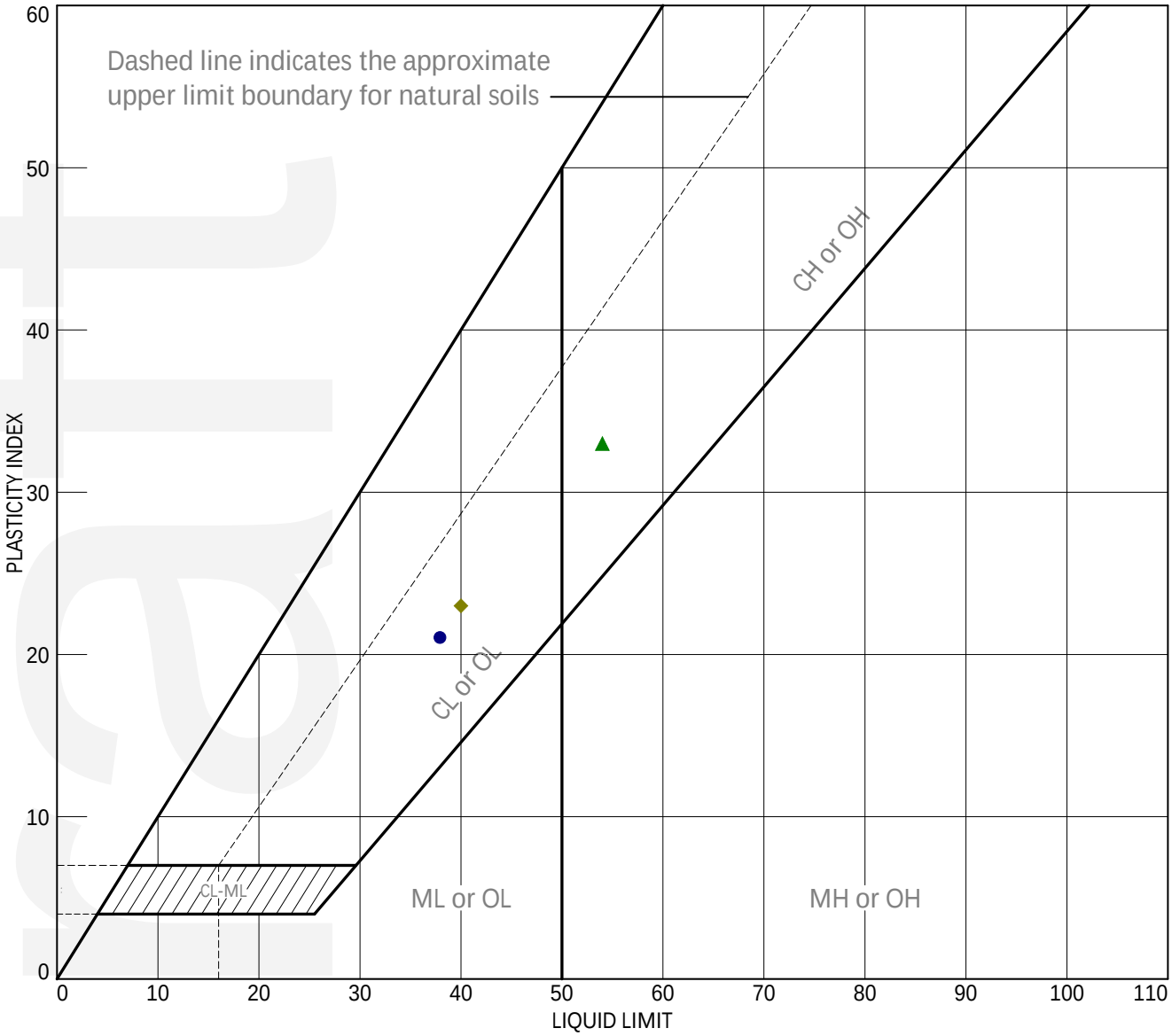
BALTIMORE BMT MATERIALS TESTING

Client: SaLUT

Project: Taylor Run Stream

Project No.: Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-2	S-3	4'-6'	20.4	17	38	21	
■	B-2	S-5	8'-10'		NP	NP	NP	SM
▲	B-2	S-7	12'-14'	42.9	21	54	33	
◆	B-2	S-11	24'-26'	26.1	17	40	23	

BALTIMORE BMT MATERIALS TESTING

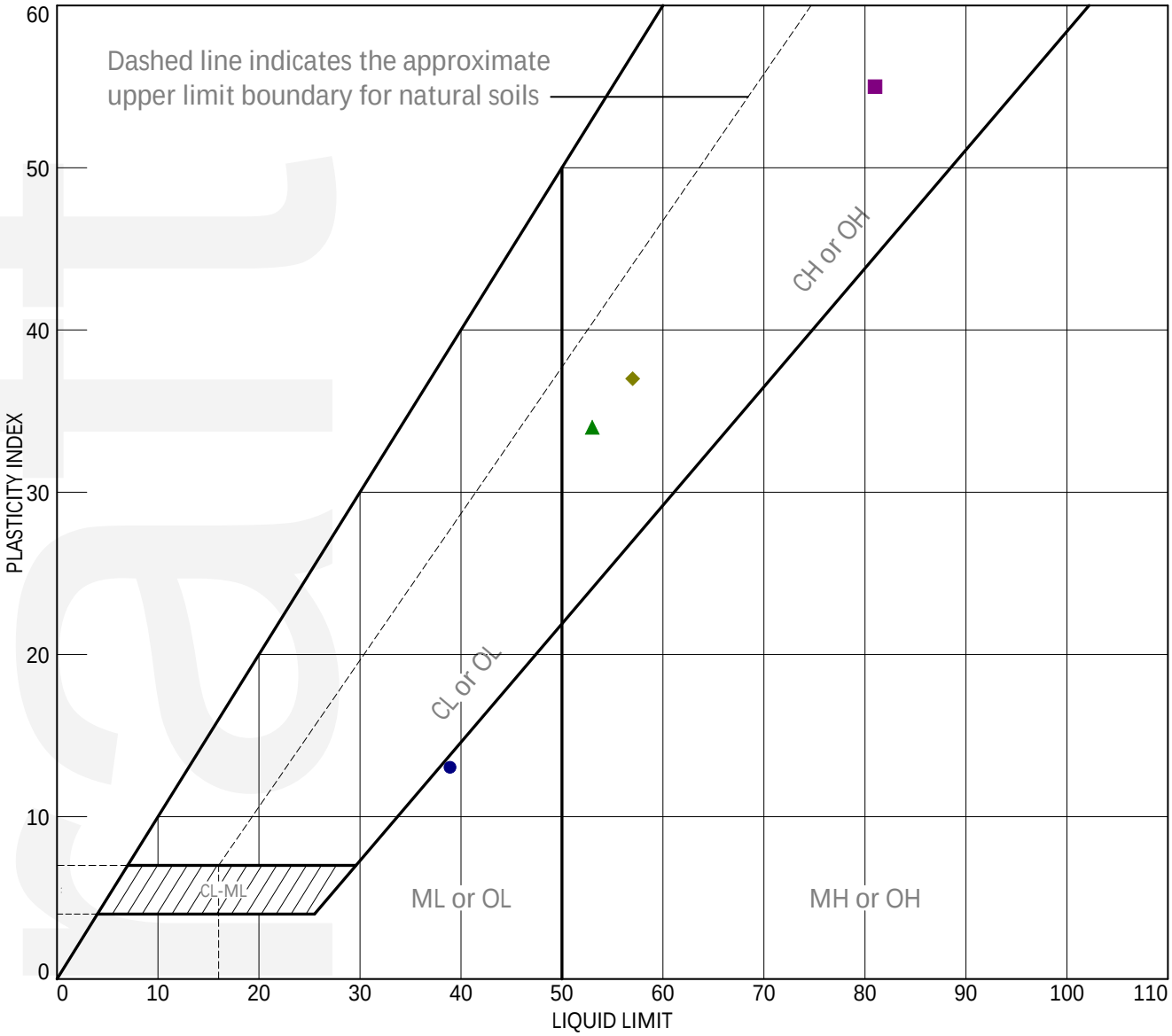
Client: SaLUT

Project: Taylor Run Stream

Project No.:

Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-3	S-3	4'-6'	39.3	26	39	13	
■	B-3	S-5	8'-10'	31.4	26	81	55	
▲	B-3	S-9	23'-25'	21.1	19	53	34	
◆	B-3	S-13	43'-45'	22.5	20	57	37	
▼	B-3	S-7	13'-15'	28.8				

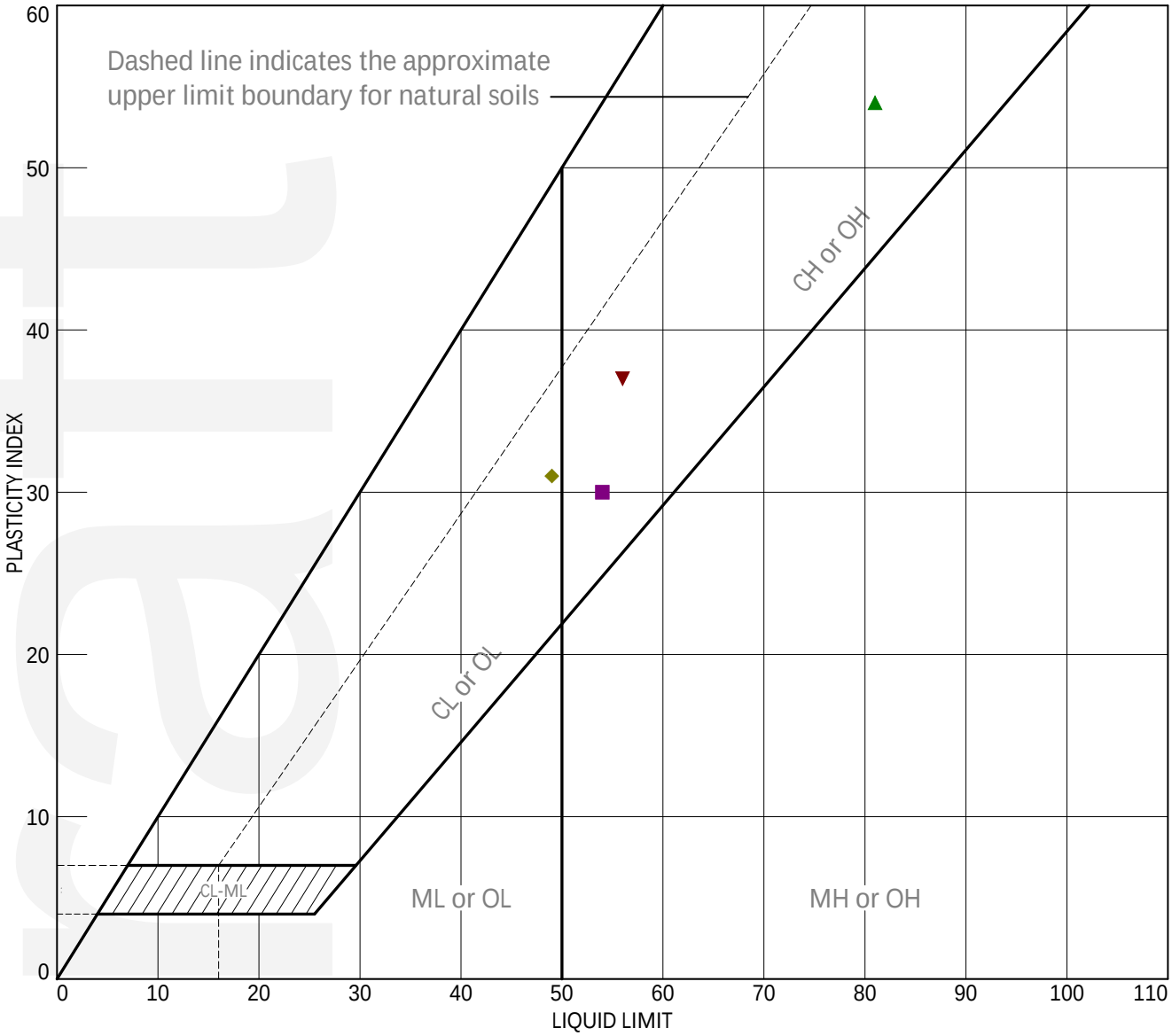
BALTIMORE BMT MATERIALS TESTING

Client: SaLUT

Project: Taylor Run Stream

Project No.: Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-4	S-3	4'-6'	4.2	NP	NP	NP	GM
■	B-4	S-4	6'-8'	36.0	24	54	30	
▲	B-4	S-6	10'-12'	34.0	27	81	54	
◆	B-4	S-9	23'-25'	20.7	18	49	31	
▼	B-4	S-11	33'-35'	19.6	19	56	37	

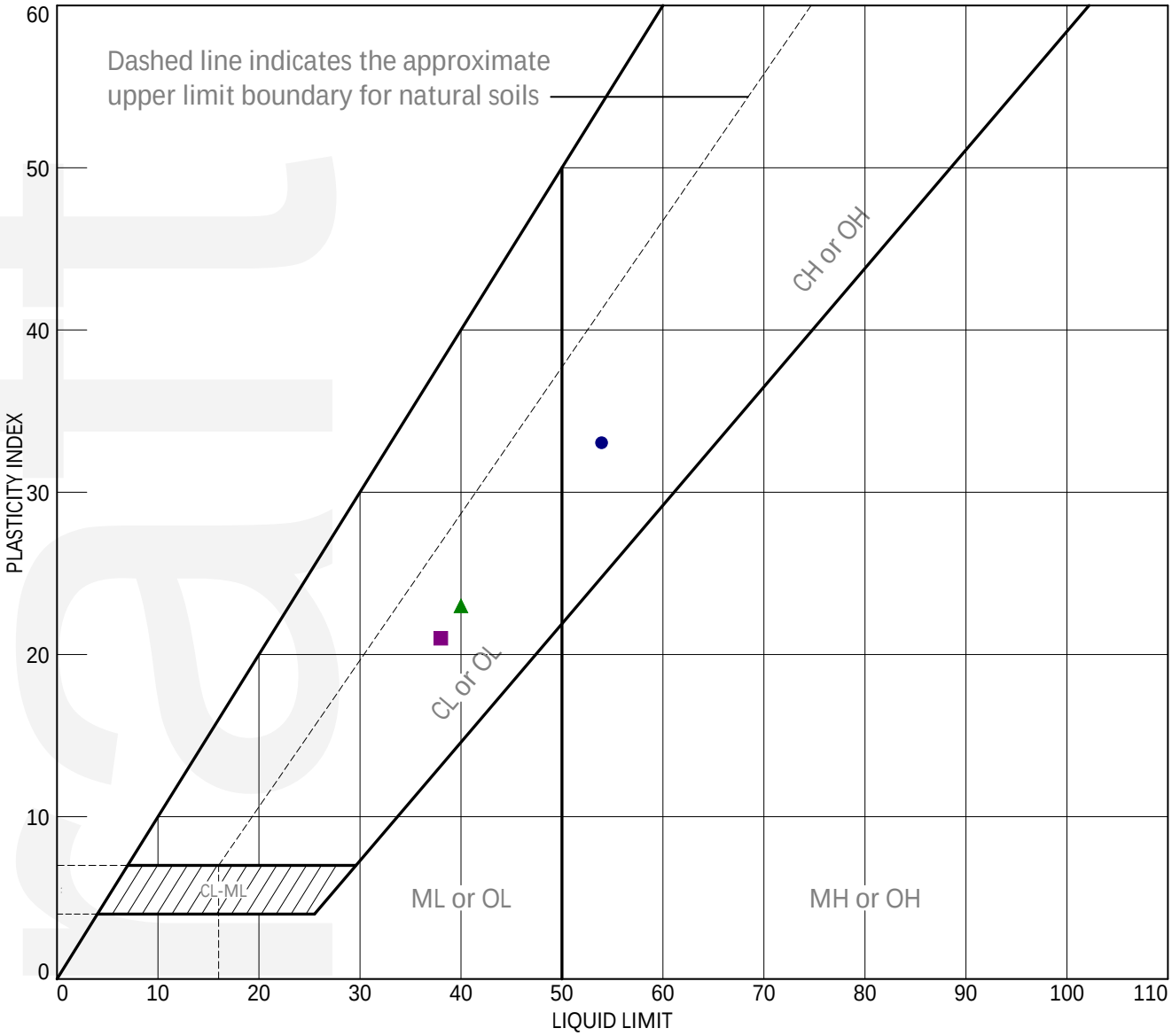
BALTIMORE BMT MATERIALS TESTING

Client: SaLUT

Project: Taylor Run Stream

Project No.: Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-2	S-7	12'-14'	42.9	21	54	33	
■	B-2	S-3	4'-6'	20.4	17	38	21	
▲	B-2	S-11	24'-26'	26.1	17	40	23	

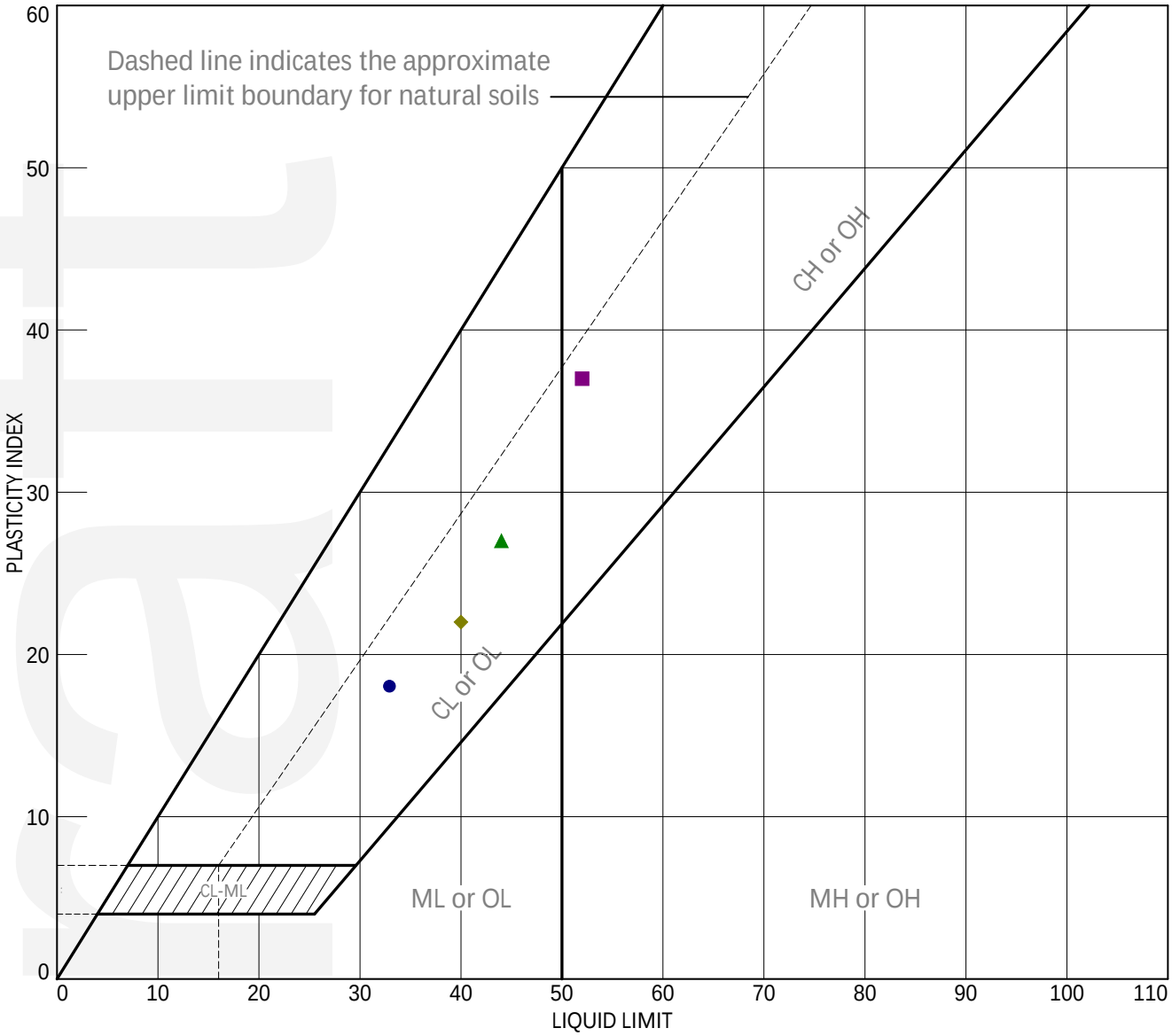
BALTIMORE BMT MATERIALS TESTING

Client: SaLUT

Project: Taylor Run Stream

Project No.: Figure

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-1	S-2	2'-4'	18.0	15	33	18	
■	B-1	S-5	8'-10'	20.3	15	52	37	
▲	B-1	S-10	18'-20'	27.3	17	44	27	
◆	B-1	S-14	26'-28	28.6	18	40	22	

BALTIMORE BMT MATERIALS TESTING

Client: SaLUT

Project: Taylor Run Stream

Project No.: Figure

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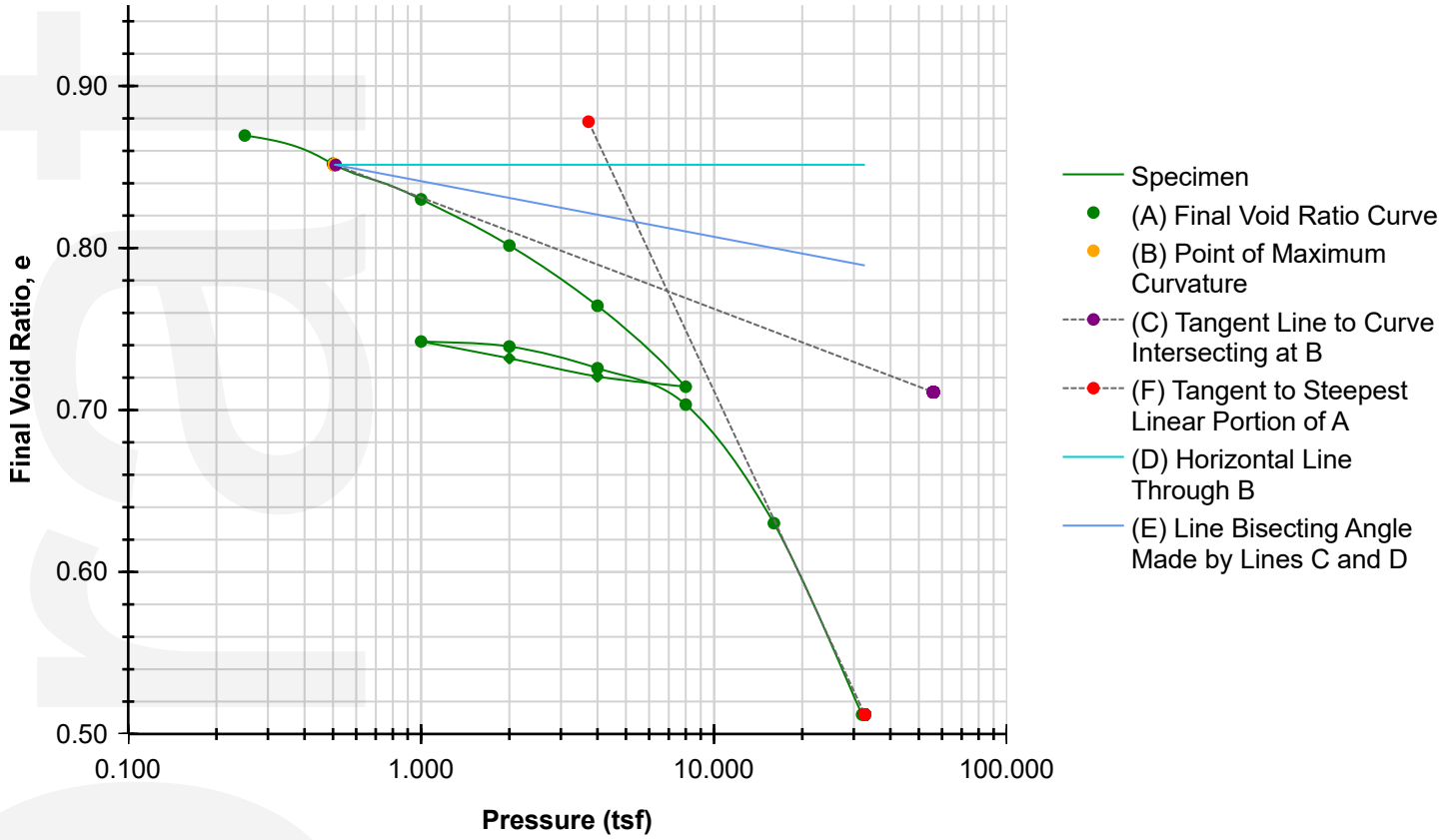
Glen Burnie, MD 21061

Final Voids [Log]

ASTM D-2435



Preconsolidation Stress (tsf)	5.378	**Cc**	0.368	**Cr**	0.037

	BEFORE	AFTER			
			Liquid Limits	62	**Test Date** 10/17/2025
Moisture (%)	28.0	21.8	**Plastic Limits**	20	
Dry Density (pcf)	90.7	106.8			
Saturation (%)	86.9	100.0			
Void Ratio	0.88	0.60	**Specific Gravity**	2.732	MEASURED

Sample Description	Fat CLAY with sand (CH)			
Project Number	25-0025	**Depth (ft)**	22.0-24.0	**Remarks**
Sample Number	T-2	**Boring Number**	B-2	
Project	Taylor Run Stream Stabilization			
Client	AECOM			
Location	Alexandria, Virginia			

Soil and Land Use Technology Inc. (SaLUT)
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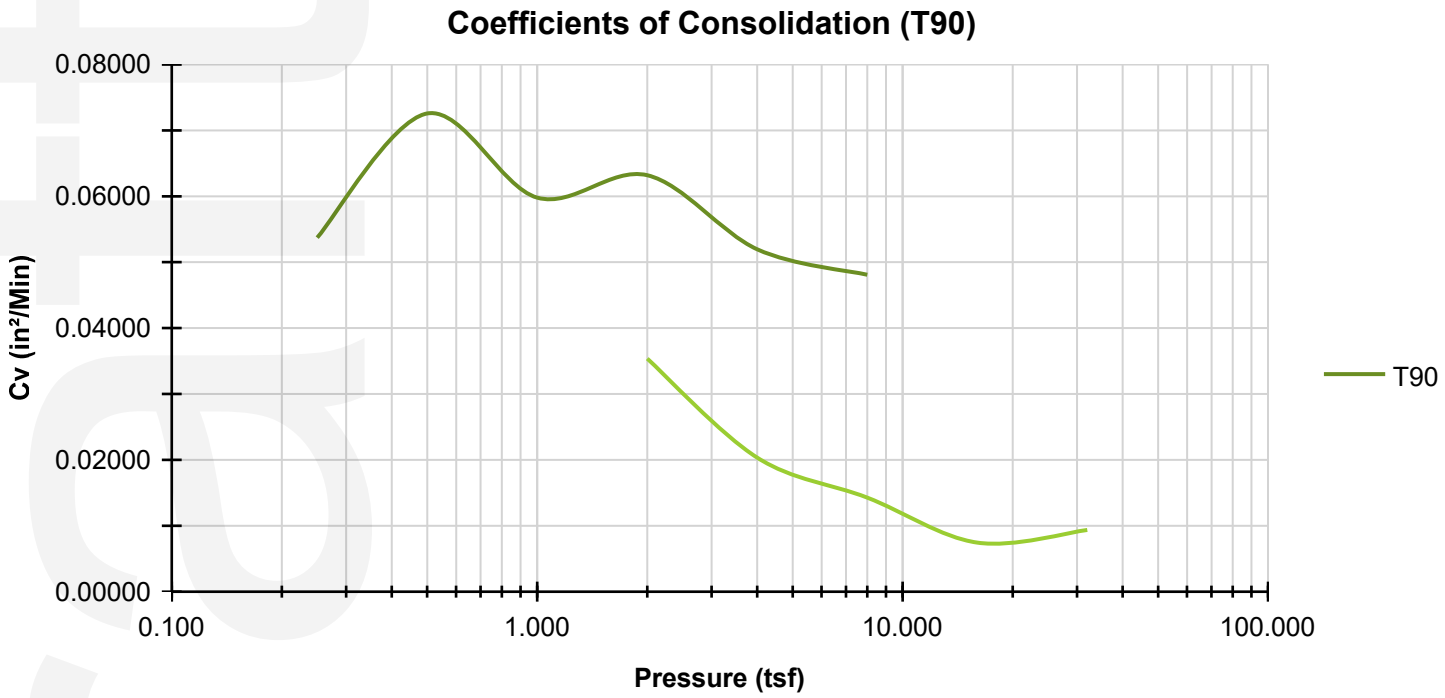
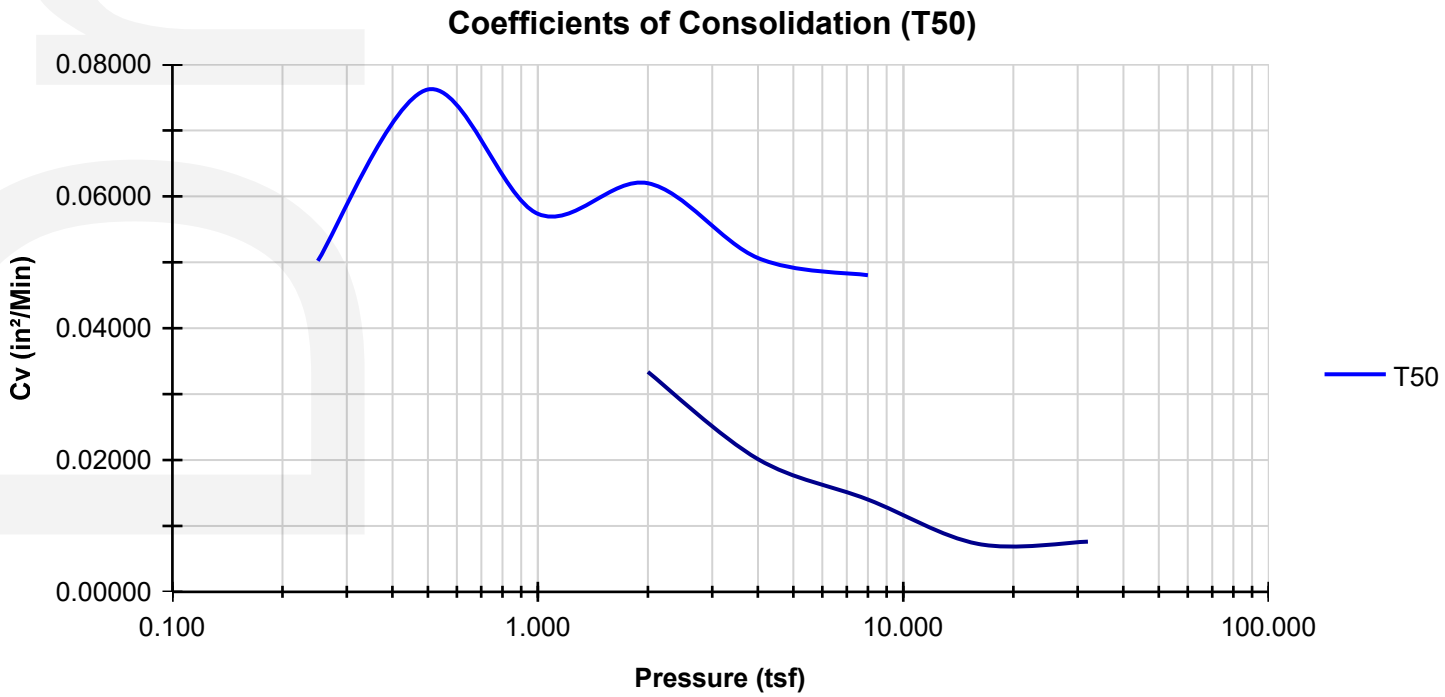
Coefficients of Consolidation

ASTM D-2435





Summary

ASTM D-2435

Sample Description	Fat CLAY with sand (CH)			
Project Number	25-0025	**Depth (ft)**	22.0-24.0	**Remarks**
Sample Number	S-12, T-2	**Boring Number**	B-2	
Project	Taylor Run Stream Stabilization			
Client	AECOM			
Location	Alexandria, Virginia			

Index	Loading Sequence (tsf)	Cummulative Change in Height (in)	Specimen Height (in)	Height of Voids (in)	Vertical Strain (%)	Void Ratio	T90 Fitting Time (Hr)	T50 Fitting Time (Hr)	T90 Cv (in²/Min)	T50 Cv (in²/Min)	Sequence Status
0	0.000	0.0000	0.7500	0.0000	0.0	0.880	0.000	0.000	0.00000	0.00000	ENABLED
1	0.250	0.0029	0.7471	0.3475	0.4	0.869	0.037	0.009	0.05373	0.05023	ENABLED
2	0.500	0.0098	0.7402	0.3405	1.3	0.852	0.027	0.006	0.07256	0.07623	ENABLED
3	1.000	0.0186	0.7314	0.3317	2.5	0.830	0.032	0.008	0.05980	0.05737	ENABLED
4	2.000	0.0300	0.7200	0.3203	4.0	0.802	0.029	0.007	0.06319	0.06200	ENABLED
5	4.000	0.0449	0.7051	0.3055	6.0	0.764	0.034	0.008	0.05196	0.05067	ENABLED
6	8.000	0.0648	0.6852	0.2855	8.6	0.714	0.034	0.008	0.04810	0.04804	ENABLED
7	4.000	0.0623	0.6877	0.2880	8.3	0.721	0.000	0.000	0.00000	0.00000	ENABLED
8	2.000	0.0578	0.6922	0.2925	7.7	0.732	0.000	0.000	0.00000	0.00000	ENABLED
9	1.000	0.0537	0.6963	0.2967	7.2	0.742	0.000	0.000	0.00000	0.00000	ENABLED
10	2.000	0.0549	0.6951	0.2954	7.3	0.739	0.048	0.012	0.03536	0.03338	ENABLED
11	4.000	0.0603	0.6897	0.2901	8.0	0.726	0.083	0.019	0.02035	0.02015	ENABLED
12	8.000	0.0692	0.6808	0.2811	9.2	0.703	0.115	0.027	0.01428	0.01401	ENABLED
13	16.000	0.0985	0.6515	0.2518	13.1	0.630	0.202	0.048	0.00744	0.00727	ENABLED
14	32.000	0.1457	0.6043	0.2046	19.4	0.512	0.138	0.039	0.00938	0.00762	ENABLED

Soil and Land Use Technology Inc. (SaLUT)
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Consolidated Test Results

ASTM D-2435

Project:	Taylor Run Stream Stabilization
Project Number:	25-0025
Job Number:	25-0025
Test Date:	10/17/2025

Sampling Date:	10/16/2025
Sample Number:	S-12, T-2
Depth (ft)	22.0-24.0
Boring Number:	B-2
Location:	Alexandria, Virginia
Client Name:	AECOM
Remarks:	

Specific Gravity:	2.732	Plastic Limit:	20	Liquid Limit:	62
Specific Gravity Method:	MEASURED			Weight of Ring (g)	61.9
Sampling Method:	Undisturbed	Soil Classification:	CH		
Specimen Description:	Fat CLAY with sand (CH)				

Parameters	Initial	Final
Height (in)	0.7500	0.6043
Height Source	NA	TEST RESULTS
Diameter (in)	2.0000	NA
Area (in²)	3.142	NA
Volume (in³)	2.3562	1.8984
Weight of Container (g)	48.3	32.8
Weight of Wet Soil + Container (g)	302.1	101.5
Weight of Dry Soil + Container (g)	246.6	89.2
Moisture Content (%)	28.0	21.8
Moist Weight + Ring Weight (g)	133.7	126.7
Dry Density (pcf)	90.7	106.8
Wet Density (pcf)	116.1	130.1
Saturation (%)	86.9	100.0
Void Ratio	0.9	0.6

Soil and Land Use Technology Inc. (SaLUT)
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Glen Burnie, MD 21061

Consolidation Test Results

ASTM D-2435

Specimen 1			
Test Description:	Consolidation		
Other Associated Tests:			
Device Details:	CON-2		
Test Specification:	ASTM D-2435		
Test Time:	10/17/2025 12:00:00 AM		
Technician:	A. N	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	Fat CLAY with sand (CH)		
Specimen Preparation:	Cutting Shoe		
Large Particle:			
Moisture Content:	Inundated		
Test Condition:	Undisturbed		
Test Procedure:	ASTM D-2435		
Seating Pressure Used:	YES	Seating Pressure (tsf):	0.050
Preconsolidation Stress:			
Percent Strain [LOG] Graph (tsf):	NA	Final Voids Graph (tsf):	5.378

Tabulated Data - Load Sequence 1 - 0.250 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	10.4	0.0053	0.0000	0.0	0.880
1	00:00:06	10.6	0.0060	0.0007	0.1	0.875
2	00:00:15	10.9	0.0064	0.0011	0.1	0.874
3	00:00:30	10.9	0.0067	0.0014	0.2	0.873
4	00:01:00	10.9	0.0071	0.0018	0.2	0.872
5	00:02:00	10.9	0.0073	0.0020	0.3	0.872
6	00:04:00	10.9	0.0074	0.0021	0.3	0.871
7	00:08:00	10.9	0.0076	0.0023	0.3	0.871
8	00:15:00	10.9	0.0078	0.0025	0.3	0.870
9	00:30:00	10.9	0.0079	0.0026	0.3	0.870
10	01:00:00	10.9	0.0080	0.0027	0.4	0.870
11	02:00:00	10.9	0.0081	0.0028	0.4	0.870
12	04:00:00	10.9	0.0082	0.0029	0.4	0.869
13	06:30:00	10.9	0.0082	0.0029	0.4	0.869

Draft

Tabulated Data - Load Sequence 2 - 0.500 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	20.7	0.0082	0.0029	0.4	0.869
1	00:00:06	21.6	0.0125	0.0072	1.0	0.859
2	00:00:15	21.6	0.0131	0.0078	1.0	0.857
3	00:00:30	21.9	0.0135	0.0082	1.1	0.856
4	00:01:00	21.9	0.0138	0.0085	1.1	0.855
5	00:02:00	21.9	0.0141	0.0088	1.2	0.855
6	00:04:00	21.9	0.0143	0.0090	1.2	0.854
7	00:08:00	21.7	0.0145	0.0092	1.2	0.854
8	00:15:00	21.7	0.0146	0.0093	1.2	0.853
9	00:30:00	21.7	0.0147	0.0094	1.3	0.853
10	01:00:00	21.8	0.0149	0.0096	1.3	0.853
11	02:00:00	21.8	0.0150	0.0097	1.3	0.852
12	04:00:00	21.8	0.0151	0.0098	1.3	0.852
13	06:30:00	21.8	0.0151	0.0098	1.3	0.852

Draft

Tabulated Data - Load Sequence 3 - 1.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	41.5	0.0151	0.0098	1.3	0.852
1	00:00:06	43.1	0.0208	0.0155	2.1	0.838
2	00:00:15	43.5	0.0214	0.0161	2.1	0.836
3	00:00:30	43.5	0.0218	0.0165	2.2	0.835
4	00:01:00	43.5	0.0223	0.0170	2.3	0.834
5	00:02:00	43.5	0.0226	0.0173	2.3	0.833
6	00:04:00	43.5	0.0229	0.0176	2.3	0.833
7	00:08:00	43.5	0.0231	0.0178	2.4	0.832
8	00:15:00	43.5	0.0233	0.0180	2.4	0.832
9	00:30:00	43.5	0.0235	0.0182	2.4	0.831
10	01:00:00	43.7	0.0237	0.0184	2.4	0.831
11	02:00:00	43.6	0.0238	0.0185	2.5	0.830
12	04:00:00	43.8	0.0239	0.0186	2.5	0.830
13	06:30:00	43.8	0.0239	0.0186	2.5	0.830

Draft

Tabulated Data - Load Sequence 4 - 2.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	82.9	0.0239	0.0186	2.5	0.830
1	00:00:06	86.4	0.0312	0.0259	3.5	0.812
2	00:00:15	86.8	0.0320	0.0267	3.6	0.810
3	00:00:30	87.5	0.0326	0.0273	3.6	0.808
4	00:01:00	87.5	0.0332	0.0279	3.7	0.807
5	00:02:00	87.5	0.0336	0.0283	3.8	0.806
6	00:04:00	87.5	0.0339	0.0286	3.8	0.805
7	00:08:00	87.4	0.0342	0.0289	3.9	0.804
8	00:15:00	87.4	0.0345	0.0292	3.9	0.804
9	00:30:00	87.3	0.0348	0.0295	3.9	0.803
10	01:00:00	87.3	0.0350	0.0297	4.0	0.802
11	02:00:00	87.1	0.0352	0.0299	4.0	0.802
12	04:00:00	87.5	0.0353	0.0300	4.0	0.802
13	06:30:00	87.5	0.0353	0.0300	4.0	0.802

Draft

Tabulated Data - Load Sequence 5 - 4.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	165.8	0.0353	0.0300	4.0	0.802
1	00:00:06	175.2	0.0444	0.0391	5.2	0.779
2	00:00:15	175.4	0.0455	0.0402	5.4	0.776
3	00:00:30	174.9	0.0464	0.0411	5.5	0.774
4	00:01:00	174.6	0.0470	0.0417	5.6	0.772
5	00:02:00	174.3	0.0476	0.0423	5.6	0.771
6	00:04:00	174.1	0.0481	0.0428	5.7	0.770
7	00:08:00	173.9	0.0486	0.0433	5.8	0.768
8	00:15:00	173.9	0.0490	0.0437	5.8	0.767
9	00:30:00	174.2	0.0494	0.0441	5.9	0.766
10	01:00:00	175.3	0.0497	0.0444	5.9	0.766
11	02:00:00	174.9	0.0500	0.0447	6.0	0.765
12	04:00:00	174.7	0.0502	0.0449	6.0	0.764
13	06:30:00	174.7	0.0502	0.0449	6.0	0.764

Draft

Tabulated Data - Load Sequence 6 - 8.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	332.3	0.0502	0.0449	6.0	0.764
1	00:00:06	348.2	0.0622	0.0569	7.6	0.734
2	00:00:15	348.1	0.0636	0.0583	7.8	0.731
3	00:00:30	348.0	0.0646	0.0593	7.9	0.728
4	00:01:00	347.9	0.0655	0.0602	8.0	0.726
5	00:02:00	347.6	0.0664	0.0611	8.1	0.724
6	00:04:00	350.0	0.0672	0.0619	8.3	0.722
7	00:08:00	349.7	0.0679	0.0626	8.3	0.720
8	00:15:00	349.4	0.0684	0.0631	8.4	0.719
9	00:30:00	349.2	0.0689	0.0636	8.5	0.717
10	01:00:00	348.8	0.0694	0.0641	8.5	0.716
11	02:00:00	348.4	0.0698	0.0645	8.6	0.715
12	04:00:00	348.7	0.0700	0.0647	8.6	0.715
13	06:30:00	348.6	0.0701	0.0648	8.6	0.714

Draft

Tabulated Data - Load Sequence 7 - 4.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	182.5	0.0701	0.0648	8.6	0.714
1	00:00:06	167.9	0.0680	0.0627	8.4	0.720
2	00:00:15	175.5	0.0679	0.0626	8.4	0.720
3	00:00:30	171.0	0.0679	0.0626	8.4	0.720
4	00:01:00	174.5	0.0679	0.0626	8.3	0.720
5	00:02:00	174.8	0.0678	0.0625	8.3	0.720
6	00:04:00	174.9	0.0678	0.0625	8.3	0.720
7	00:08:00	175.1	0.0678	0.0625	8.3	0.720
8	00:15:00	175.3	0.0677	0.0624	8.3	0.720
9	00:30:00	174.1	0.0677	0.0624	8.3	0.720
10	01:00:00	174.5	0.0677	0.0624	8.3	0.720
11	02:00:00	174.5	0.0677	0.0624	8.3	0.721
12	04:00:00	174.6	0.0677	0.0624	8.3	0.721
13	06:30:00	174.4	0.0676	0.0623	8.3	0.721

Draft

Tabulated Data - Load Sequence 8 - 2.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	90.4	0.0676	0.0623	8.3	0.721
1	00:00:06	85.8	0.0649	0.0596	7.9	0.728
2	00:00:15	86.8	0.0647	0.0594	7.9	0.728
3	00:00:30	87.2	0.0644	0.0591	7.9	0.729
4	00:01:00	87.1	0.0642	0.0589	7.9	0.729
5	00:02:00	87.1	0.0640	0.0587	7.8	0.730
6	00:04:00	87.0	0.0639	0.0586	7.8	0.730
7	00:08:00	86.9	0.0637	0.0584	7.8	0.730
8	00:15:00	87.0	0.0637	0.0584	7.8	0.731
9	00:30:00	87.6	0.0636	0.0583	7.8	0.731
10	01:00:00	87.3	0.0635	0.0582	7.8	0.731
11	02:00:00	86.9	0.0633	0.0580	7.7	0.731
12	04:00:00	87.1	0.0632	0.0579	7.7	0.732
13	06:30:00	87.4	0.0631	0.0578	7.7	0.732

Draft

Tabulated Data - Load Sequence 9 - 1.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	45.5	0.0631	0.0578	7.7	0.732
1	00:00:06	42.7	0.0609	0.0556	7.4	0.737
2	00:00:15	43.3	0.0608	0.0555	7.4	0.738
3	00:00:30	44.2	0.0606	0.0553	7.4	0.738
4	00:01:00	43.8	0.0603	0.0550	7.3	0.739
5	00:02:00	43.8	0.0601	0.0548	7.3	0.740
6	00:04:00	43.8	0.0598	0.0545	7.3	0.740
7	00:08:00	43.8	0.0597	0.0544	7.2	0.741
8	00:15:00	43.7	0.0595	0.0542	7.2	0.741
9	00:30:00	43.6	0.0594	0.0541	7.2	0.741
10	01:00:00	43.4	0.0593	0.0540	7.2	0.741
11	02:00:00	43.4	0.0592	0.0539	7.2	0.742
12	04:00:00	43.8	0.0591	0.0538	7.2	0.742
13	06:30:00	43.8	0.0590	0.0537	7.2	0.742

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Tabulated Data - Load Sequence 10 - 2.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	83.0	0.0590	0.0537	7.2	0.742
1	00:00:06	86.0	0.0591	0.0538	7.2	0.742
2	00:00:15	86.9	0.0592	0.0539	7.2	0.742
3	00:00:30	87.5	0.0594	0.0541	7.2	0.741
4	00:01:00	87.5	0.0597	0.0544	7.2	0.741
5	00:02:00	87.5	0.0599	0.0546	7.3	0.740
6	00:04:00	87.4	0.0600	0.0547	7.3	0.740
7	00:08:00	87.4	0.0601	0.0548	7.3	0.740
8	00:15:00	87.3	0.0601	0.0548	7.3	0.740
9	00:30:00	87.1	0.0602	0.0549	7.3	0.739
10	01:00:00	86.9	0.0602	0.0549	7.3	0.739
11	02:00:00	87.2	0.0602	0.0549	7.3	0.739
12	04:00:00	87.1	0.0602	0.0549	7.3	0.739
13	08:00:00	87.1	0.0602	0.0549	7.3	0.739

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Tabulated Data - Load Sequence 11 - 4.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	166.2	0.0602	0.0549	7.3	0.739
1	00:00:06	173.0	0.0604	0.0551	7.3	0.739
2	00:00:15	175.2	0.0608	0.0555	7.4	0.738
3	00:00:30	172.2	0.0613	0.0560	7.5	0.737
4	00:01:00	179.3	0.0622	0.0569	7.6	0.734
5	00:02:00	173.6	0.0632	0.0579	7.7	0.732
6	00:04:00	174.3	0.0639	0.0586	7.8	0.730
7	00:08:00	175.1	0.0645	0.0592	7.9	0.728
8	00:15:00	175.1	0.0649	0.0596	7.9	0.728
9	00:30:00	175.2	0.0652	0.0599	8.0	0.727
10	01:00:00	175.4	0.0654	0.0601	8.0	0.726
11	02:00:00	173.8	0.0655	0.0602	8.0	0.726
12	04:00:00	175.2	0.0656	0.0603	8.0	0.726
13	06:30:00	175.1	0.0656	0.0603	8.0	0.726

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Tabulated Data - Load Sequence 12 - 8.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	331.7	0.0656	0.0603	8.0	0.726
1	00:00:06	344.8	0.0659	0.0606	8.1	0.725
2	00:00:15	350.4	0.0664	0.0611	8.1	0.724
3	00:00:30	350.2	0.0672	0.0619	8.3	0.722
4	00:01:00	350.0	0.0683	0.0630	8.4	0.719
5	00:02:00	349.9	0.0696	0.0643	8.6	0.716
6	00:04:00	349.7	0.0708	0.0655	8.7	0.713
7	00:08:00	349.7	0.0720	0.0667	8.9	0.710
8	00:15:00	349.6	0.0729	0.0676	9.0	0.707
9	00:30:00	349.6	0.0736	0.0683	9.1	0.706
10	01:00:00	349.6	0.0741	0.0688	9.2	0.704
11	02:00:00	349.5	0.0743	0.0690	9.2	0.704
12	04:00:00	349.6	0.0744	0.0691	9.2	0.704
13	06:30:00	349.6	0.0745	0.0692	9.2	0.703

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Tabulated Data - Load Sequence 13 - 16.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	663.9	0.0745	0.0692	9.2	0.703
1	00:00:06	702.1	0.0751	0.0698	9.3	0.702
2	00:00:15	699.2	0.0768	0.0715	9.5	0.698
3	00:00:30	699.1	0.0788	0.0735	9.8	0.693
4	00:01:00	698.9	0.0817	0.0764	10.2	0.685
5	00:02:00	698.7	0.0851	0.0798	10.6	0.677
6	00:04:00	698.5	0.0891	0.0838	11.2	0.667
7	00:08:00	698.2	0.0938	0.0885	11.8	0.655
8	00:15:00	697.8	0.0987	0.0934	12.5	0.643
9	00:30:00	697.4	0.1015	0.0962	12.8	0.636
10	01:00:00	696.1	0.1027	0.0974	13.0	0.633
11	02:00:00	699.9	0.1033	0.0980	13.1	0.631
12	04:00:00	697.1	0.1036	0.0983	13.1	0.631
13	06:30:00	697.2	0.1038	0.0985	13.1	0.630

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Tabulated Data - Load Sequence 14 - 32.000 tsf

ASTM D-2435

Stop Method: 06:30:00 (hh:mm:ss)

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Settlement (in)	Axial Strain (%)	Void Ratio
0	00:00:00	1,327.9	0.1038	0.0985	13.1	0.630
1	00:00:06	1,393.4	0.1199	0.1146	15.3	0.590
2	00:00:15	1,393.5	0.1211	0.1158	15.4	0.587
3	00:00:30	1,394.8	0.1228	0.1175	15.7	0.583
4	00:01:00	1,394.3	0.1253	0.1200	16.0	0.576
5	00:02:00	1,393.6	0.1300	0.1247	16.6	0.565
6	00:04:00	1,392.9	0.1367	0.1314	17.5	0.548
7	00:08:00	1,397.2	0.1409	0.1356	18.1	0.537
8	00:15:00	1,396.7	0.1441	0.1388	18.5	0.529
9	00:30:00	1,395.9	0.1470	0.1417	18.9	0.522
10	01:00:00	1,395.4	0.1489	0.1436	19.1	0.517
11	02:00:00	1,393.3	0.1500	0.1447	19.3	0.515
12	04:00:00	1,393.7	0.1506	0.1453	19.4	0.513
13	06:30:00	1,393.4	0.1510	0.1457	19.4	0.512

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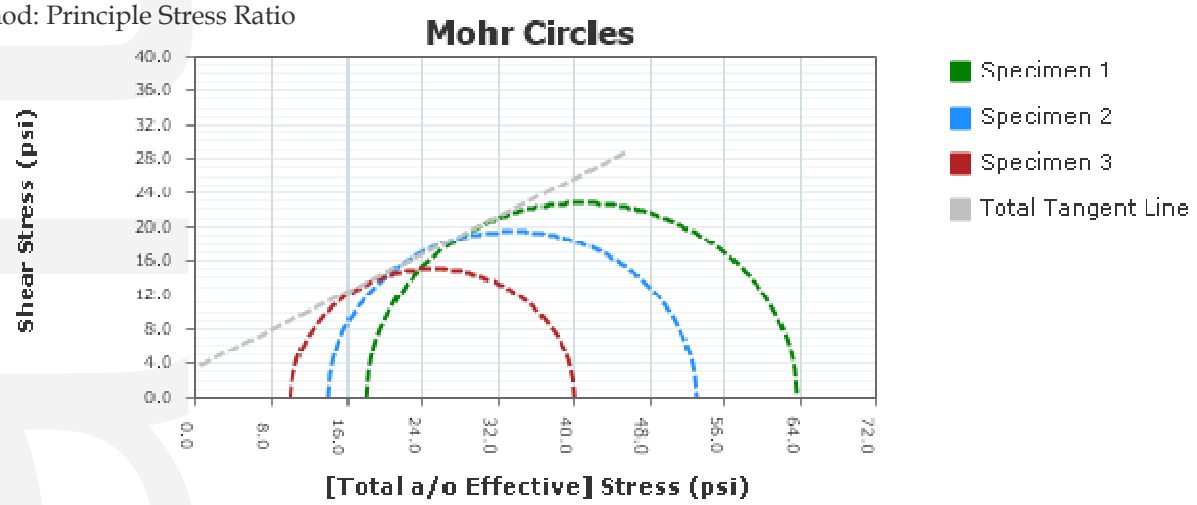
Glen Burnie, MD 21061

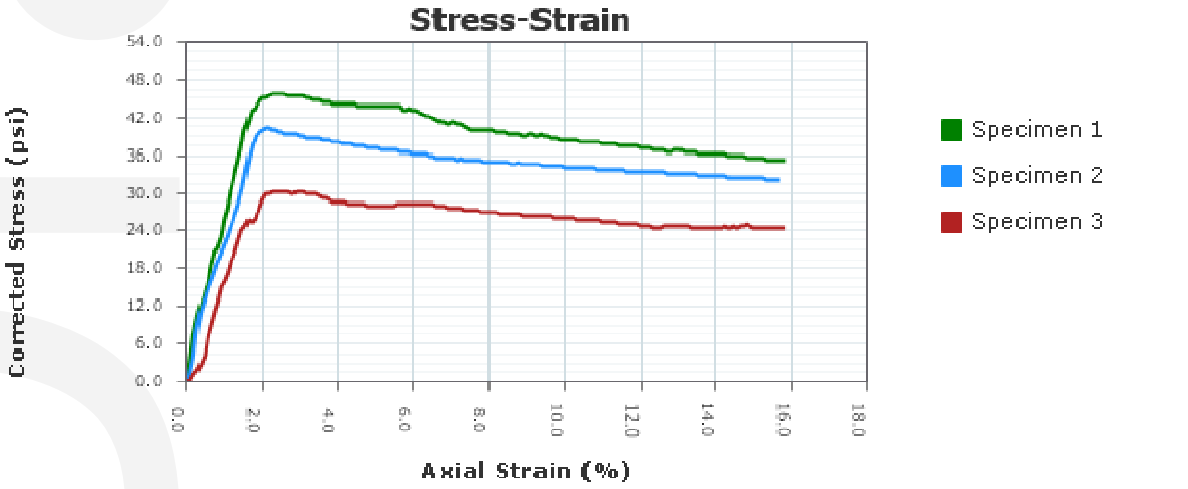
Consolidated Undrained Test

ASTM D4767

Calculation Method: Principle Stress Ratio



Total Strength Intercept (psi):	3.5	Effective Strength Intercept (psi):	NA
Total Friction Angle (°):	29.1	Effective Friction Angle (°):	NA



After Shear	Specimen Number 1	2	3	4	5	6	7	8
σ'1 at Failure (psi)								
σ'3 at Failure (psi)								

Project:	Taylor Run Stream Stabilization
Project Number:	25-0025
Sampling Date:	
Sample Number:	T-1
Sample Depth:	14.0 - 16.0 ft
Location:	Alexandria, Virginia
Remarks:	Clay with Sand and Silt (Visual Classification)

Soil and Land Use Technology Inc. (SaLUT)
530 McCormick Drive, Suite S
Glen Burnie, MD 21061

Consolidated Undrained Test

ASTM D4767

Initial Parameters	Specimen Number							
	1	2	3	4	5	6	7	8
Moisture Content (%)	34.5	32.5	32.7					
Moisture Material	Trimmings	Trimmings	Trimmings					
Dry Density (pcf)	84.4	89.0	88.5					
Saturation (%)	95.2	100.2	99.8					
Void Ratio	0.961	0.859	0.868					
Height (in)	5.5827	5.5892	5.5460					
Diameter (in)	2.8660	2.8588	2.8633					
Test Temperature (°C)	23.0	23.0	23.0					
Membrane Thickness (in)	0.0120	0.0120	0.0120					
Filter Paper Strips	Used	Used	Used					
Saturation Parameters	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Height (in)	5.5867	5.5932	5.5480					
Area (in²)	6.460	6.428	6.444					
Volume (in³)	36.0925	35.9543	35.7506					
B-Value	0.960	0.970	0.970					
Method Used	Wet	Wet	Wet					
Consolidation Parameters	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Cell Pressure (psi)	48.6	44.0	40.3					
Back Pressure (psi)	30.6	30.0	30.3					
Effective Pressure (psi)	18.0	14.0	10.0					
Height (in)	5.4997	5.5552	5.5030					
Area (in²)	6.396	6.439	6.286					
Volume (in³)	35.1771	35.7713	34.5911					
Dry Density (pcf)	86.4	89.2	91.4					
Saturation (%)	99.2	100.0	97.5					
Void Ratio	0.915	0.854	0.810					
Final Parameters	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture Content (%)	34.2	32.2	29.8					
Dry Density (pcf)	90.8	88.6	93.3					
Void Ratio	0.822	0.866	0.773					
Failure Angle (°):								
Test Data	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Comp. Strength at Failure (psi)	45.5	39.0	30.0					
σ'1 at Failure (psi)	53.8	43.7	33.1					
σ'3 at Failure (psi)	8.3	4.7	3.0					
Rate of Strain (%/Hr)	5.5	5.4	5.5					
Rate of Strain (in/min)	0.005000	0.005000	0.005000					
Axial Strain at Failure (%)	2.7	1.8	2.2					

Soil and Land Use Technology Inc. (SaLUT)
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Glen Burnie, MD 21061

Consolidated Undrained Test

ASTM D4767

Project:	Taylor Run Stream Stabilization
Project Number:	25-0025
Sampling Date:	10/23/2025
Sample Number:	T-1
Sample Depth:	14.0 - 16.0 ft
Location:	Alexandria, Virginia
Boring Number:	B-2
Client Name:	AECOM
Remarks:	Clay with Sand and Silt (Visual Classification)

Specimen 1 Failure Sketch	Specimen 2 Failure Sketch	Specimen 3 Failure Sketch	Specimen 4 Failure Sketch	Specimen 5 Failure Sketch	Specimen 6 Failure Sketch	Specimen 7 Failure Sketch	Specimen 8 Failure Sketch

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Consolidated Undrained Test

ASTM D4767

Specimen 1

Test Description:	Triaxial CU 18 psi		
Other Associated Tests:			
Device Details:			
Test Specification:			
Test Time:	11/12/2025		
Technician:	AN	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	Clay with Sand and Silt (Visual Classification)		
Specific Gravity:	2.65 (Assumed)		
Plastic Limit:	23	Liquid Limit:	68
Filter Paper Correction:	Yes	Membrane Correction:	Yes
Failure Criteria:	17% Strain		
Initial Moist Weight (g):	1073.0		
Test Remarks:			

Specimen 2

Test Description:	Triaxial CU 14 psi		
Other Associated Tests:			
Device Details:			
Test Specification:			
Test Time:	11/12/2025		
Technician:	AN	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	Clay with Sand and Silt (Visual Classification)		
Specific Gravity:	2.65 (Assumed)		
Plastic Limit:	23	Liquid Limit:	68
Filter Paper Correction:	Yes	Membrane Correction:	Yes
Failure Criteria:	16% Strain		
Initial Moist Weight (g):	1110.1		
Test Remarks:			

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Consolidated Undrained Test

ASTM D4767

Specimen 3

Test Description:	Triaxial CU 10 psi		
Other Associated Tests:			
Device Details:			
Test Specification:			
Test Time:	11/12/2025		
Technician:	AN	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	Clay with Sand and Silt (Visual Classification)		
Specific Gravity:	2.65 (Assumed)		
Plastic Limit:	23	Liquid Limit:	68
Filter Paper Correction:	Yes	Membrane Correction:	Yes
Failure Criteria:	16% Strain		
Initial Moist Weight (g):	1101.5		
Test Remarks:			

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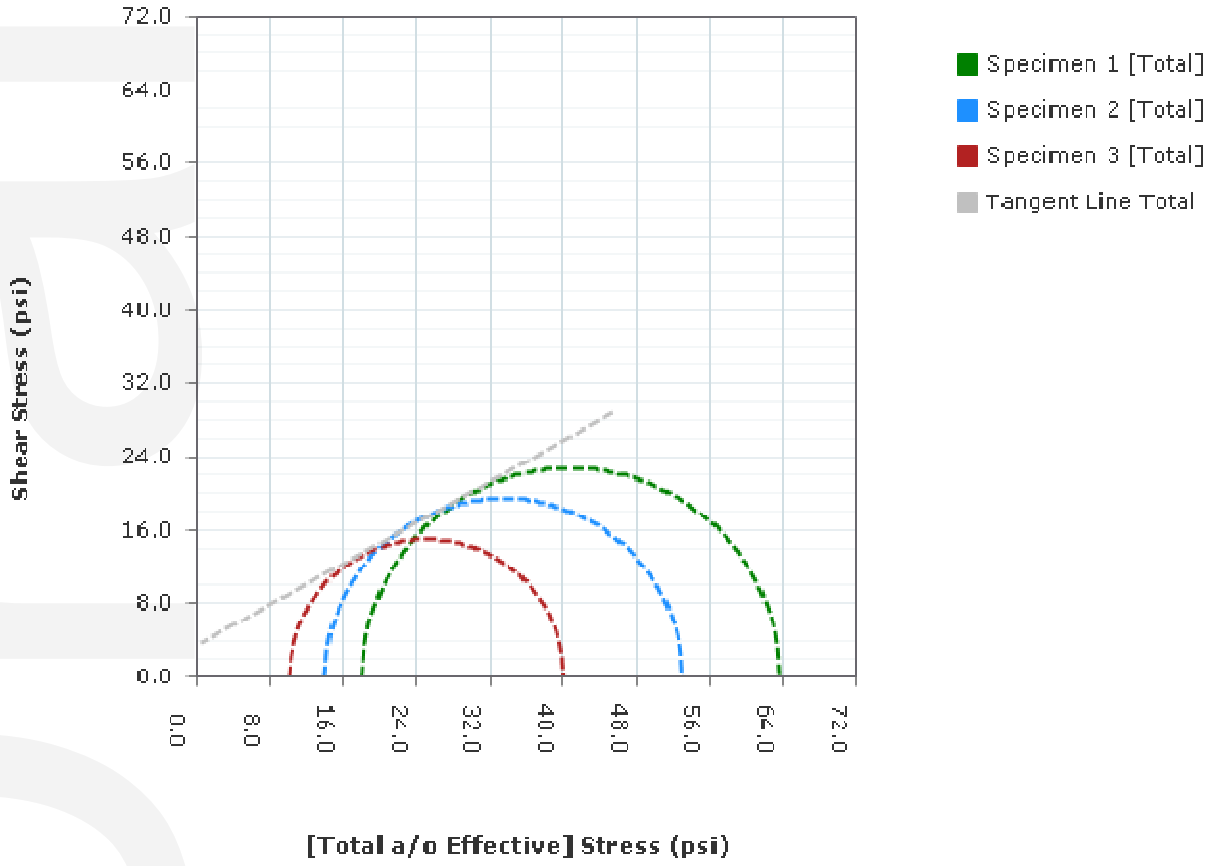
Graph - Mohr Circle (Total)

ASTM D4767



Tangent Line Results	TOTAL	EFFECTIVE
Strength Intercept (psi)	3.5	NA
Friction Angle (°)	29.143	NA

Calculation Method: Principle Stress Ratio

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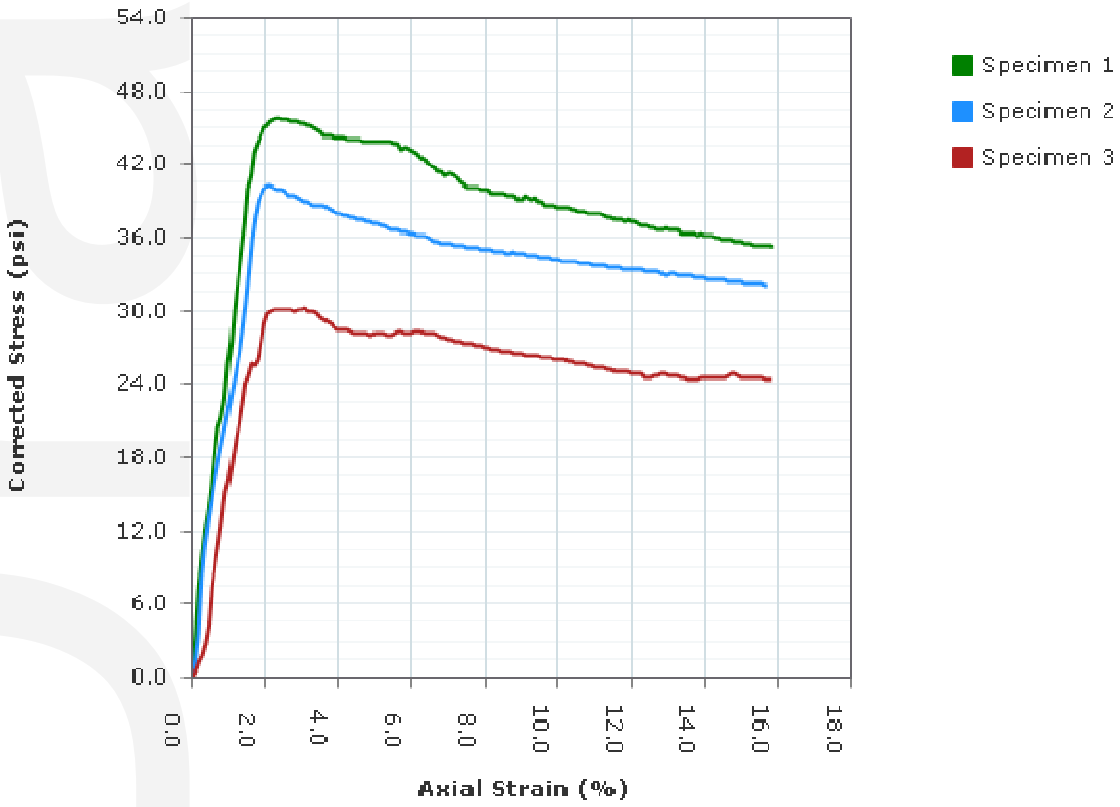
Stress Strain Graph

ASTM D4767



Soil and Land Use Technology Inc. (SaLUT)
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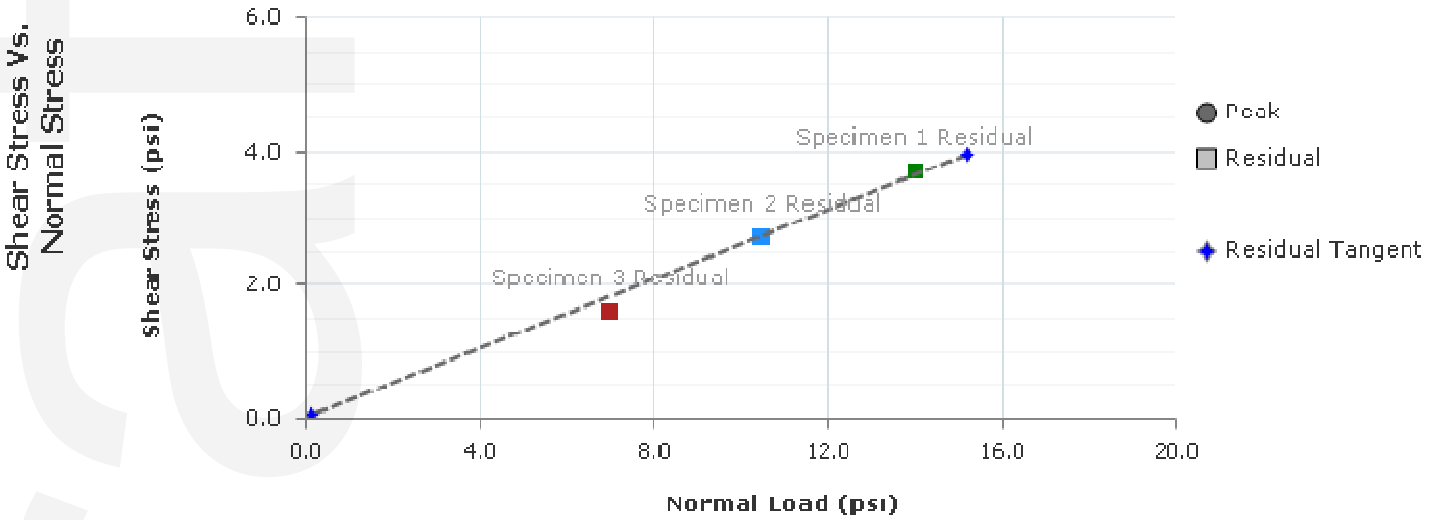
Direct Shear Test

ASTM D3080

Project: Taylor Run Stream Stabilization
Project Number: 25-0025
Location: Alexandria, Virginia
Client Name: AECOM



C (psi): NA
Phi (°): NA
Residual C (psi): 0.0
Residual Phi (°): 14.5

	Specimen Number							
Initial	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture (%):	30.2	30.7	19.6					
Dry Density (pcf):	91.9	91.2	108.6					
Void Ratio:	0.800	0.813	0.523					
Saturation (%):	99.9	100.0	99.3					
Diameter (in):	2.5000	2.5000	2.5000					
Height (in):	1.0000	1.0000	1.0000					
Final	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture (%):	30.2	34.9	22.1					
Dry Density (pcf):	91.9	86.0	104.2					
Void Ratio:	0.800	0.924	0.587					
Saturation (%):	100.0	100.0	100.0					
Height (in):	0.9946	0.9969	0.9969					
Normal Stress (psi):	14.0	10.5	7.0					
Peak Shear Stress (psi):								
Residual Stress (psi):	3.7	2.7	1.6					
Horizontal Deformation (%):								
Rate (in/min):	0.015000	0.015000	0.015000					

Soil and Land Use Technology Inc. (SaLUT)
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Direct Shear Test

ASTM D3080

Project: Taylor Run Stream Stabilization
Project Number: 25-0025
Sampling Date: 10/15/2025
Sample Number: T-1
Sample Depth: 10.0 - 12.0 ft
Location: Alexandria, Virginia
Client Name: AECOM
Remarks:

Information Parameters	Specimen Number 1	2	3	4	5	6	7	8
Liquid Limit:	90	90	90					
Plastic Limit:	26	26	26					
Specific Gravity:	2.65	2.65	2.65					
Specific Gravity Method:	ASSUMED	ASSUMED	ASSUMED					
Initial Parameters	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Test Temperature (°C):	0.0	0.0	0.0					
Sample Shape:	ROUND	ROUND	ROUND					
Height (in):	1.0000	1.0000	1.0000					
Diameter (in):	2.5000	2.5000	2.5000					
Area (in²):	4.909	4.909	4.909					
Volume (in³):	4.9087	4.9087	4.9087					
Moisture (%):	30.2	30.7	19.6					
Dry Density (pcf):	91.9	91.2	108.6					
Wet Density (pcf):	119.6	119.2	129.9					
Saturation (%):	99.9	100.0	99.3					
Void Ratio:	0.800	0.813	0.523					
Porosity (%):	44.4	44.9	34.3					
Consolidation Parameters	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Reference Height (in):	1.0000	1.0000	1.0000					
Final Reference Height (in):	0.9946	0.9969	0.9969					
Height (in):	0.9946	0.9969	0.9969					
Final Parameters	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture Content (%)	30.2	34.9	22.1					
Dry Density (pcf):	91.9	86.0	104.2					
Wet Density (pcf):	119.7	116.0	127.3					
Saturation (%):	100.0	100.0	100.0					
Void Ratio:	0.800	0.924	0.587					
Porosity (%):	44.4	48.0	37.0					

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Direct Shear Test

ASTM D3080

Project:	Taylor Run Stream Stabilization
Project Number:	25-0025
Sampling Date:	10/15/2025
Sample Number:	T-1
Sample Depth:	10.0 - 12.0 ft
Location:	Alexandria, Virginia
Client Name:	AECOM
Remarks:	

Specific Gravity:	2.65	Plastic Limit:	26	Liquid Limit:	90
Type:	Undisturbed	Soil Classification:	CH		
Specimen Description:	FAT CLAY(CH)				

Specimen 1 Failure Sketch	Specimen 2 Failure Sketch	Specimen 3 Failure Sketch	Specimen 4 Failure Sketch	Specimen 5 Failure Sketch	Specimen 6 Failure Sketch	Specimen 7 Failure Sketch	Specimen 8 Failure Sketch

Soil and Land Use Technology Inc. (SaLUT)
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Direct Shear Test

ASTM D3080

Specimen 1

Test Description:	Normal Load 14 psi		
Other Associated Tests:			
Device Details:			
Test Specification:	ASTM D3080		
Test Time:	11/12/2025		
Technician:	AN	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	FAT CLAY(CH)		
Specific Gravity:	2.65		
Plastic Limit:	26	Liquid Limit:	90
Test Remarks:			

Specimen 2

Test Description:	Normal Load 10.5 psi		
Other Associated Tests:			
Device Details:			
Test Specification:	ASTM D3080		
Test Time:	11/12/2025		
Technician:	AN	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	FAT CLAY(CH)		
Specific Gravity:	2.65		
Plastic Limit:	26	Liquid Limit:	90
Test Remarks:			

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Direct Shear Test

ASTM D3080

Specimen 3

Test Description:	Normal Load 7.0 psi		
Other Associated Tests:			
Device Details:			
Test Specification:	ASTM D3080		
Test Time:	11/12/2025		
Technician:	AN	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	FAT CLAY(CH)		
Specific Gravity:	2.65		
Plastic Limit:	26	Liquid Limit:	90
Test Remarks:			

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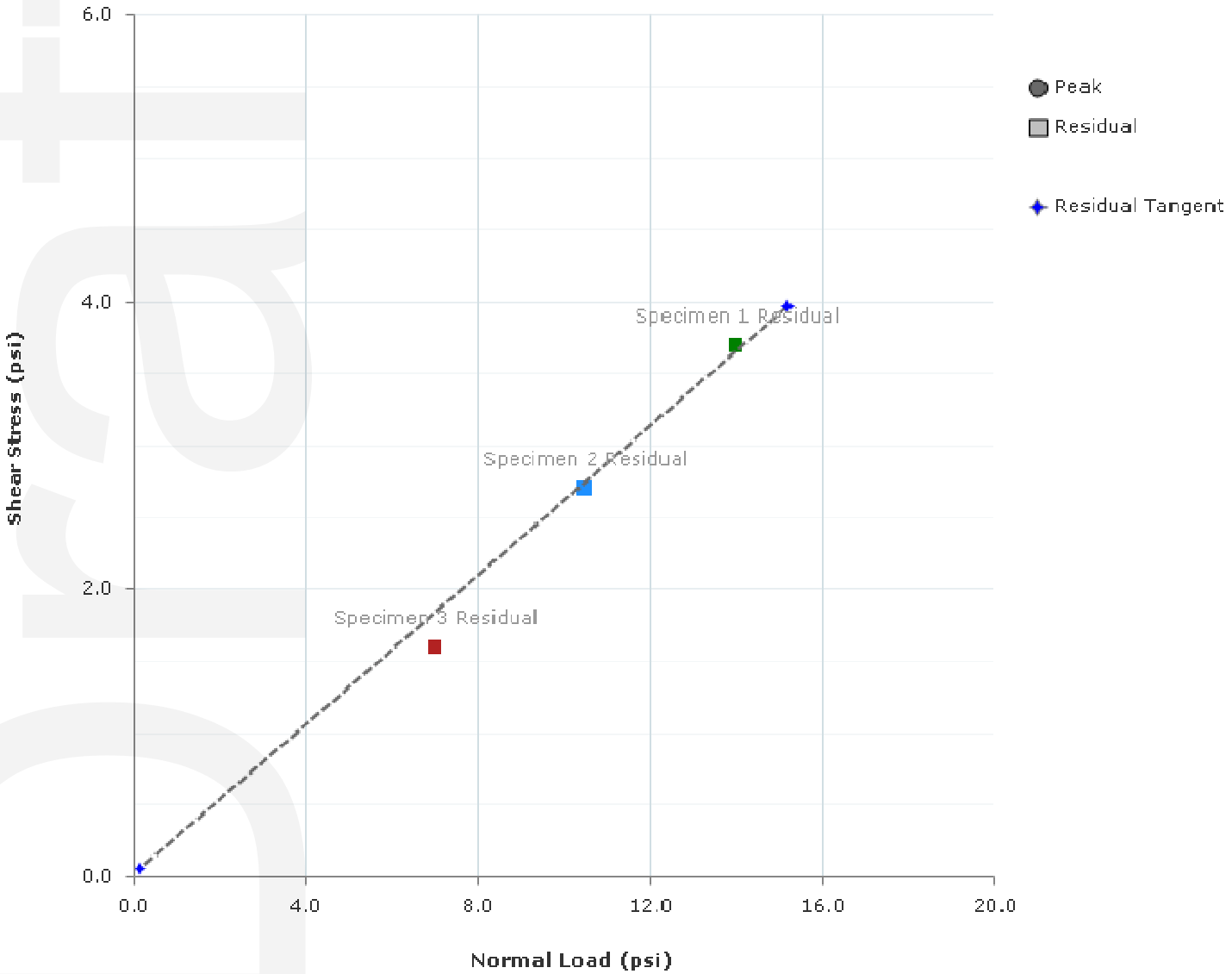
Direct Shear Test - Shear Stress Vs. Normal Stress

ASTM D3080



Tangent Results	C (psi)	Phi (°)
Peak Tangent:	NA	NA
Residual Tangent:	0.0	14.5

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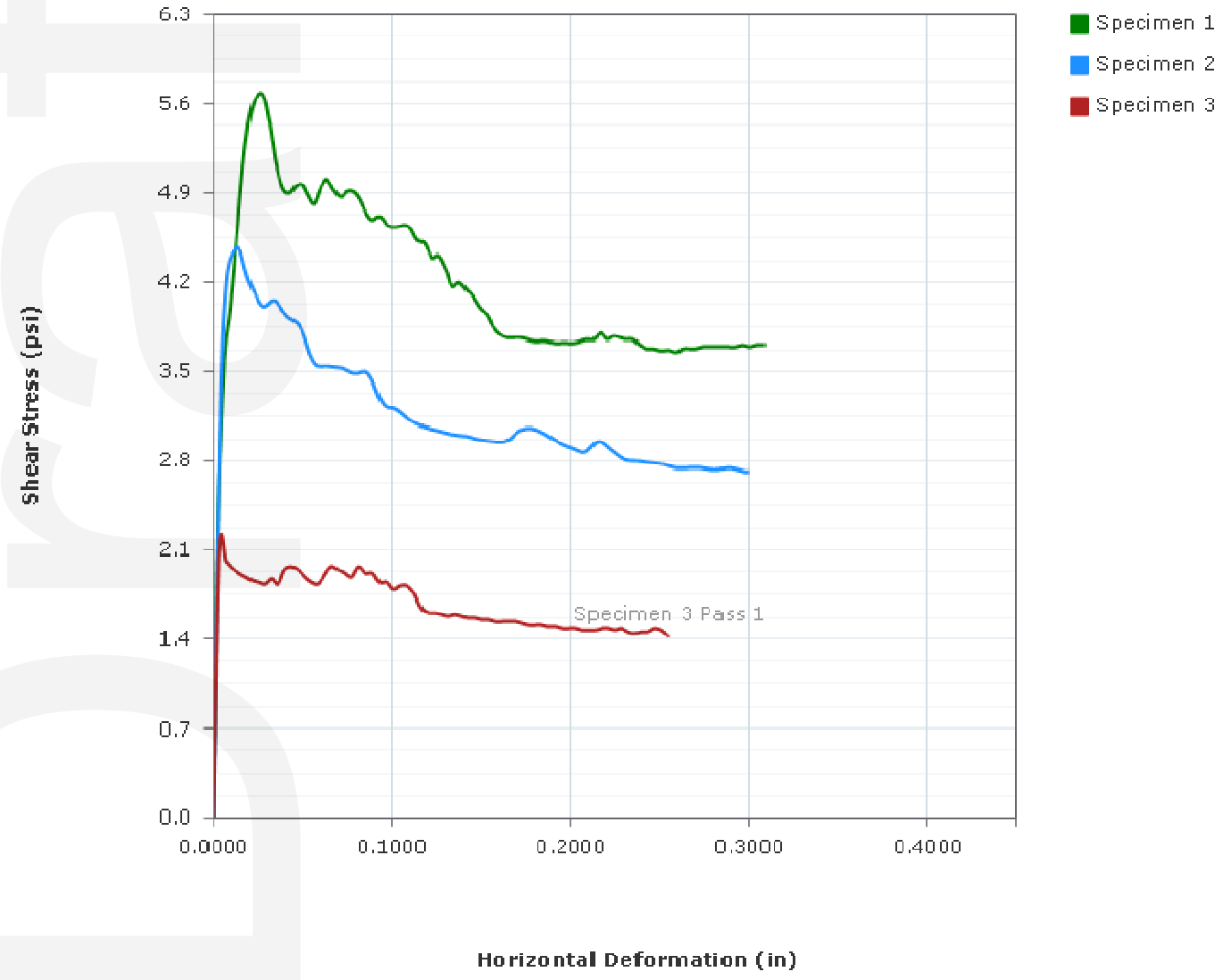
Graph - Stress Deformation

ASTM D3080



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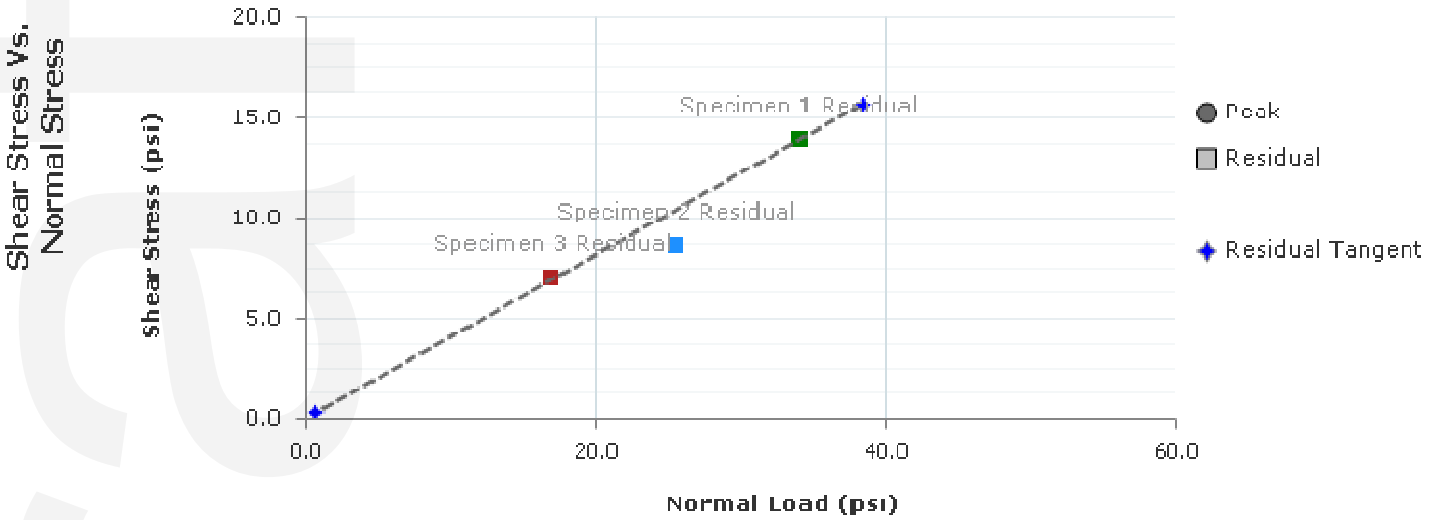
Direct Shear Test

ASTM D3080

Project: Taylor Run Stream Stabilization
Project Number: 25-0025
Location: Alexandria, Virginia
Client Name: AECOM



C (psi): NA
Phi (°): NA
Residual C (psi): 0.1
Residual Phi (°): 22.2

Initial	Specimen Number 1	2	3	4	5	6	7	8
Moisture (%):	20.0	21.4	20.5					
Dry Density (pcf):	107.9	104.0	107.0					
Void Ratio:	0.533	0.591	0.545					
Saturation (%):	99.7	96.0	99.7					
Diameter (in):	2.5000	2.5000	2.5000					
Height (in):	1.0000	1.0000	1.0000					
Final	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture (%):	23.8	24.4	23.1					
Dry Density (pcf):	101.4	100.5	102.6					
Void Ratio:	0.632	0.646	0.612					
Saturation (%):	99.8	100.0	100.0					
Height (in):	0.9891	0.9909	0.9909					
Normal Stress (psi):	34.0	25.5	17.0					
Peak Shear Stress (psi):								
Residual Stress (psi):	13.9	8.6	7.0					
Horizontal Deformation (%):								
Rate (in/min):	0.004000	0.004000	0.004000					

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Direct Shear Test

ASTM D3080

Project: Taylor Run Stream Stabilization
Project Number: 25-0025
Sampling Date: 10/15/2025
Sample Number: T-3
Sample Depth: 25.0 - 27.0 ft
Location: Alexandria, Virginia
Client Name: AECOM
Remarks:

Information Parameters	Specimen Number 1	2	3	4	5	6	7	8
Liquid Limit:	59	59	59					
Plastic Limit:	17	17	17					
Specific Gravity:	2.65	2.65	2.65					
Specific Gravity Method:	ASSUMED	ASSUMED	ASSUMED					
Initial Parameters	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Test Temperature (°C):	25.0	25.0	0.0					
Sample Shape:	ROUND	ROUND	ROUND					
Height (in):	1.0000	1.0000	1.0000					
Diameter (in):	2.5000	2.5000	2.5000					
Area (in²):	4.909	4.909	4.909					
Volume (in³):	4.9087	4.9087	4.9087					
Moisture (%):	20.0	21.4	20.5					
Dry Density (pcf):	107.9	104.0	107.0					
Wet Density (pcf):	129.6	126.2	129.0					
Saturation (%):	99.7	96.0	99.7					
Void Ratio:	0.533	0.591	0.545					
Porosity (%):	34.7	37.2	35.3					
Consolidation Parameters	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Initial Reference Height (in):	1.0000	1.0000	1.0000					
Final Reference Height (in):	0.9891	0.9909	0.9909					
Height (in):	0.9891	0.9909	0.9909					
Final Parameters	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture Content (%)	23.8	24.4	23.1					
Dry Density (pcf):	101.4	100.5	102.6					
Wet Density (pcf):	125.5	125.0	126.3					
Saturation (%):	99.8	100.0	100.0					
Void Ratio:	0.632	0.646	0.612					
Porosity (%):	38.7	39.2	38.0					

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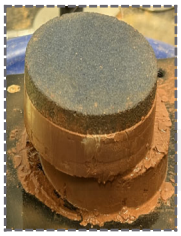
Direct Shear Test

ASTM D3080

Project:	Taylor Run Stream Stabilization
Project Number:	25-0025
Sampling Date:	10/15/2025
Sample Number:	T-3
Sample Depth:	25.0 - 27.0 ft
Location:	Alexandria, Virginia
Client Name:	AECOM
Remarks:	

Specific Gravity:	2.65	Plastic Limit:	17	Liquid Limit:	59
Type:	Undisturbed	Soil Classification:	CH		
Specimen Description:	FAT CLAY(CH)				

Specimen 1 Failure Sketch	Specimen 2 Failure Sketch	Specimen 3 Failure Sketch	Specimen 4 Failure Sketch	Specimen 5 Failure Sketch	Specimen 6 Failure Sketch	Specimen 7 Failure Sketch	Specimen 8 Failure Sketch
							

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Direct Shear Test

ASTM D3080

Specimen 1

Test Description:	Normal Load 34 psi		
Other Associated Tests:			
Device Details:			
Test Specification:	ASTM D3080		
Test Time:	10/16/2025		
Technician:	AN	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	Fat CLAY (CH)		
Specific Gravity:	2.65		
Plastic Limit:	17	Liquid Limit:	59
Test Remarks:			

Specimen 2

Test Description:	Normal Load 25.5 psi		
Other Associated Tests:			
Device Details:			
Test Specification:	ASTM D3080		
Test Time:	11/12/2025		
Technician:	AN	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	FAT CLAY(CH)		
Specific Gravity:	2.65		
Plastic Limit:	17	Liquid Limit:	59
Test Remarks:			

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Direct Shear Test

ASTM D3080

Specimen 3

Test Description:	Normal Load 17.0 psi		
Other Associated Tests:			
Device Details:			
Test Specification:	ASTM D3080		
Test Time:	11/12/2025		
Technician:	AN	Sampling Method:	Undisturbed
Specimen Code:		Specimen Lab #:	
Specimen Description:	FAT CLAY(CH)		
Specific Gravity:	2.65		
Plastic Limit:	17	Liquid Limit:	59
Test Remarks:			

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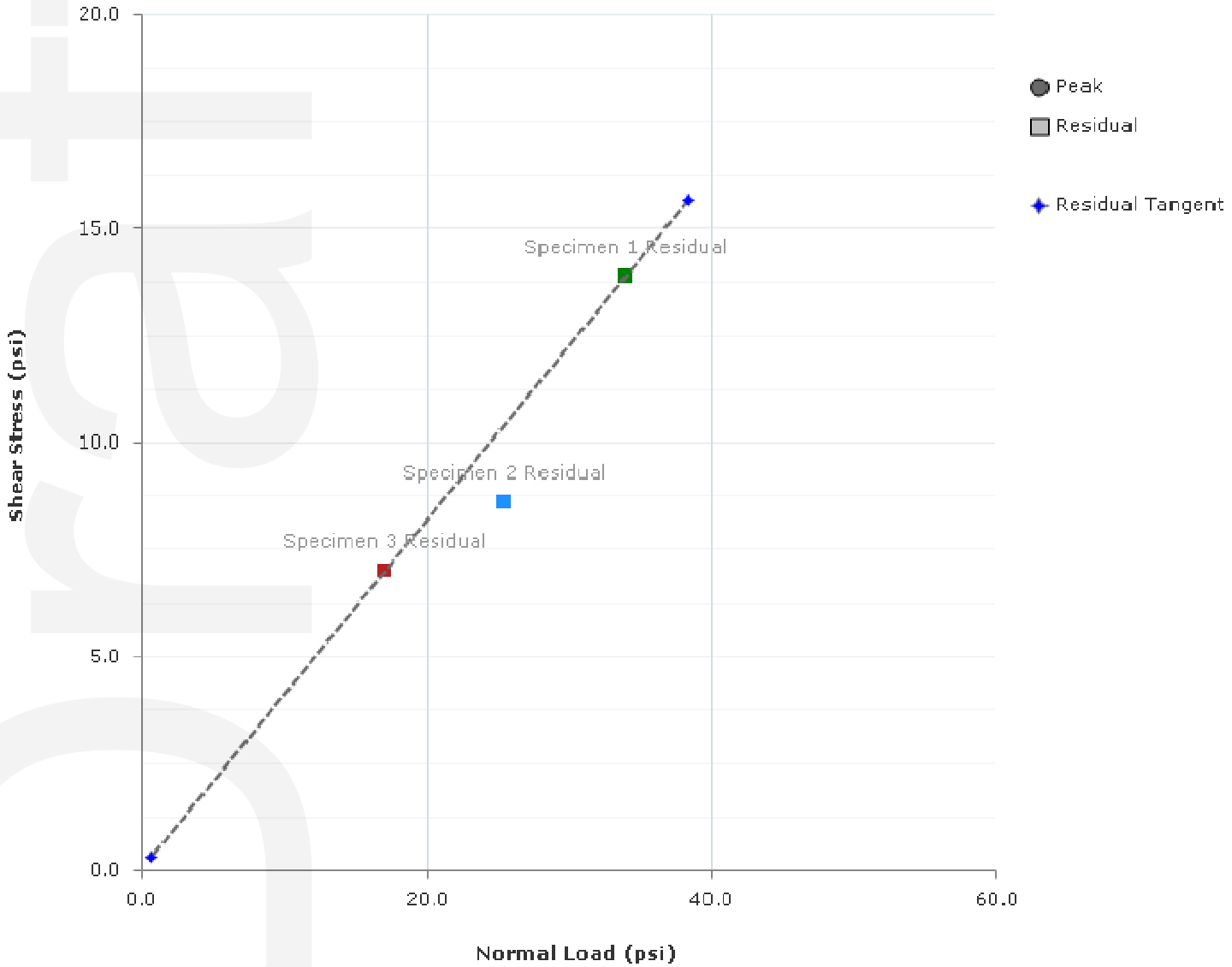
Direct Shear Test - Shear Stress Vs. Normal Stress

ASTM D3080



Tangent Results	C (psi)	Phi (°)
Peak Tangent:	NA	NA
Residual Tangent:	0.1	22.2

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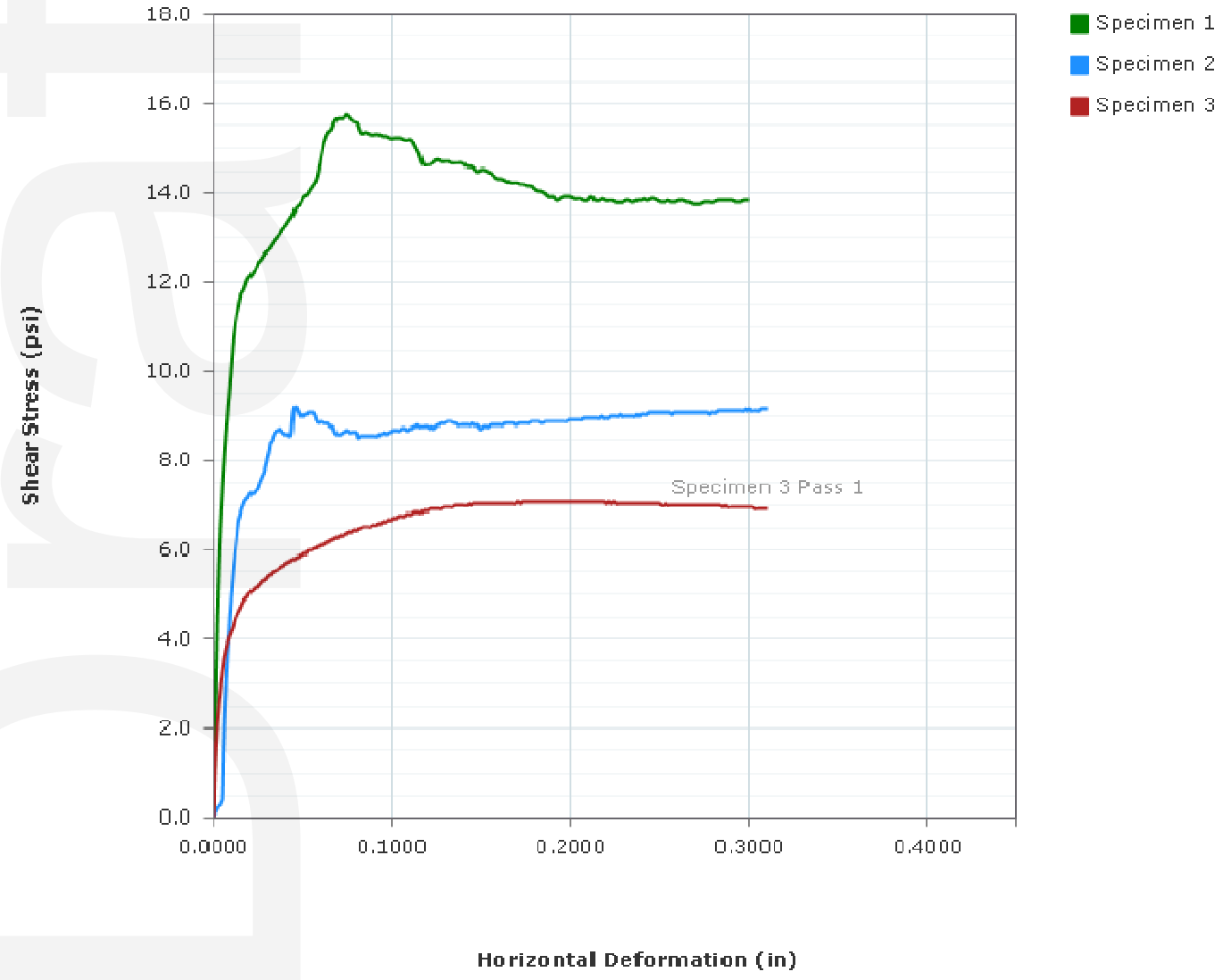
Graph - Stress Deformation

ASTM D3080



Laboratory Soils Testing
Unconfined Compressive Strength of Soil

Sample No. S-12 / T-2 | **Project Name:** Taylor Run Stream Stabilization

Boring No.: B-2 | **Project No.:** 25-0025

Depth (ft): 22.0 - 24.0 | **Location:** Alexandria, Virginia

Sample Description: FAT CLAY with SAND (CH)

Tested By: Amit Neupane | **Date:** 10/16/2025

Sample Data:

Dia (in):	Ht (in):	Wt (gms)	
D1 = 2.812	L1 = 5.582	Before =	1140.22
D2 = 2.811	L2 = 5.591	After =	1132.58
D3 = 2.814	L3 = 5.589		
Avg D (in) = 2.812	**Avg H (in) = 5.587**	**L/D Ratio=**	**1.99**
Area (in^2) =	**6.212**		

Moisture Content:

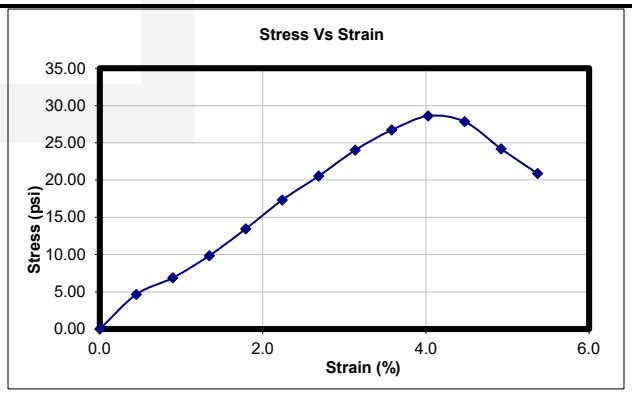
Tare No.	**470B**
Tare wt (gms) =	48.25
Wet + Tare (gms) =	302.14
Dry + Tare (gms) =	246.63
Water wt (gms) =	**55.51**
Dry Soil wt (gms) =	**198.38**
Moisture (%) =	**27.98**

Strain Dial (in)	Load (lbs)	Time (sec)	Deform. ΔL (in)	Unit Strain ΔL/L	Strain (%)	Corr. A (in^2)	Stress (lbs/in^2)
0.000	0.00	0.0	0.000	0.00	0.0	6.21	0.00
0.025	29.00	30.0	0.025	0.00	0.4	6.24	4.65
0.050	43.00	60.0	0.050	0.01	0.9	6.27	6.86
0.075	62.00	90.0	0.075	0.01	1.3	6.30	9.85
0.100	85.00	120.0	0.100	0.02	1.8	6.33	13.44
0.125	110.00	150.0	0.125	0.02	2.2	6.35	17.31
0.150	131.00	180.0	0.150	0.03	2.7	6.38	20.52
0.175	154.00	210.0	0.175	0.03	3.1	6.41	24.01
0.200	172.00	240.0	0.200	0.04	3.6	6.44	26.70
0.225	185.00	270.0	0.225	0.04	4.0	6.47	28.58
0.250	181.00	300.0	0.250	0.04	4.5	6.50	27.83
0.275	158.00	330.0	0.275	0.05	4.9	6.53	24.18
0.300	137.00	360.0	0.300	0.05	5.4	6.56	20.87
0.325							
0.350							
0.375							
0.400							
0.425							
0.450							
0.475							
0.500							
0.550							
0.600							
0.650							
0.700							
0.750							
0.800							
0.850							
						Max	28.6 psi
							4116 psf

SKETCH

Bulge:
Vertical Shear:
Diagonal: Yes

Remarks:



Laboratory Soils Testing
Unconfined Compressive Strength of Soil

Sample No. T-2 | **Project Name: Taylor Run Stream Stabilization**

Boring No.: B-4 | **Project No.: 25-0025**

Depth (ft): 14.0 - 16.0 | **Location: Alexandria, Virginia**

Sample Description: Fat CLAY (CH)

Tested By: Amit Neupane | **Date: 11/03/2025**

Sample Data:

Dia (in):		Ht (in):		Wt (gms)	
D1 =	2.781	L1 =	5.591	Before =	1116.66
D2 =	2.844	L2 =	5.586	After =	1110.12
D3 =	2.829	L3 =	5.590		
Avg D (in) =	**2.818**	**Avg H (in) =**	**5.589**	**L/D Ratio=**	**1.98**
Area (in^2) =	**6.237**				

Moisture Content:

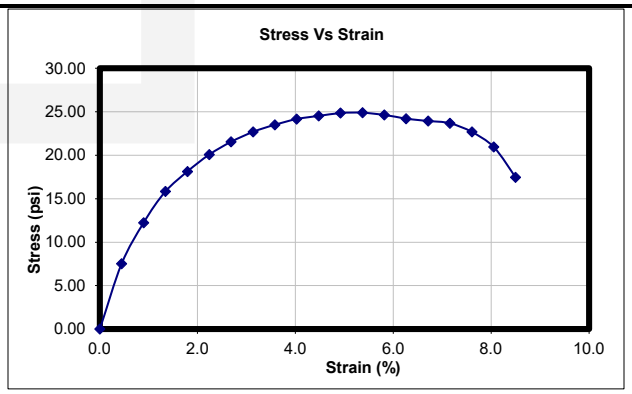
Tare No.	**CL-3**
Tare wt (gms) =	32.41
Wet + Tare (gms) =	204.54
Dry + Tare (gms) =	161.91
Water wt (gms) =	**42.63**
Dry Soil wt (gms) =	**129.5**
Moisture (%) =	**32.92**

Strain Dial (in)	Load (lbs)	Time (sec)	Deform. ΔL (in)	Unit Strain ΔL/L	Strain (%)	Corr. A (in^2)	Stress (lbs/in^2)
0.000	0.00	0.0	0.000	0.00	0.0	6.24	0.00
0.025	47.00	30.0	0.025	0.00	0.4	6.26	7.50
0.050	77.00	60.0	0.050	0.01	0.9	6.29	12.24
0.075	100.00	90.0	0.075	0.01	1.3	6.32	15.82
0.100	115.00	120.0	0.100	0.02	1.8	6.35	18.11
0.125	128.00	150.0	0.125	0.02	2.2	6.38	20.06
0.150	138.00	180.0	0.150	0.03	2.7	6.41	21.53
0.175	146.00	210.0	0.175	0.03	3.1	6.44	22.68
0.200	152.00	240.0	0.200	0.04	3.6	6.47	23.50
0.225	157.00	270.0	0.225	0.04	4.0	6.50	24.16
0.250	160.00	300.0	0.250	0.04	4.5	6.53	24.51
0.275	163.00	330.0	0.275	0.05	4.9	6.56	24.85
0.300	164.00	360.0	0.300	0.05	5.4	6.59	24.88
0.325	163.00	390.0	0.325	0.06	5.8	6.62	24.61
0.350	161.00	420.0	0.350	0.06	6.3	6.65	24.20
0.375	160.00	450.0	0.375	0.07	6.7	6.69	23.93
0.400	159.00	480.0	0.400	0.07	7.2	6.72	23.67
0.425	153.00	510.0	0.425	0.08	7.6	6.75	22.67
0.450	142.00	540.0	0.450	0.08	8.1	6.78	20.93
0.475	119.00	570.0	0.475	0.08	8.5	6.82	17.46
0.500							
0.550							
0.600							
0.650							
0.700							
0.750							
0.800							
0.850							
						Max	24.9 psi
							3583 psf

SKETCH

Bulge:
Vertical Shear:
Diagonal: Yes

Remarks:



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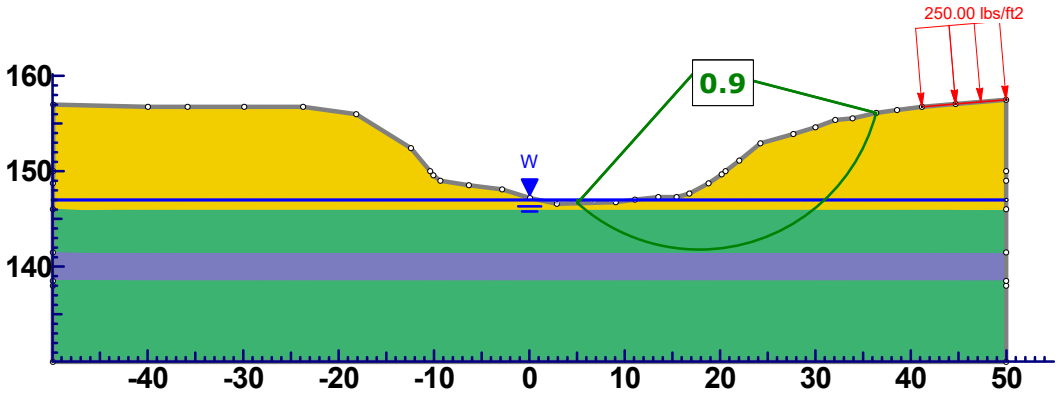
Appendix D – Slope Stability Analysis (20)



Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Sit and Lean Clay)		120	0	28
Potomac Clay		120	0	14
Sand and Gravel		120	0	32

Draft

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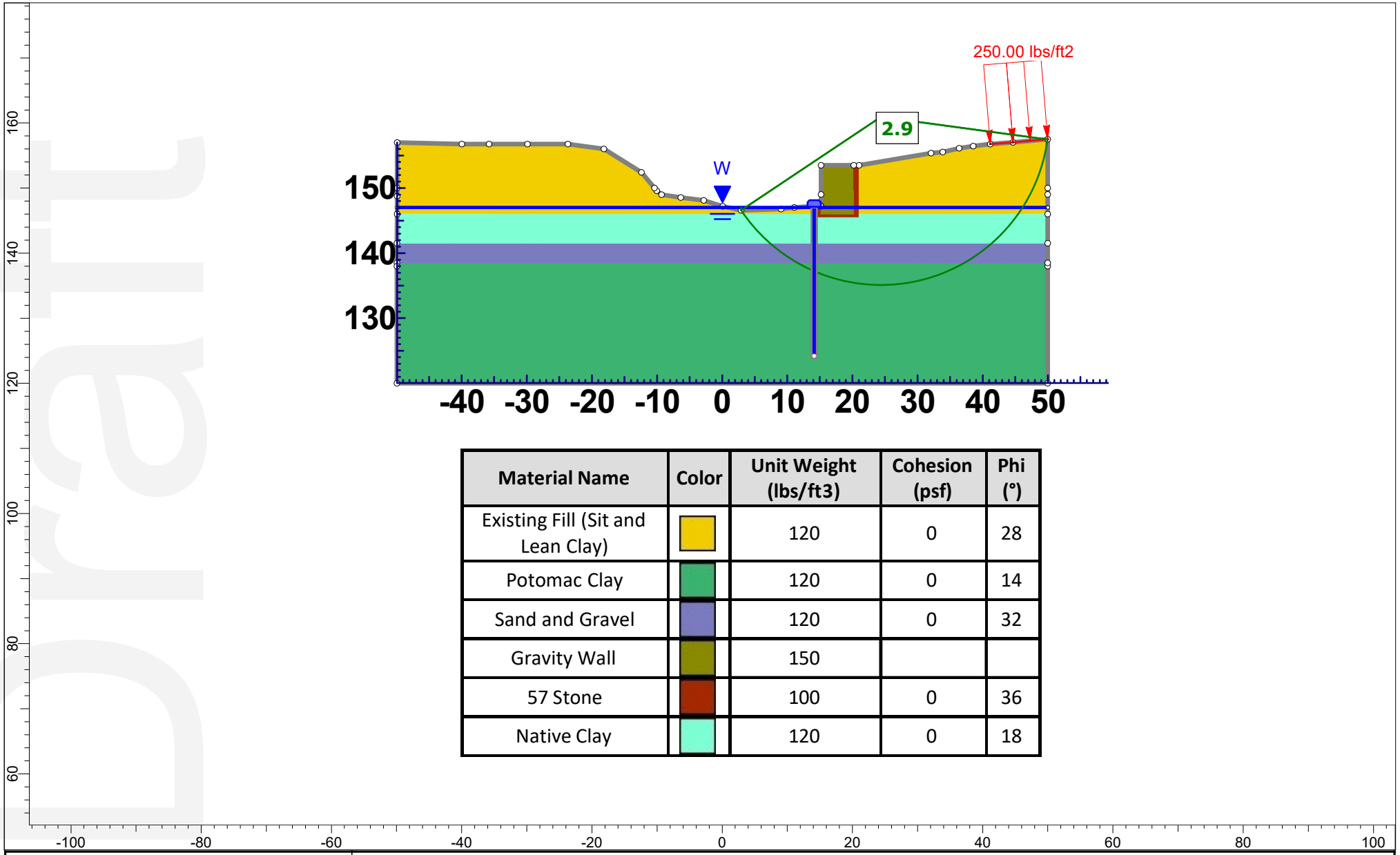
SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 0+25.00 East	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Sit and Lean Clay)		120	0	28
Potomac Clay		120	0	14
Sand and Gravel		120	0	32
Gravity Wall		150		
57 Stone		100	0	36
Native Clay		120	0	18

Draft

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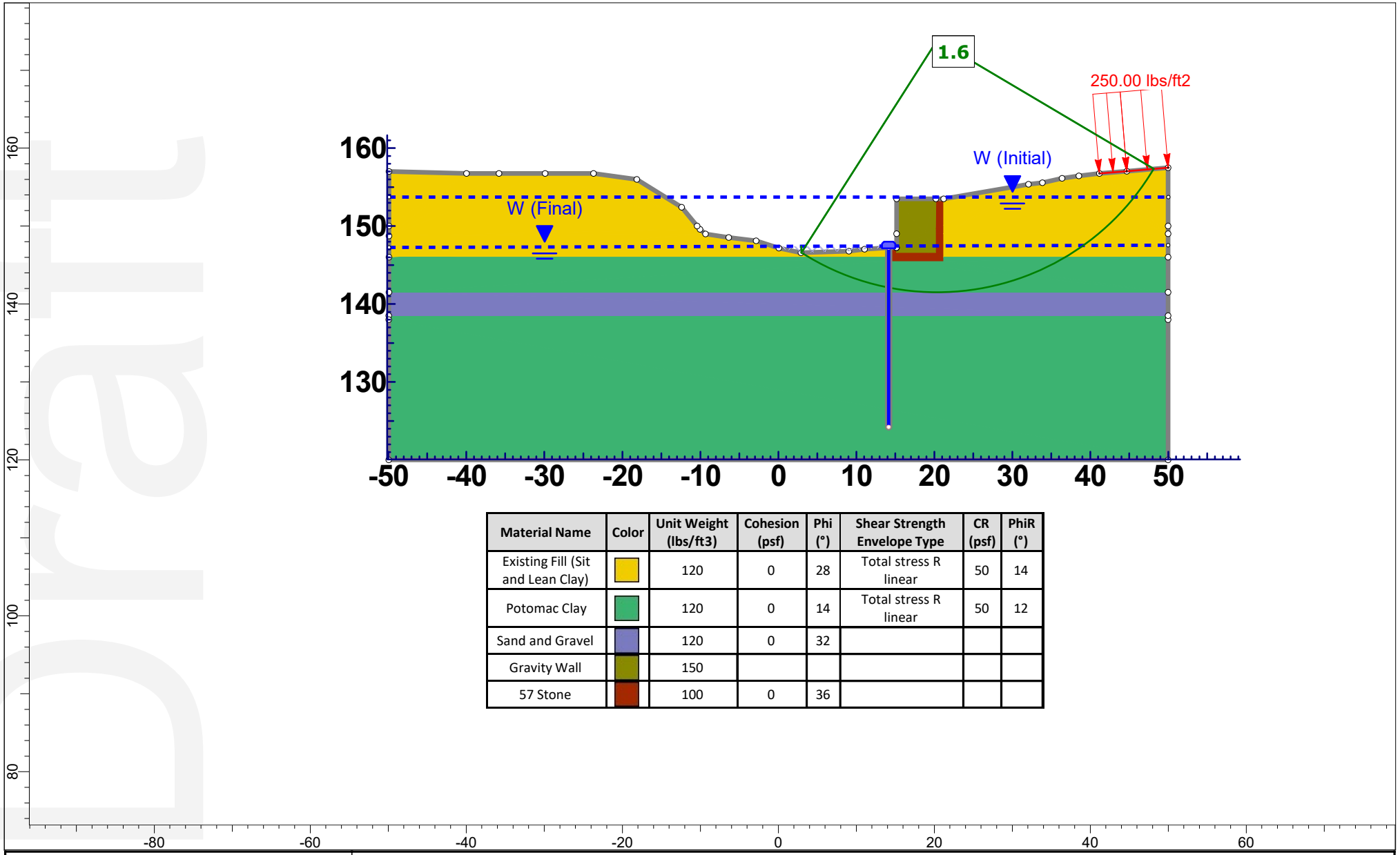
SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 0+25.00 East-Wall	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)	Shear Strength Envelope Type	CR (psf)	PhiR (°)
Existing Fill (Sit and Lean Clay)		120	0	28	Total stress R linear	50	14
Potomac Clay		120	0	14	Total stress R linear	50	12
Sand and Gravel		120	0	32			
Gravity Wall		150					
57 Stone		100	0	36			

Draft

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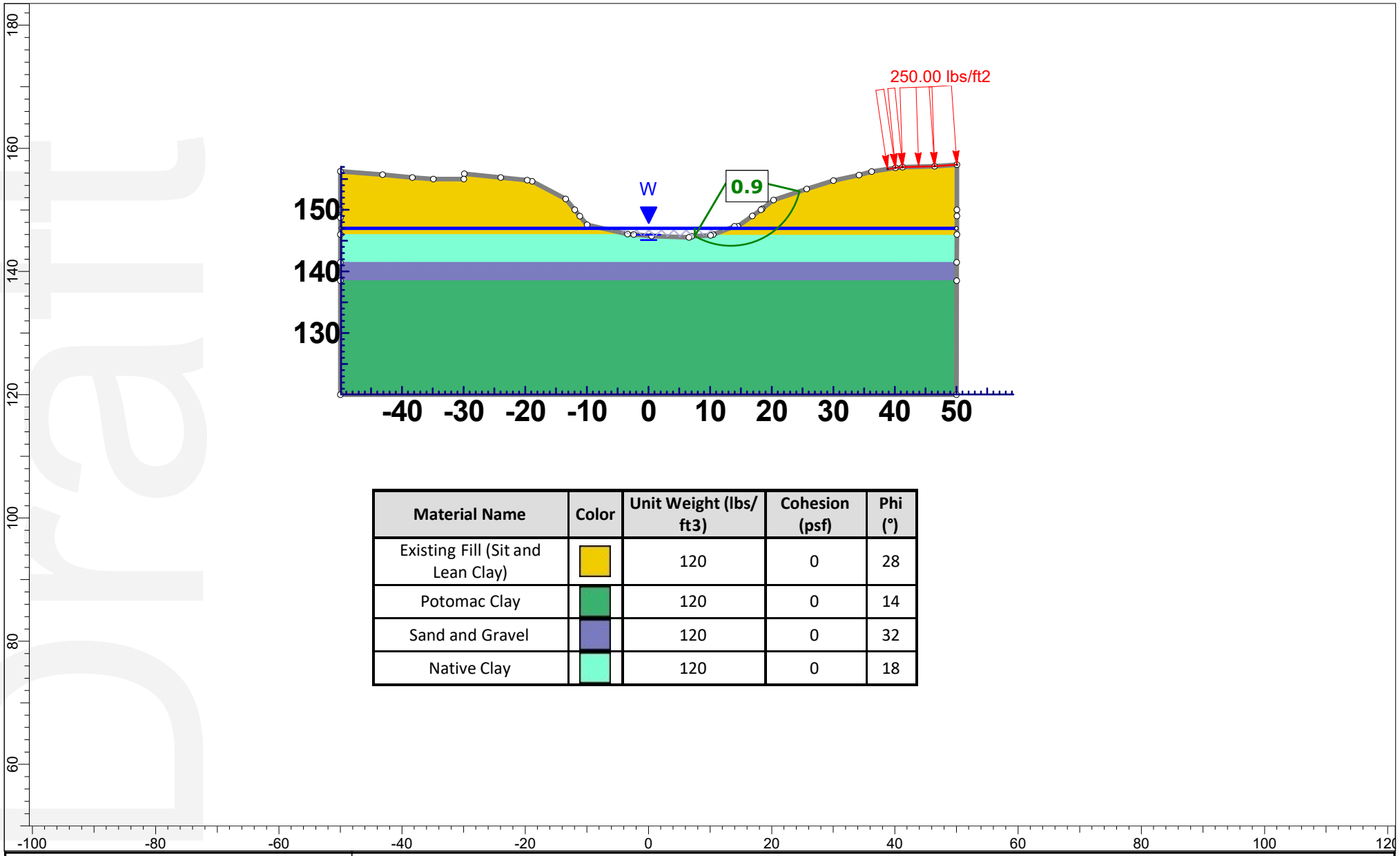
SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 0+25.00 East-Wall	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Sit and Lean Clay)		120	0	28
Potomac Clay		120	0	14
Sand and Gravel		120	0	32
Native Clay		120	0	18

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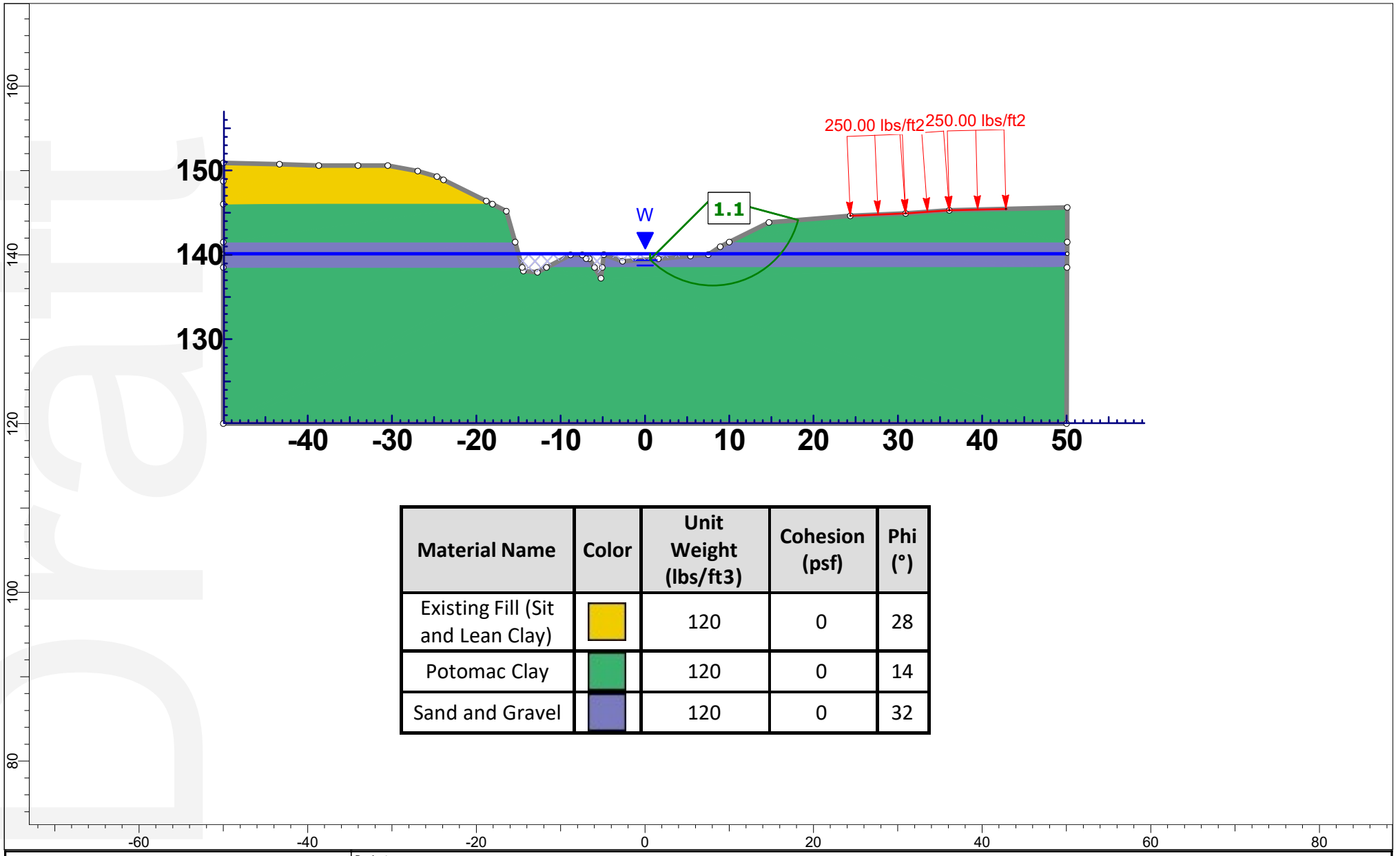
SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 0+51.99 East	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Sit and Lean Clay)		120	0	28
Potomac Clay		120	0	14
Sand and Gravel		120	0	32

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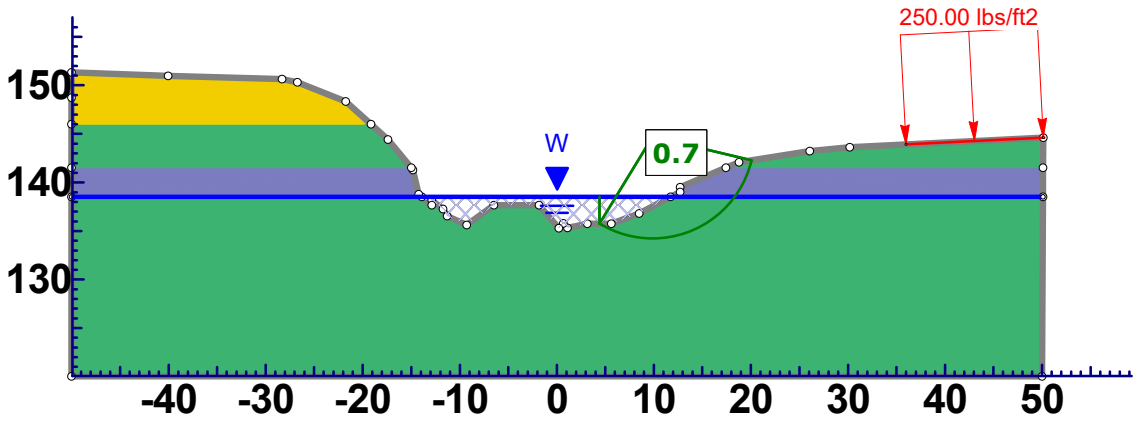
SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 10+25.00 East	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Sit and Lean Clay)		120	0	28
Potomac Clay		120	0	14
Sand and Gravel		120	0	32

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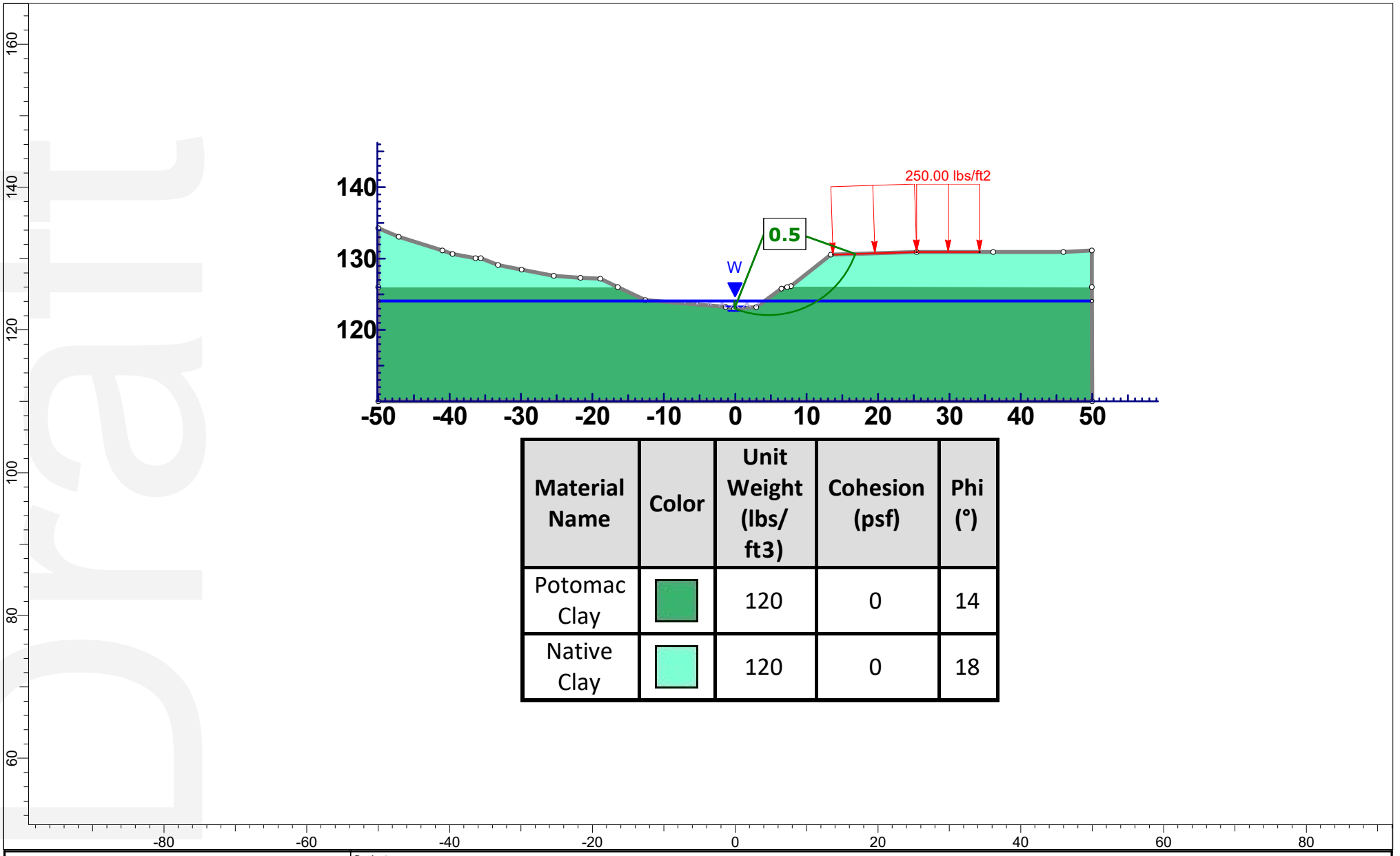
rocscience	Project	Slide2 - An Interactive Slope Stability Program	
	Group	STA 10+50.00 East	Scenario: Master Scenario
	Drawn By		Company
SLIDEINTERPRET 9.030	Date	12/10/2025, 9:58:18 AM	File Name: test.slmd



Material Name	Color	Unit Weight (lbs/ ft3)	Cohesion (psf)	Phi (°)
Potomac Clay		120	0	14
Native Clay		120	0	18

Draft

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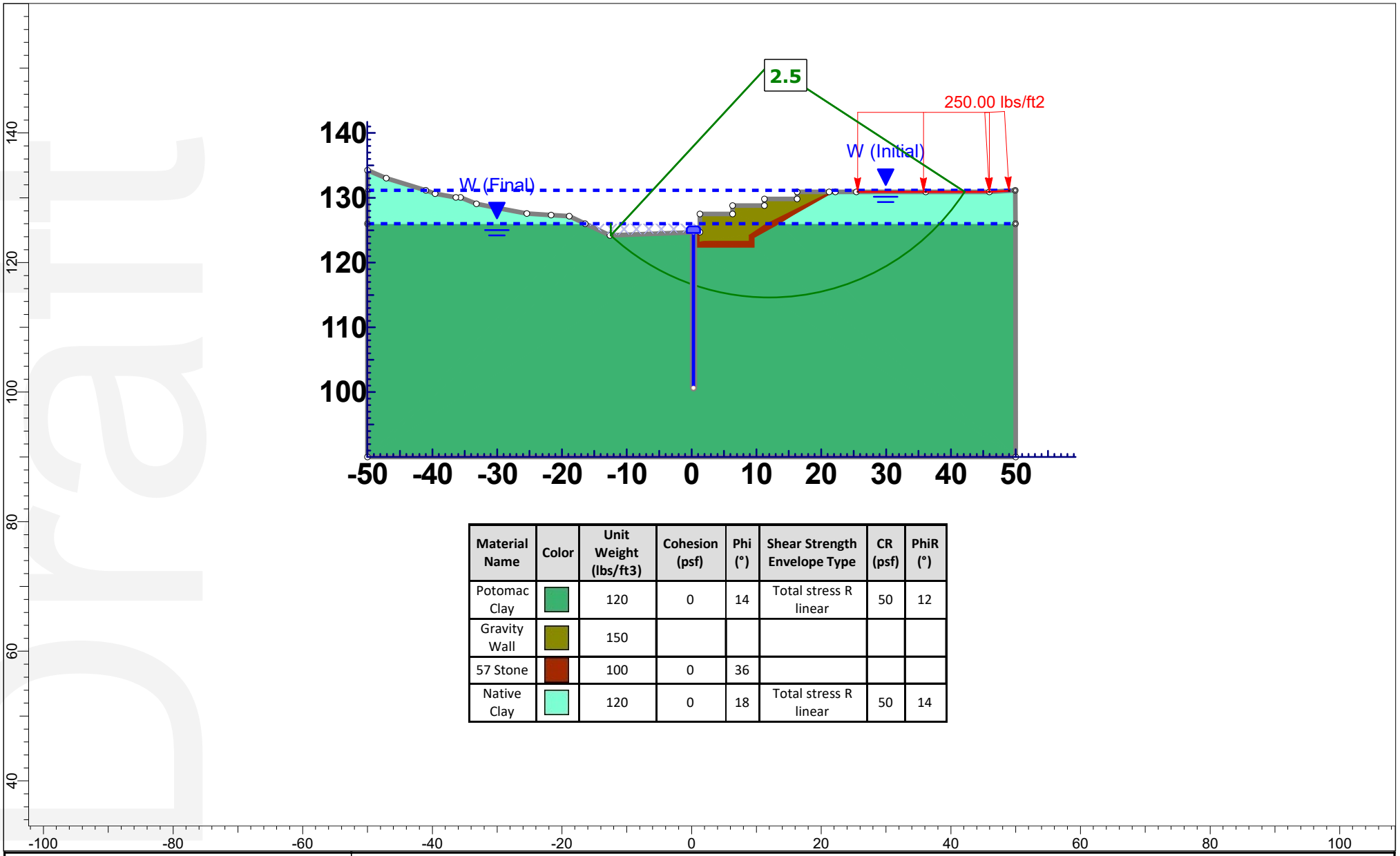
SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 20+50.00 East	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



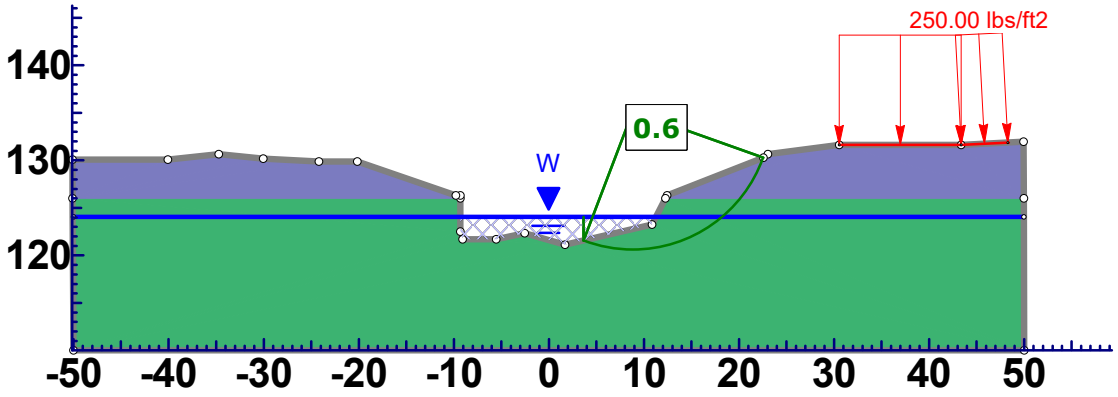
Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)	Shear Strength Envelope Type	CR (psf)	PhiR (°)
Potomac Clay		120	0	14	Total stress R linear	50	12
Gravity Wall		150					
57 Stone		100	0	36			
Native Clay		120	0	18	Total stress R linear	50	14

Draft

rocscience

SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 20+50.00 East-Wall RDD	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd

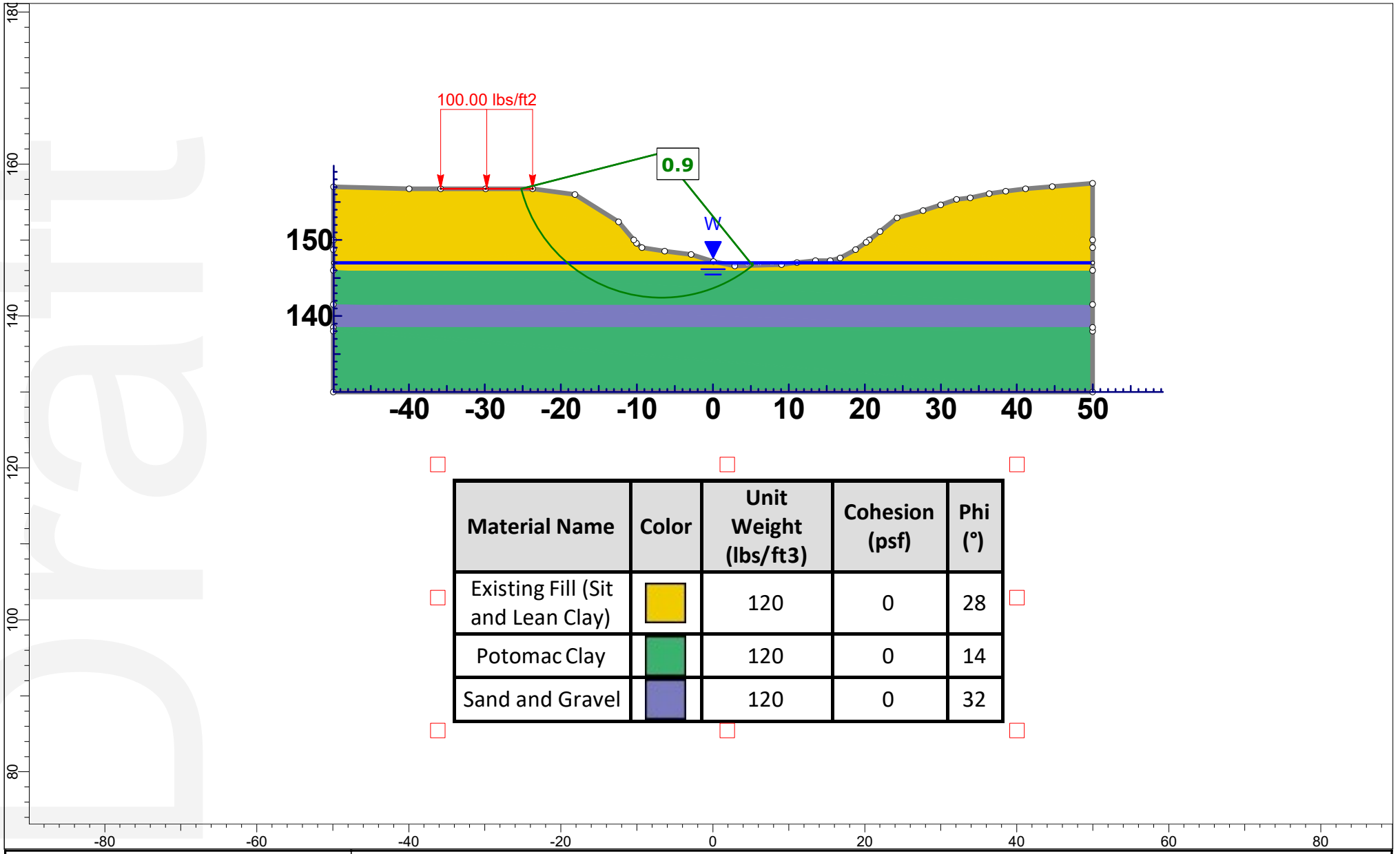


Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Potomac Clay		120	0	14
Sand and Gravel		120	0	32

Draft

rocscience	Project	Slide2 - An Interactive Slope Stability Program	
	Group	STA 30+50.00 East	Scenario: Master Scenario
	Drawn By		Company
	Date	12/10/2025, 9:58:18 AM	File Name: test.slmd

SLIDEINTERPRET 9.030



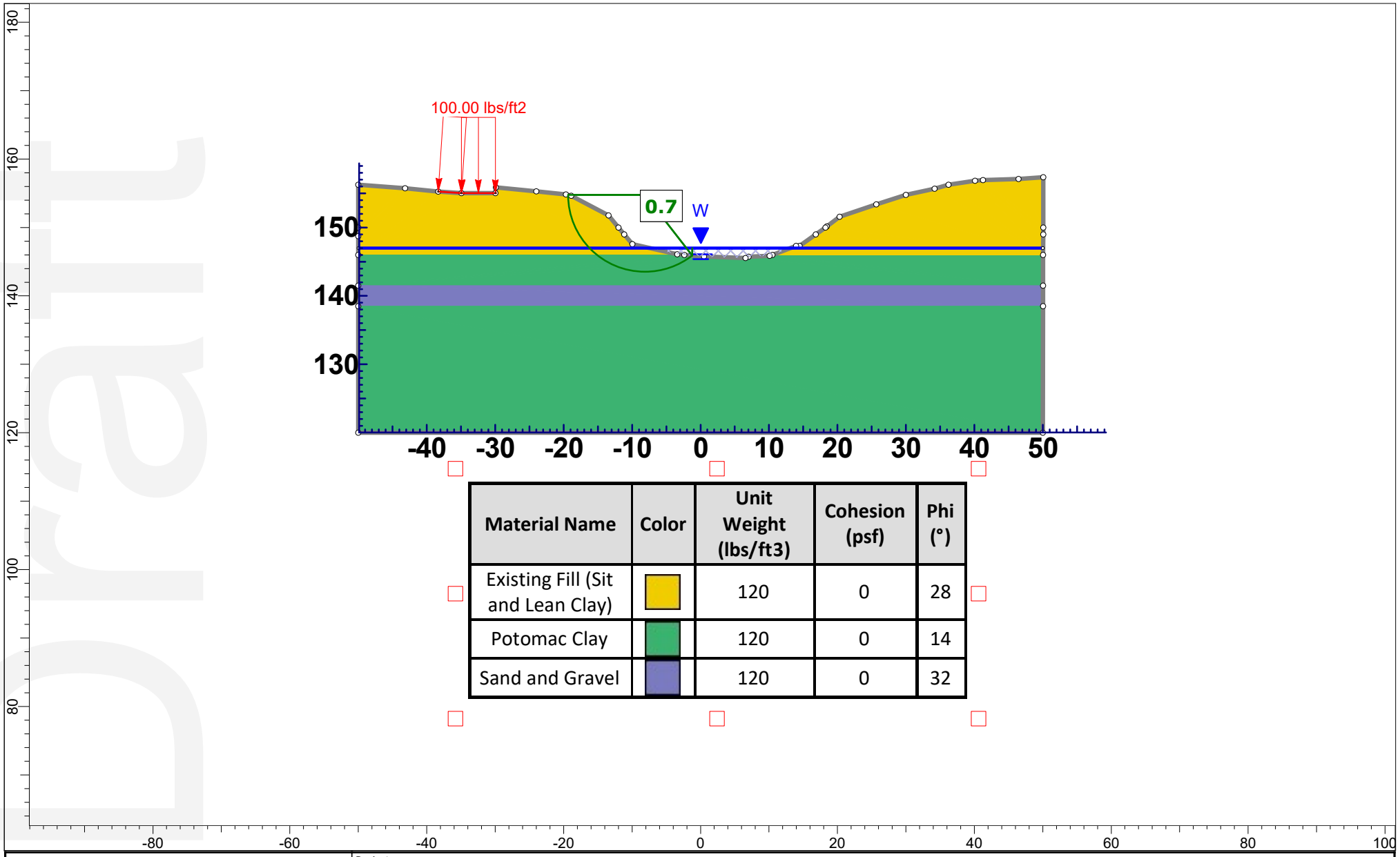
Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Sit and Lean Clay)		120	0	28
Potomac Clay		120	0	14
Sand and Gravel		120	0	32

Draft

rocscience

SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 0+25.00 West	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Sit and Lean Clay)		120	0	28
Potomac Clay		120	0	14
Sand and Gravel		120	0	32

Draft

rocscience

SLIDEINTERPRET 9.030

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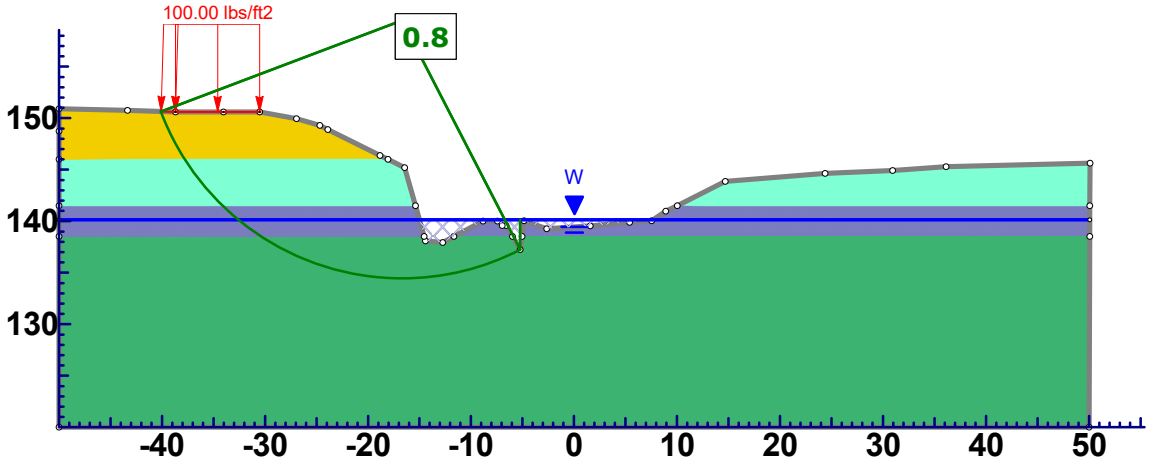
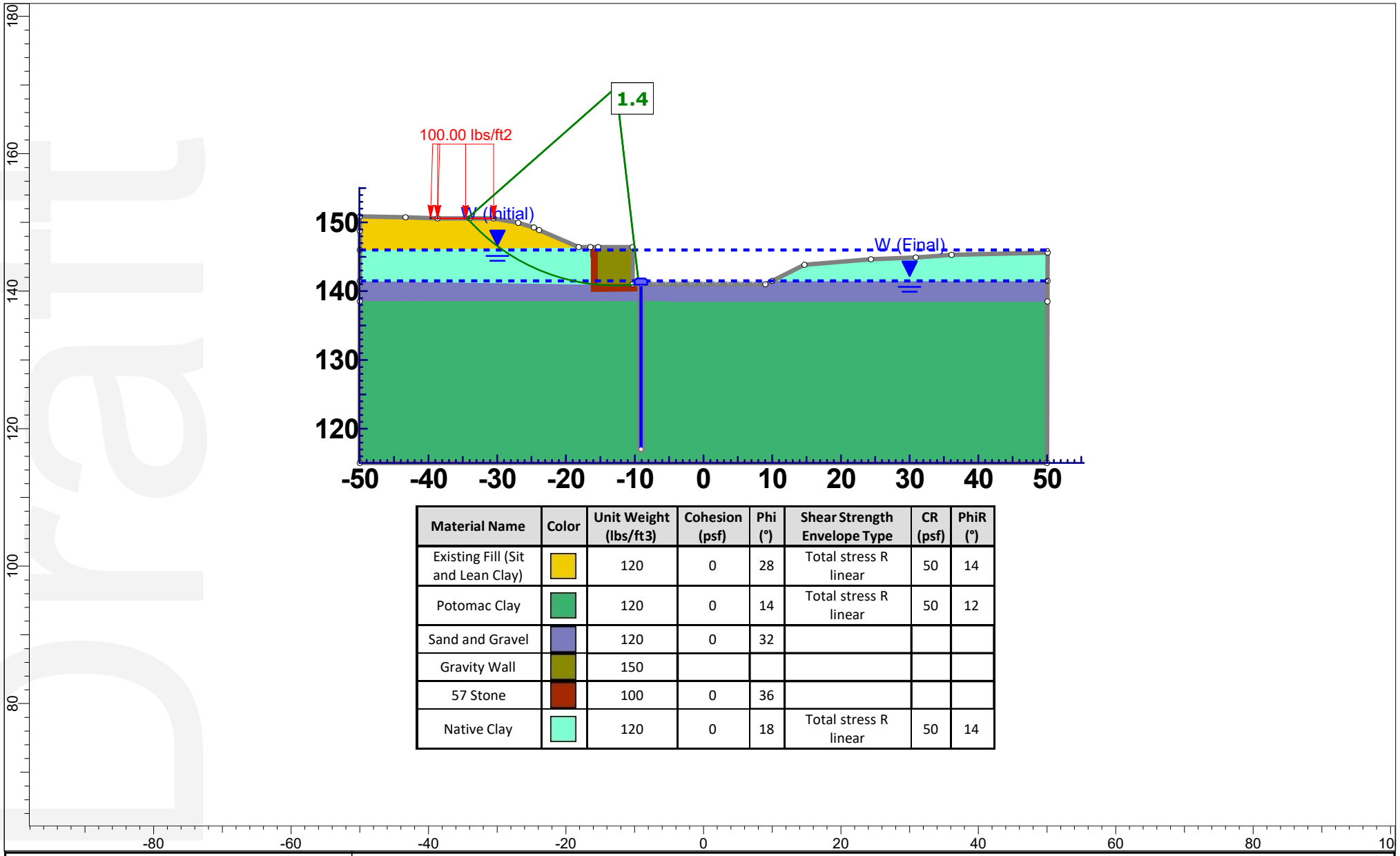


Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Sit and Lean Clay)		120	0	28
Potomac Clay		120	0	14
Sand and Gravel		120	0	32
Native Clay		120	0	18

Draft

rocscience	Project: Slide2 - An Interactive Slope Stability Program		
	Group: STA 10+25.00 West	Scenario: Master Scenario	
	Drawn By:	Company:	
SLIDEINTERPRET 9.030	Date: 12/10/2025, 9:58:18 AM	File Name: test.slmd	



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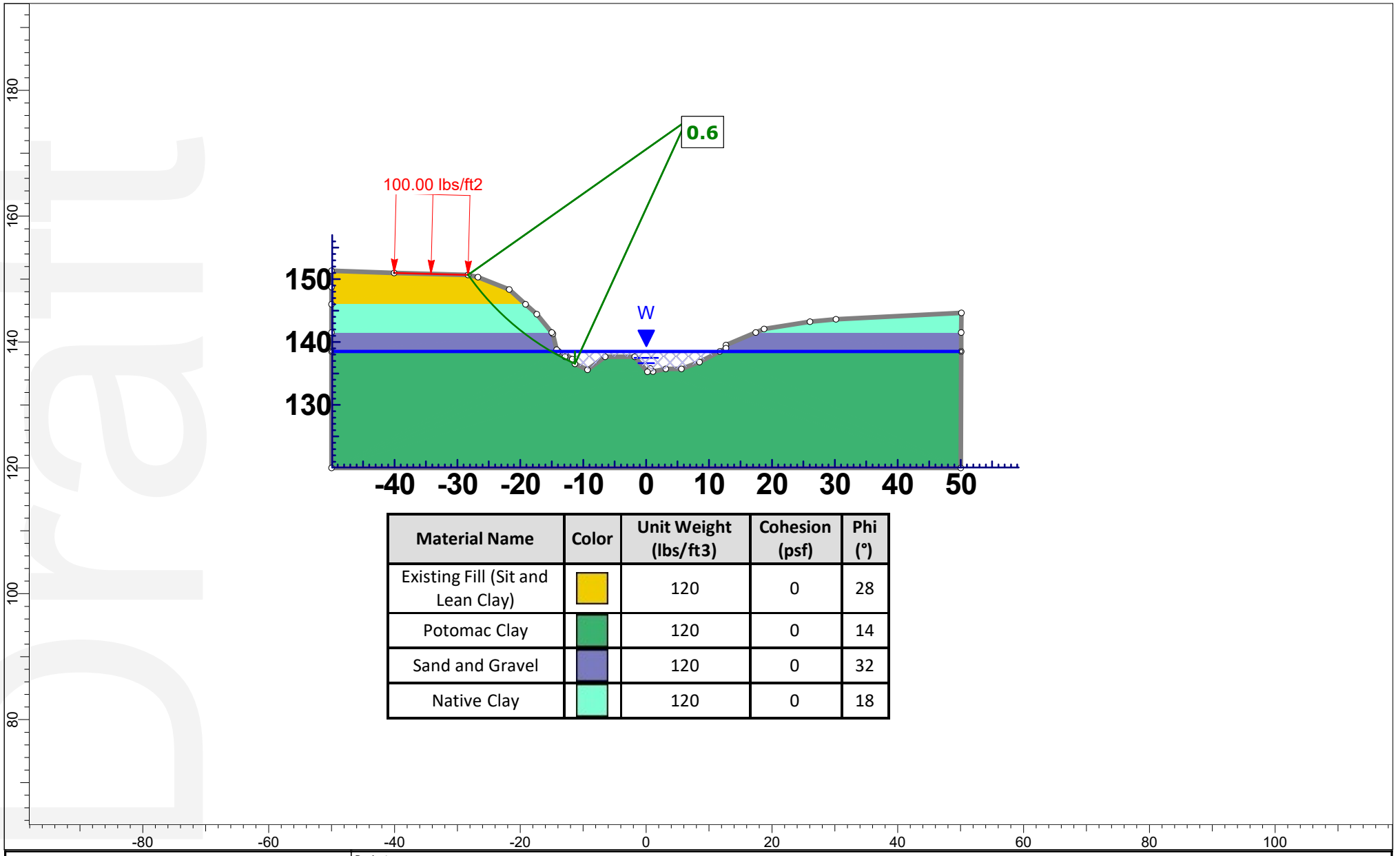
Existing Fill (Sit and Lean Clay)		120	0	28	Total stress R linear	50	14
Potomac Clay		120	0	14	Total stress R linear	50	12
Sand and Gravel		120	0	32			
Gravity Wall		150					
57 Stone		100	0	36			
Native Clay		120	0	18	Total stress R linear	50	14

Draft

rocscience

SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 10+25.00 West- with wall-RDD	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



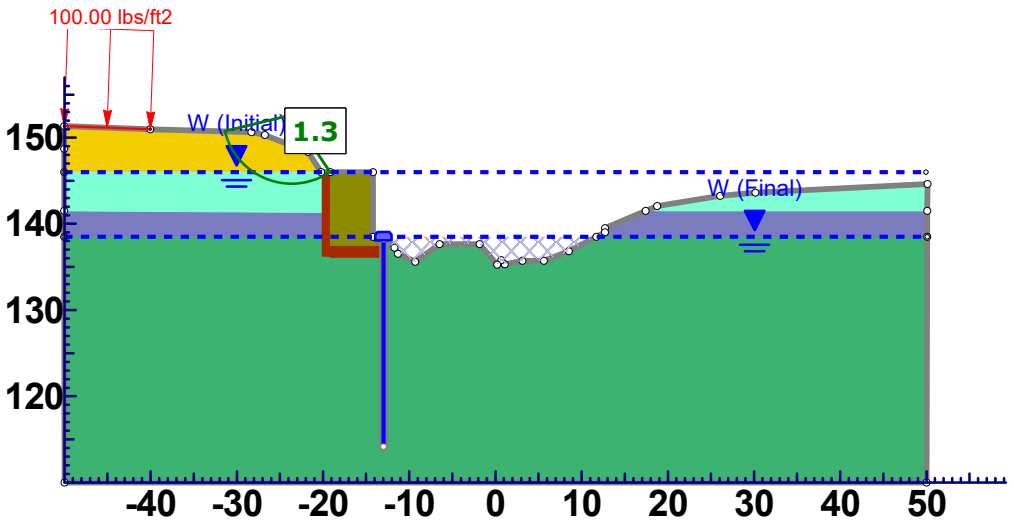
Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Existing Fill (Sit and Lean Clay)		120	0	28
Potomac Clay		120	0	14
Sand and Gravel		120	0	32
Native Clay		120	0	18

Draft

rocscience

SLIDEINTERPRET 9.030

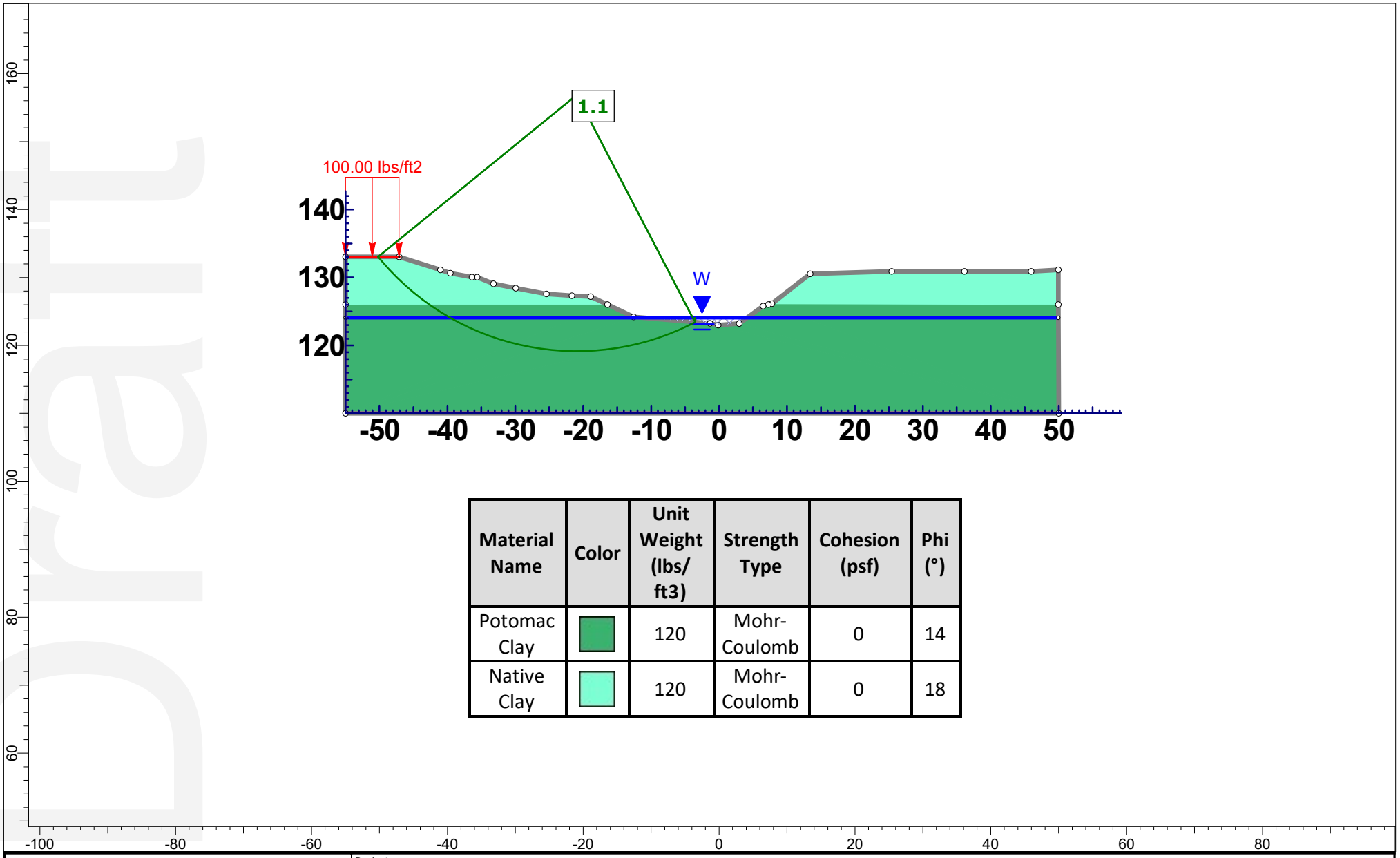
Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 10+50.00 West	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)	Shear Strength Envelope Type	CR (psf)	PhiR (°)
Existing Fill (Sit and Lean Clay)		120	0	28	Total stress R linear	50	14
Potomac Clay		120	0	14	Total stress R linear	50	12
Sand and Gravel		120	0	32			
Gravity Wall		150					
57 Stone		100	0	36			
Native Clay		120	0	18	Total stress R linear	50	14

Draft

rocscience	Project	Slide2 - An Interactive Slope Stability Program	
	Group	STA 10+50.00 West-Wall RDD	Scenario: Master Scenario
	Drawn By		Company
SLIDEINTERPRET 9.030	Date	12/10/2025, 9:58:18 AM	File Name: test.slmd



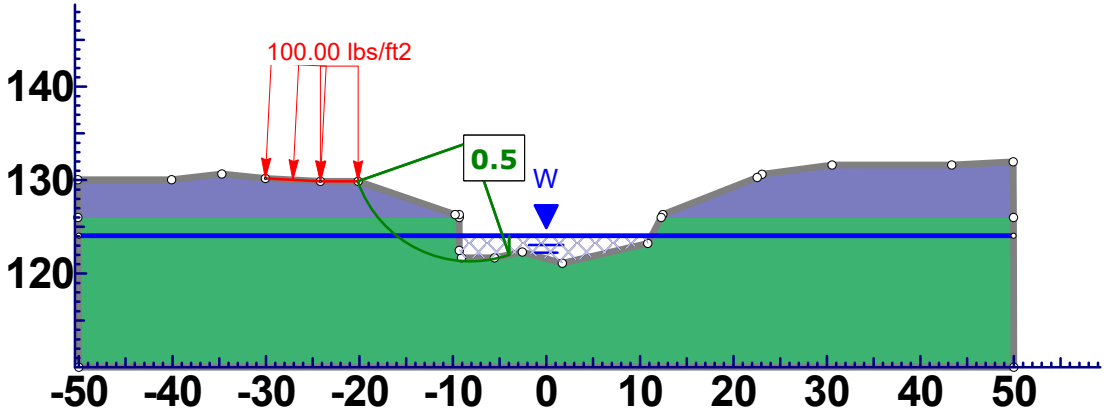
Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (°)
Potomac Clay		120	Mohr-Coulomb	0	14
Native Clay		120	Mohr-Coulomb	0	18

Draft

rocscience

SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 20+50.00 West	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)
Potomac Clay		120	0	14
Sand and Gravel		120	0	32

Draft

rocscience	Project: Slide2 - An Interactive Slope Stability Program		
	Group: STA 30+50.00 West	Scenario: Master Scenario	
	Drawn By:	Company:	
	Date: 12/10/2025, 9:58:18 AM	File Name: test.slmd	

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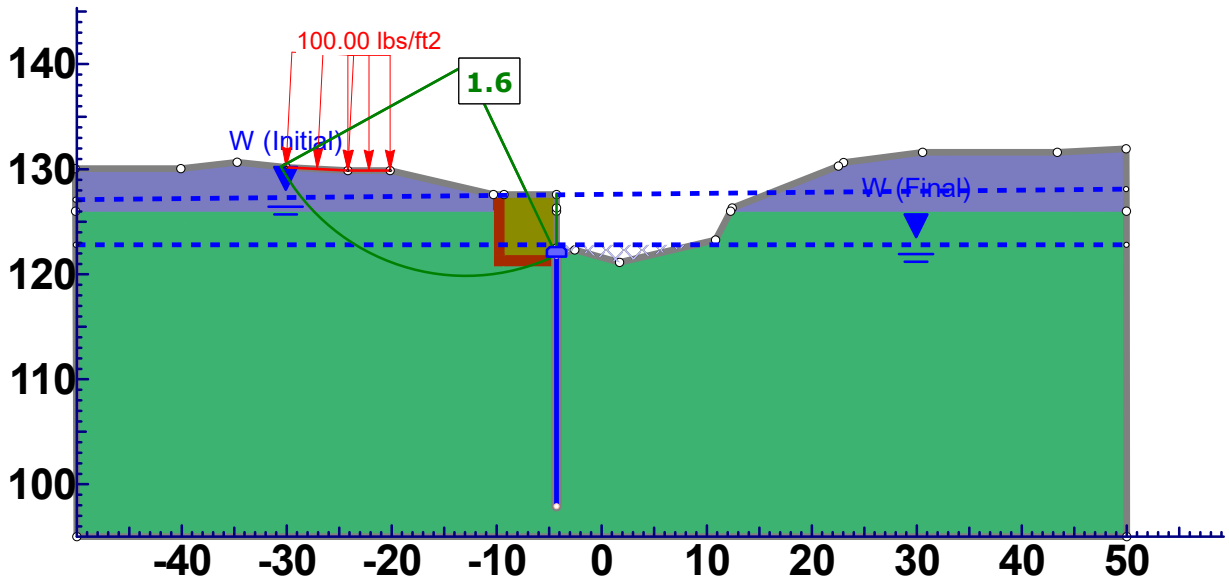

Material Name	Color	Unit Weight (lbs/ft3)	Cohesion (psf)	Phi (°)	Shear Strength Envelope Type	CR (psf)	PhiR (°)
Potomac Clay		120	0	14	Total stress R linear	50	12
Sand and Gravel		120	0	32			
Gravity Wall		150					
57 Stone		100	0	36			

Draft

rocscience

SLIDEINTERPRET 9.030

Project	Slide2 - An Interactive Slope Stability Program		
Group	STA 30+50.00 West-RDD with Wall	Scenario	Master Scenario
Drawn By		Company	
Date	12/10/2025, 9:58:18 AM	File Name	test.slmd

About AECOM

AECOM (NYSE: ACM) is built to deliver a better world. We design, build, finance and operate infrastructure assets for governments, businesses, and organizations in more than 150 countries.

As a fully integrated firm, we connect knowledge and experience across our global network of experts to help clients solve their most complex challenges.

From high-performance buildings and infrastructure, to resilient communities and environments, to stable and secure nations, our work is transformative, differentiated, and vital. A Fortune 500 firm, AECOM companies had revenue of approximately US$19 billion during the 12 months ended June 30, 2015.

See how we deliver what others can only imagine at aecom.com and @AECOM.

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Appendix D Wetland Delineation Report

AECOM
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Germantown, Maryland 20876
www.aecom.com

Memorandum

To	Alex Haptemariam, City of Alexandria	Pages	6
CC	Brandon Alderman, AECOM		
Subject	Wetland Delineation Memorandum Taylor Run Infrastructure Stabilization Project Alexandria, Virginia		
From	Sean Bernheisel/Lauren Palmieri, AECOM Environmental Specialist		
Date	April 17, 2025		

Introduction

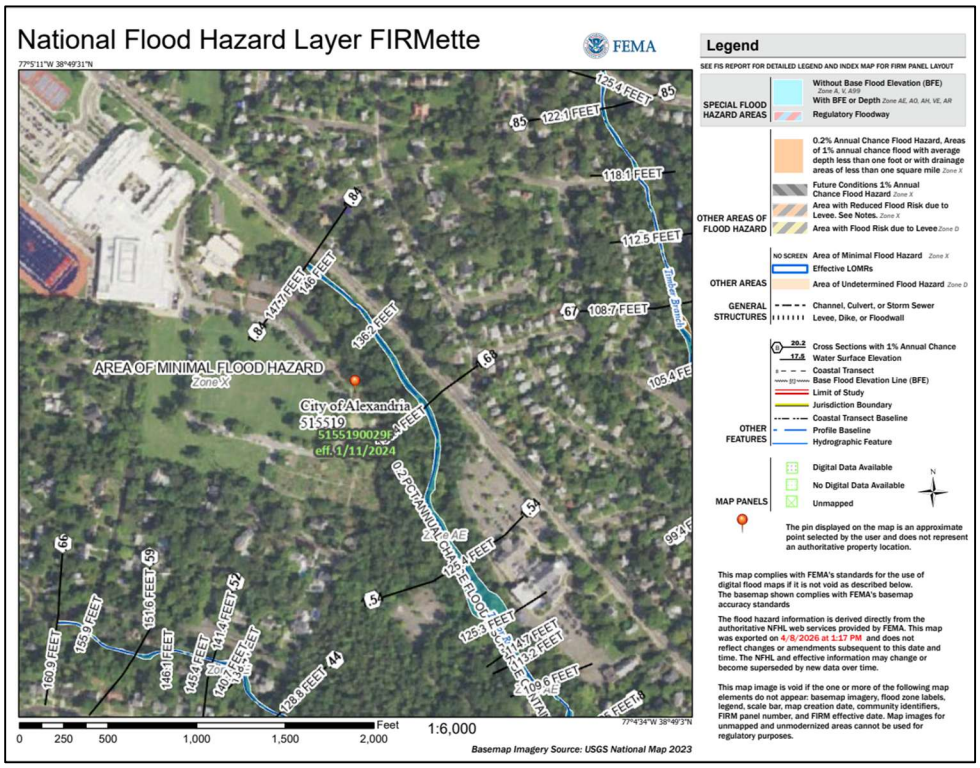
The City of Alexandria has retained the services of AECOM to provide design, engineering and construction support related to the above referenced project. The project includes stabilization and channel modifications to the Taylor Run stream to address areas of active erosion, protect existing stormwater and sanitary sewer infrastructure, and improve overall stream stability. The proposed actions have been divided into four distinct areas, each addressing specific infrastructure vulnerabilities. A wetland and Waters of the U.S. (WUS) delineation was conducted within a study area that incorporates the four distinct areas and beyond, to capture all locations of potential access which may be required to complete the project. The study area is roughly located between Chinquapin Drive and King Street and is approximately 8.08 acre (**Figure 1**).

Figure 1: Project Location Map

Published Resource Review

Taylor Run is within the Mid-Atlantic Region within the Middle Potomac-Anacostia-Occoquan (HUC8: 02070010), Cameron Run-Potomac River (HUC10:0207001003), and Cameron Run (HUC12: 020700100302) watersheds. The stream discharges into Holmes Run, which ultimately flows into the Potomac River and then the Chesapeake Bay. The City of Alexandria local data viewer also identifies The study area is located on Federal Emergency Management Administration Flood Insurance Rate Map (FEMA FIRM) panel: 5155190029F (effective date January 11, 2024) which shows the area is located within a mapped FEMA 100-year floodplain, Zone AE, associated with Taylor Run (**Figure 2**). National Wetland Inventory (NWI) data identifies Taylor Run as a riverine system (R5UBH) with an associated 0.27 acre linear freshwater forested/shrub wetland habitat (PFO1A). Dominant soils within the study area are Sassafras-Neabsco complex soils and are not classified as hydric.

Figure 2: Floodplain Map



Methodology

A wetland and WUS delineation has been completed in accordance with the U.S. Army Corps of Engineers (USACE) *Wetland Delineation Manual* (USACE, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0* (USACE, 2010), which describe the three-parameter approach to delineating typical wetlands (hydrophytic vegetation, hydric soils, and wetland hydrology) and the approach for delineating atypical wetlands.

AECOM used the *Field Indicators of Hydric Soils in the United States* Version 9.0, (USDA NRCS, 2024) and the *Atlantic Gulf and Coastal Plain Region 2022 National Wetland Plant List* (USACE, 2020) to further determine the presence of hydric soil indicators and the wetland indicator status of plants, respectively, within the study area. Wetland boundaries were located using sub-meter accuracy global positioning system (GPS) equipment. Wetland and upland determination data points were collected in the field to support the upland/wetland boundary determination. Delineated resources were classified in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States* (USFWS, 1979), commonly referred to as the Cowardin Classification System.

Results

On April 6, 2026 AECOM Environmental Scientists delineated one palustrine emergent wetland (PEM), two palustrine forested wetlands (PFO), one perennial WUS, one intermittent WUS, and multiple ephemeral drainage channels. **Attachment A** contains the wetland delineation resource maps, and **Attachment B** contains upland and wetland determination data sheets, **Attachment C**

contains a photographic log of identified resources, and **Attachment D** contains the Soil Report. The following provides a summary description of regulated resources identified within the study area.

INT 1

INT 1 (R4SB5) is an unnamed intermittent tributary to Taylor Run located within Chinquapin Park along the right downstream bank of Taylor Run. The channel originates at the southeastern edge of WET C, where sheet flow moves through the wetland and concentrates at a root grade control to form a defined channel. From there, the stream flows beneath a pedestrian footbridge and discharging into Taylor Run. Flow within the channel is supported by seepage from WET C as well as overland runoff from the adjacent trail. The substrate consists primarily of silt and cobble, particularly where the channel enters Taylor Run. Stream banks are moderately defined at the point of entry. INT 1 received a total of 22 points under the Fairfax County stream assessment protocol and 27.5 points under the NCDWQ methodology (following a delineation in 2020), indicating that the feature functions as an intermittent stream[1].

TAYLOR RUN (2,040 LF)

Taylor Run, an R5UB1 perennial stream, flows generally northwest to southeast through the study area. The stream daylights through a 72-inch RCP in the northwest and exits the study area through twin 60-inch RCPs under a parking lot for the adjacent First Baptist Church of Alexandria. A sanitary sewer line which runs through Chinquapin Park crosses Taylor Run just before the stream flows onto church property.

The stream receives flow from a variety of sources including groundwater, overland flow, one intermittent channel, several ephemeral channels, and multiple stormwater outfalls. The channel substrate varies throughout its length within the study area. Within Chinquapin Park, upstream of the sanitary sewer crossing, the substrate consists of riprap, boulders, and concrete structures with some cobble and sand. Downstream of the sanitary sewer, within the church property, the substrate consists of cobble, sand, and silt. A large debris pile, consisting of large trees, limbs, and other debris constricts flow before the stream enters the twin 60-inch RCPs.

The stream corridor is primarily forested with woody vegetation extending to the top of the banks. Despite the forested buffer there is evidence of scour, with vertical banks exceeding 10 feet high in many locations. The stream channel ranges from 10 to 20 feet wide and water depths range from 2 inches to greater than 2 feet in the scour pool below the 72-inch RCP.

WET A (1,021 ft²)

WET A is a PFO wetland located at the northwestern end of Chinquapin Park along the west side of an existing pedestrian trail. The wetland tree stratum is dominated by red maple (*Acer rubrum*); the sapling shrub stratum by slippery elm (*Ulmus rubra*) and sweet gum (*Liquidambar styraciflua*) and the woody vine stratum is dominated by poison ivy (*Toxicodendron radicans*) and Virginia creeper (*Parthenocissus quinquefolia*). Hydrology indicators include presence of reduced iron and geomorphic position. The soil profile meets the criteria of an F3 Depleted Matrix hydric soil indicator with a matrix at least 6 inches thick with 60% or more having a chroma 2 or less within the first 10 inches of the soil surface. There are prominent redox concentrations overall.

[1] Stream assessment forms were not completed during this 2026 delineation.

WET B (1,996 ft²)
WET B is a PEM wetland located at a large footbridge along the west side of the trail through Chinquapin Park. The wetland tree stratum has a few scattered tulip poplar (*Liriodendron tulipifera*) comprising no more than 5% of the total vegetation within the wetland sample plot and the woody vine stratum is dominated by poison ivy. Approximately 20% of the wetland is not vegetated. Hydrology indicators include presence of reduced iron, a sparsely vegetated concave surface, and geomorphic position. The soil profile meets the criteria of an F3 Depleted Matrix hydric soil indicator with a matrix at least 6 inches thick with 60% or more chroma 2 or less within the first 10 inches of the soil surface.

WET C (13,546 ft²)
WET C is a PFO acid seepage wetland located about 1,000 feet from the trail entrance within an area of relatively undisturbed forest along the west side of the trail. A spur trail to the Chinquapin Park Community Gardens diverges from the main trail at the southern end of this wetland. The wetland tree stratum is dominated by red maple and tulip poplar (*Liriodendron tulipifera*) comprising approximately 15% of the total vegetation within the wetland sample plot. The wetland shrub/sapling stratum is dominated by black gum (Nyssa sylvatica), red maple, and arrowwood (*Viburnum dentatum*) and and the wetland herbaceous stratum is dominated by skunk cabbage (*Symplocarpus foetidus*) and fowl mann grass (*Glyceria striata*). Hydrology indicators include surface water, a high water table, water-stained leaves, geomorphic position, FAC-Neutral test, and drainage patterns. The soil profile meets the criteria of a Histosol (A1).

Conclusion
AECOM conducted a field delineation of wetlands and WUS within the Taylor Run study area on April 6 of 2026. This delineation provided confirmation of wetland and WUS boundaries from the previous delineation. During previous review, the USACE-Norfolk District determined WETA and WETC are regulated wetlands and Taylor Run, INT1, EPH3 and EPH 6 are regulated waters. At this time the USACE considered WET B to be disturbed and did not satisfy hydric soil parameters. However, invesigations in 2026 reveal no disturbance and soils to exhibit hydric conditions. Proposed access to the site, limits of disturbance, and identified construction staging areas are able to avoid impact to identified resources. Erosion and sediment control best management practices are recommended around the limits-of-disturbance to these resources and potential drainage/discharge into Taylor Run.

Appendix A: Figures

Taylor Run Stream Restoration Project Location Map – 4/6/2026

CLEVELAND ST

KING ST

QUINCY ST

CHINQUAPIN PARK

72" RCP

15" RCP

TAYLOR RUN

Perennial - 2040 LF

10" PVC

WETA
PFO
1,021 SF/ 0.02 AC

36" RCP

Foot Bridge

CHINQUAPIN DR

CONCRETE DITCH

36" CMP

SCROGGINS RD

WETB
PEM
1,996 SF/ 0.05 AC

KING ST

EPH1
Ephemeral
105 LF

12" CMP

21" RCP

MATCHLINE TO SHEET 2

Study Area

Stream Flow Direction Indicator

Stream Line

AECOM Delineated Wetland

Resource Protection Area

Storm Drain

FEMA 100 Year Floodplain

Wetland Data Point

Upland Data Point

Trails

Bridge Structure

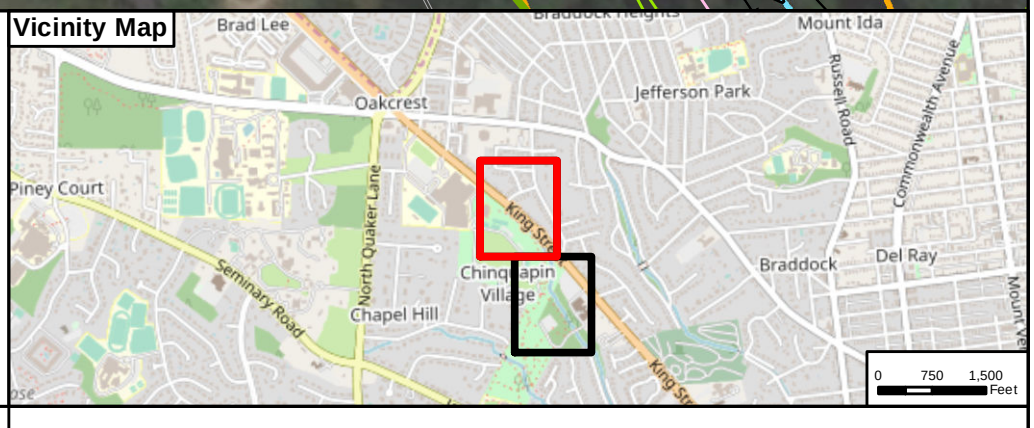
Park Boundary

Sanitary Sewer

1 inch = 100 feet

0 50 100 200 Feet

Vicinity Map



Taylor Run
City Of Alexandria, Virginia
Environmental Field Survey
Wetland and Waters of the U.S. Delineation

AECOM

Note: UTILITY FEATURE LOCATIONS
ARE APPROXIMATE
NOT INTENDED FOR DESIGN
UTILITY NETWORK MAY BE INCOMPLETE

MATCHLINE TO SHEET 1

CHINQUAPIN DR

Foot Bridge

CONCRETE DITCH

27" RCP

24" RCP

EPH2
Ephemeral
109 LF

KING ST

Foot Bridge

INT1
Intermittent
48 LF

WETC
PFO
13,546 SF/ 0.31 AC

Foot Bridge

15"PVC

EPH3
Ephemeral
72 LF

ROAN LN

EPH4
Ephemeral
43 LF

EPH5
Ephemeral
17 LF

EPH6
Ephemeral
66 LF

CONCRETE DITCH

TAYLOR RUN

15" RCP

Perennial
-2040 LF

EPH7
Intermittent
70 LF

CHINQUAPIN PARK

60" RCP (X2)

NOTE: Taylor Run and Resource Protection Area Continues South Past Project Study Area

Study Area
Stream Flow Direction Indicator
Stream Line
AECOM Delineated Wetland
Resource Protection Area
Storm Drain

FEMA 100 Year Floodplain
Wetland Data Point
Upland Data Point
Trails
Bridge Structure
Park Boundary
Sanitary Sewer

Ü
1 inch = 100 feet

0 50 100 200 Feet

Vicinity Map

Taylor Run
City Of Alexandria, Virginia
Environmental Field Survey
Wetland and Waters of the U.S. Delineation

AECOM

Note: UTILITY FEATURE LOCATIONS ARE APPROXIMATE
NOT INTENDED FOR DESIGN
UTILITY NETWORK MAY BE INCOMPLETE

Appendix B: Photograph Log

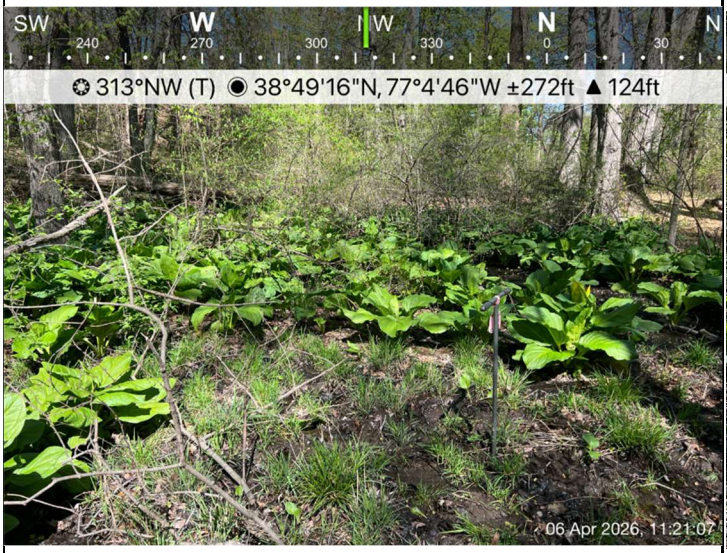
PHOTOGRAPHIC LOG

Project Site: Taylor Run Stream Stabilization, City of Alexandria, Virginia

Project No.: 60742359

Photograph No.: 01	**Date:** 4/6/2026	**Photograph No.:** 02	**Date:** 4/6/2026
Direction photograph taken: Northwest **Description:** Upland C facing upstream between King Street and WET C.		**Direction photograph taken:** Southeast **Description:** Upland C facing downstream between King Street and WET C.	

Photograph No.: 03	**Date:** 4/6/2026	**Photograph No.:** 04	**Date:** 4/6/2026
Direction photograph taken: Northwest **Description:** WET C adjacent to pedestrian trail and west of Taylor Run.		**Direction photograph taken:** South **Description:** WET C hydrology and concave surface.	

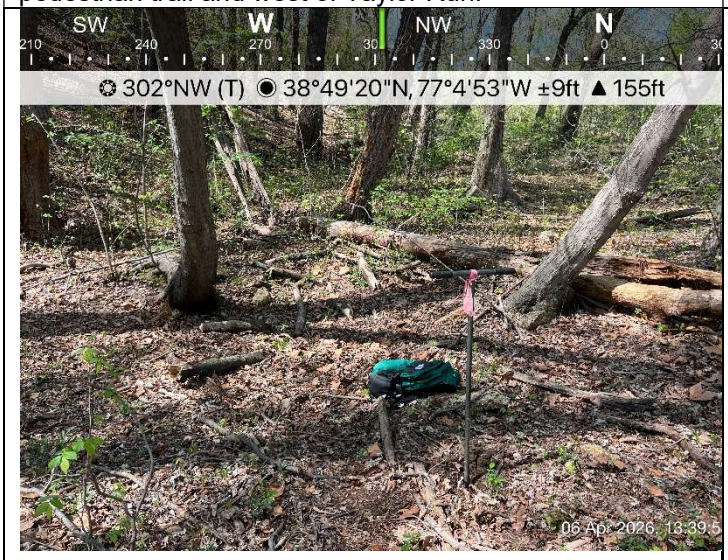


Project Site: Taylor Run Stream Stabilization, City of Alexandria, Virginia

Photograph No.: 05	**Date:** 4/6/2026
Direction photograph taken: West **Description:** UPL B facing west adjacent to pedestrian trail and west of Taylor Run.	

Photograph No.: 06	**Date:** 4/6/2026
Direction photograph taken: East **Description:** UPL B facing east.	

Photograph No.: 07	**Date:** 4/6/2026
Direction photograph taken: Northwest **Description:** WET A facing northwest adjacent to pedestrian trail and west of Taylor Run.	



Photograph No.: 08	**Date:** 4/6/2026
Direction photograph taken: Northeast **Description:** View of Taylor Run manhole repair location facing northeast.	

Project Site: Taylor Run Stream Stabilization, City of Alexandria, Virginia

Photograph No.: 09	**Date:** 4/6/2026

Direction photograph taken: Northeast
Description: Taylor Run facing downstream.

Photograph No.: 10	**Date:** 4/6/2026

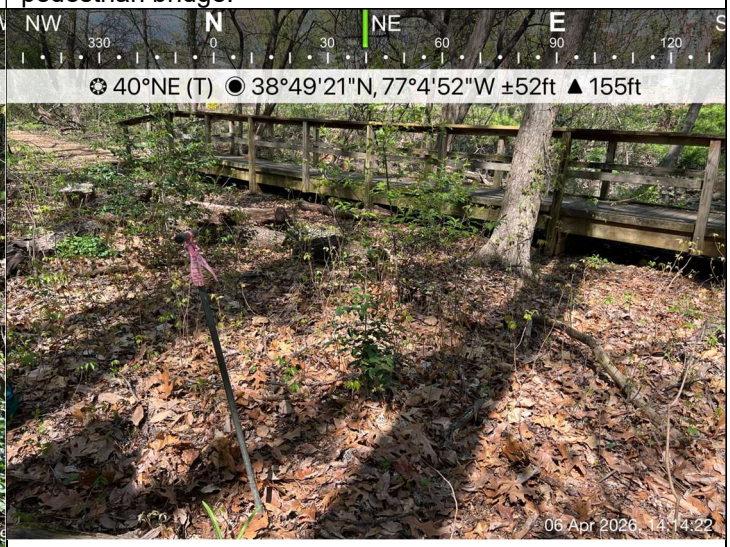
Direction photograph taken: Southwest
Description: UPL A facing southwest away from the pedestrian trail and Taylor Run.

Photograph No.: 11	**Date:** 4/6/2026

Direction photograph taken: None
Description: UPL A facing southeast adjacent to pedestrian trail.

Photograph No.: 12	**Date:** 4/6/2026

Direction photograph taken: Northeast
Description: WET B facing northeast towards pedestrian bridge.



Project Site: Taylor Run Stream Stabilization, City of Alexandria, Virginia

Photograph No.: 13 | **Date:** 4/6/2026

Direction photograph taken: South
Description: WET B facing east towards pedestrian bridge.

Appendix C: USACE Wetland Determination Data Forms

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Restoration City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: VA Sampling Point: UPL A

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8227190 Long: 77.0819180 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UPL A

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	10	=Total Cover	
50% of total cover: 5	20% of total cover: 2		
Sapling Stratum (Plot size: 30' diameter)			
1. *Prunus serotina*	3	No	FACU
2. *Juniperus virginiana*	5	No	FACU
3. *Acer rubrum*	25	Yes	FAC
4.			
5.			
6.			
	33	=Total Cover	
50% of total cover: 17	20% of total cover: 7		
Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 30' diameter)			
1. *potentilla indica*	10	No	FACU
2. *Toxicodendron radicans*	5	No	FAC
3. *Viola sororia*	70	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85	=Total Cover	
50% of total cover: 43	20% of total cover: 17		
Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	3	Yes	
3. *Rubus allegheniensis*	2	Yes	UPL
4.			
5.			
	5	=Total Cover	
50% of total cover: 3	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	110	x 3 =	330
FACU species	18	x 4 =	72
UPL species	2	x 5 =	10
Column Totals:	130 (A)		412 (B)
Prevalence Index = B/A =			3.17

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: UPL A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100					Mucky Loam/Clay	silt loam
5-18	10YR 4/3	55					Mucky Loam/Clay	silt loam
	10YR 5/6	35						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Restoration City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: VA Sampling Point: UPL B

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8217013 Long: 77.0808220 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: UPL B

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liriodendron tulipifera*	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	20	=Total Cover	
50% of total cover: 10	20% of total cover: 4		
Sapling Stratum (Plot size: 30' diameter)			
1. *Liriodendron tulipifera*	25	Yes	FACU
2. *Acer negundo*	10	Yes	FAC
3. *Fraxinus pennsylvanica*	2	No	FACW
4.			
5.			
6.			
	37	=Total Cover	
50% of total cover: 19	20% of total cover: 8		
Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 30' diameter)			
1. *Reynoutria japonica*	10	No	UPL
2. *Toxicodendron radicans*	2	No	FAC
3. *Viola sororia*	15	Yes	FAC
4. *Allium vineale*	25	Yes	
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	52	=Total Cover	
50% of total cover: 26	20% of total cover: 11		
Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	3	No	
3.			
4.			
5.			
	3	=Total Cover	
50% of total cover: 2	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)
Prevalence Index = B/A =	

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: UPL B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	100					Loamy/Clayey	organic loam
8-12	10YR 5/6	100					Mucky Loam/Clay	silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Restoration City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: VA Sampling Point: UPL C

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: 38.8203013 Long: -77.099058 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes X	No 3	Depth (inches): ____
Water Table Present?	Yes X	No 10	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UPL C

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	15	Yes	FACW
2. *Acer rubrum*	15	Yes	FAC
3. *Liriodendron tulipifera*	10	Yes	FACU
4.			
5.			
6.			
	40	=Total Cover	
50% of total cover: 20	20% of total cover: 8		

Sapling Stratum (Plot size: 30' diameter)			
1. *Ulmus americana*	5	Yes	
2. *Linderia benzoin*	3	Yes	
3.			
4.			
5.			
6.			
	8	=Total Cover	
50% of total cover: 4	20% of total cover: 2		

Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:	20% of total cover:		

Herb Stratum (Plot size: 30' diameter)			
1. *Euonymus fortunei*	40	Yes	UPL
2. *Parthenocisus quinquefolia*	1	No	
3. *Galium aparine*	5	No	FACU
4. *Duchesnea indica*	3	No	
5.	1	No	FACU
6. *Allaria petiolata*			
7.			
8.			
9.			
10.			
11.			
	50	=Total Cover	
50% of total cover: 25	20% of total cover: 10		

Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Rubus pensilvanicus*	3	Yes	
3. *Smilax rotundifolia*	5	Yes	FAC
4.			
5.			
	8	=Total Cover	
50% of total cover: 4	20% of total cover: 2		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 37.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	20	x 3 =	60
FACU species	16	x 4 =	64
UPL species	40	x 5 =	200
Column Totals:	91 (A)		354 (B)
Prevalence Index = B/A =			3.89

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: UPL C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Mucky Loam/Clay	organic loam
4-14	10YR 5/4	60					Mucky Loam/Clay	
	10YR 3/2	40					Mucky Loam/Clay	
15-18	10YR 5/4	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Stabilization City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: MD Sampling Point: WET A

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8224016 Long: 77.0814420 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WET A

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	30	=Total Cover	
50% of total cover: 15		20% of total cover: 6	

Sapling Stratum (Plot size: 30' diameter)			
1. *Ulmus rubra*	3	No	FAC
2. *Liquidambar styraciflua*	1	No	FAC
3.			
4.			
5.			
6.			
	4	=Total Cover	
50% of total cover: 2		20% of total cover: 1	

Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot size: 30' diameter)			
1. *Ulmus rubra*	1	No	FAC
2. *Liriodendron tulipifera*	3	No	FACU
3. *Lindera benzoin*	1	No	FACW
4. *Toxicodendron radicans*	10	Yes	FAC
5. *Ulmus americana*	5	Yes	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	20	=Total Cover	
50% of total cover: 10		20% of total cover: 4	

Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	3	No	
3.			
4.			
5.			
	3	=Total Cover	
50% of total cover: 2		20% of total cover: 1	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	50	x 3 =	150
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	54 (A)		164 (B)
Prevalence Index = B/A =			3.04

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WET A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	80	5YR 4/4	20	C		Mucky Loam/Clay	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** ____

Remarks:

The presence of a reduced matrix within 12 inches of the soil surface indicates that this soil is hydric based on the hydric soil definition: "a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part".

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Stabilization City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: MD Sampling Point: WET B

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8221323 Long: 77.0811171 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WET B

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liriodendron tulipifera*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	5	=Total Cover	
50% of total cover: 3	20% of total cover: 1		
Sapling Stratum (Plot size: 30' diameter)			
1.			
2. *Acer rubrum*	10	Yes	FAC
3. *Ilex opaca*	8	Yes	FAC
4. *Prunus serotina*	3	No	FACU
5.			
6.			
	21	=Total Cover	
50% of total cover: 11	20% of total cover: 5		
Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 30' diameter)			
1. *Toxicodendron radicans*	25	Yes	FAC
2. *Hemerocallis fulva*	5	No	UPL
3. *Ulmus americana*	1	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	31	=Total Cover	
50% of total cover: 16	20% of total cover: 7		
Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	15	Yes	
3.			
4.			
5.			
	15	=Total Cover	
50% of total cover: 8	20% of total cover: 3		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WET B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	75	2.5YR 4/6	25			Loamy/Clayey	refusal at 12"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** ____

Remarks:

The presence of a reduced matrix within 12 inches of the soil surface indicates that this soil is hydric based on the hydric soil definition: "a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part".

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Stabilization City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: MD Sampling Point: WET C

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8217260 Long: 77.0808281 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes X	No 3	Depth (inches): ____
Water Table Present?	Yes X	No 10	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Iron reduction present in standing water ~10 ft east from sampling point. The site is situated at the toe of slope and within floodplain and limits of manmade stormwater management facility.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WET C

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	10	Yes	FAC
2. *Liriodendron tulipifera*	15	Yes	FACU
3.			
4.			
5.			
6.			
	25	=Total Cover	
50% of total cover: 13		20% of total cover: 5	

Sapling Stratum (Plot size: 30' diameter)			
1. *Acer rubrum*	5	Yes	FAC
2. *Nyssa sylvatica*	5	Yes	FAC
3.			
4.			
5.			
6.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover: 2	

Shrub Stratum (Plot size: 30' diameter)			
1. *Viburnum dentatum*	20	Yes	FAC
2. *Clethra alnifolia*	15	Yes	FACW
3.			
4.			
5.			
6.			
	35	=Total Cover	
50% of total cover: 18		20% of total cover: 7	

Herb Stratum (Plot size: 30' diameter)			
1. *Symplocarpus foetidus*	20	Yes	OBL
2. *Onoclea sensibilis*	5	No	FACW
3. *Athyrium filix-femina*	2	No	UPL
4. *Clethra alnifolia*	3	No	FACW
5. *Glyceria striata*	20	Yes	OBL
6.			
7. *Impatiens capensis*	1	No	FACW
8.			
9.			
10.			
11.			
	51	=Total Cover	
50% of total cover: 26		20% of total cover: 11	

Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	1	Yes	
3. *Rosa multiflora*	2	Yes	FACU
4. *Smilax rotundifolia*	2	Yes	FAC
5.			
	5	=Total Cover	
50% of total cover: 3		20% of total cover: 1	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 72.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	24	x 2 =	48
FAC species	42	x 3 =	126
FACU species	17	x 4 =	68
UPL species	2	x 5 =	10
Column Totals:	125 (A)		292 (B)

Prevalence Index = B/A = 2.34

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WET C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** ____

Remarks:

Appendix D: USDA NRCS Web Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Alexandria City, Virginia

Taylor Run Stream Restoration Soil Report

April 14, 2026

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

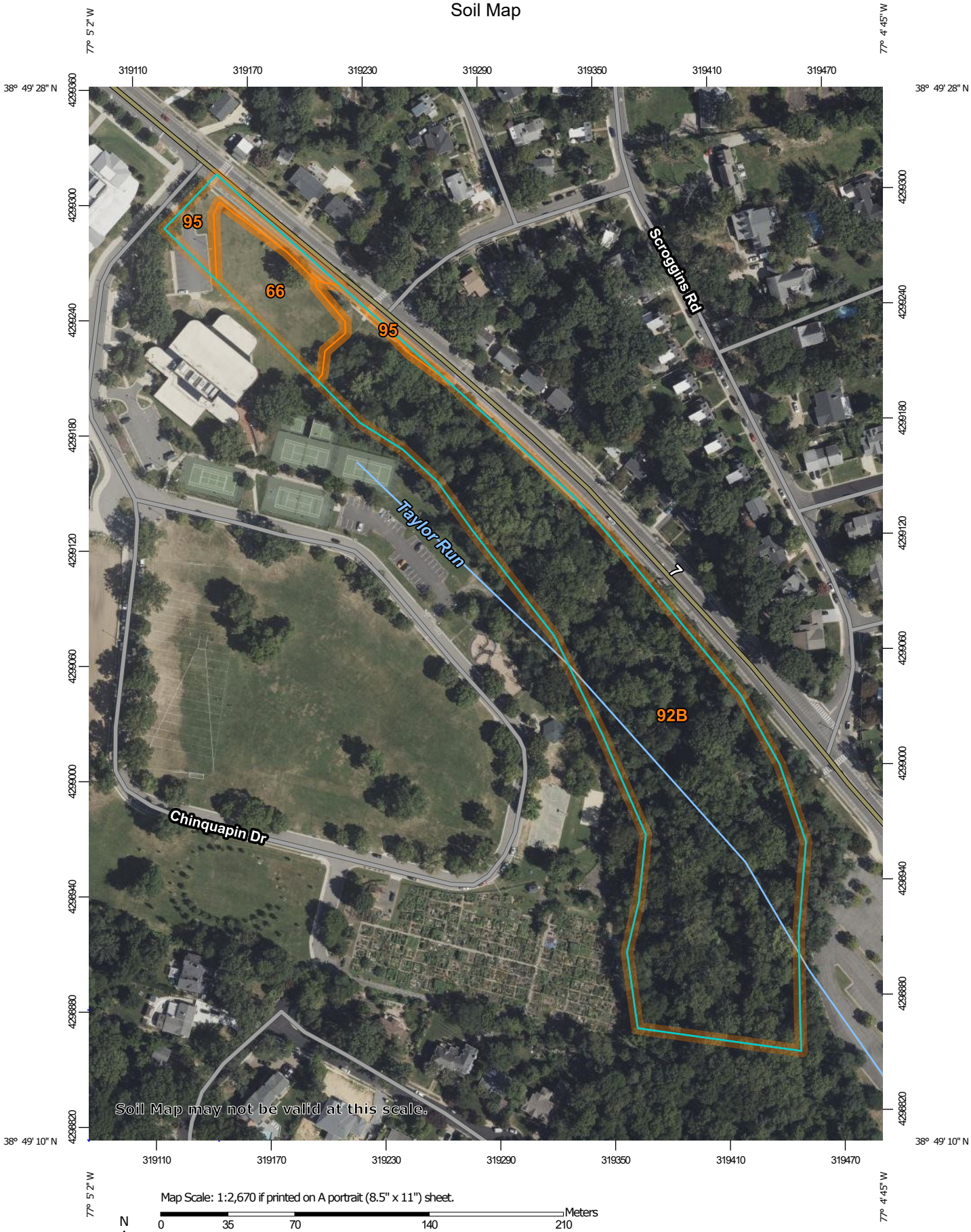
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,670 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Alexandria City, Virginia
Survey Area Data: Version 15, Sep 5, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
66	Kingstowne sandy clay loam, 0 to 45 percent slopes	0.7	8.9%
92B	Sassafras-Neabsco complex, 2 to 7 percent slopes	7.0	87.0%
95	Urban land	0.3	4.2%
Totals for Area of Interest		**8.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Alexandria City, Virginia

66—Kingstowne sandy clay loam, 0 to 45 percent slopes

Map Unit Setting

National map unit symbol: 226lt
Landscape: Coastal plains
Elevation: 0 to 510 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 45 to 67 degrees F
Frost-free period: 185 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Kingstowne and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kingstowne

Setting

Landscape: Coastal plains
Landform: Marine terraces
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Earthy fill of fluviomarine deposits

Typical profile

H1 - 0 to 4 inches: sandy clay loam
H2 - 4 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 79 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

92B—Sassafras-Neabsco complex, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 226m5
Landscape: Coastal plains
Elevation: 50 to 390 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 45 to 67 degrees F
Frost-free period: 185 to 212 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sassafras and similar soils: 50 percent
Neabsco and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sassafras

Setting

Landscape: Coastal plains
Landform: Terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fluviomarine deposits

Typical profile

H1 - 0 to 9 inches: sandy loam
H2 - 9 to 40 inches: sandy clay loam
H3 - 40 to 70 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

Description of Neabsco

Setting

Landscape: Coastal plains
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fluviomarine deposits

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 17 inches: clay loam
H3 - 17 to 36 inches: loam
H4 - 36 to 52 inches: clay loam
H5 - 52 to 72 inches: very gravelly sandy loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 14 to 30 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 14 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

95—Urban land

Map Unit Setting

National map unit symbol: 226m7
Landscape: Coastal plains
Mean annual precipitation: 28 to 58 inches
Mean annual air temperature: 87 to 89 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landscape: Coastal plains
Anthropogenic Feature: Urban land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix E Site Photographs

AECOM

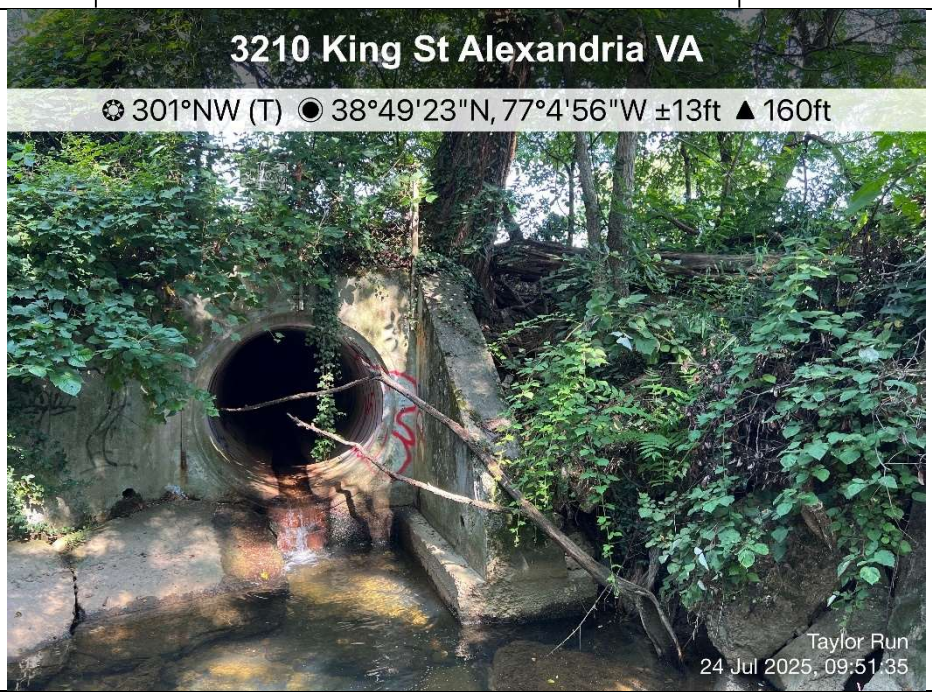
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
1	07/24/25

Direction Photo Taken:
Upstream

Description:
72-inch outfall condition. Gully next to right wingwall (look upstream) and beginning of plunge pool (Project Area 1)



AECOM

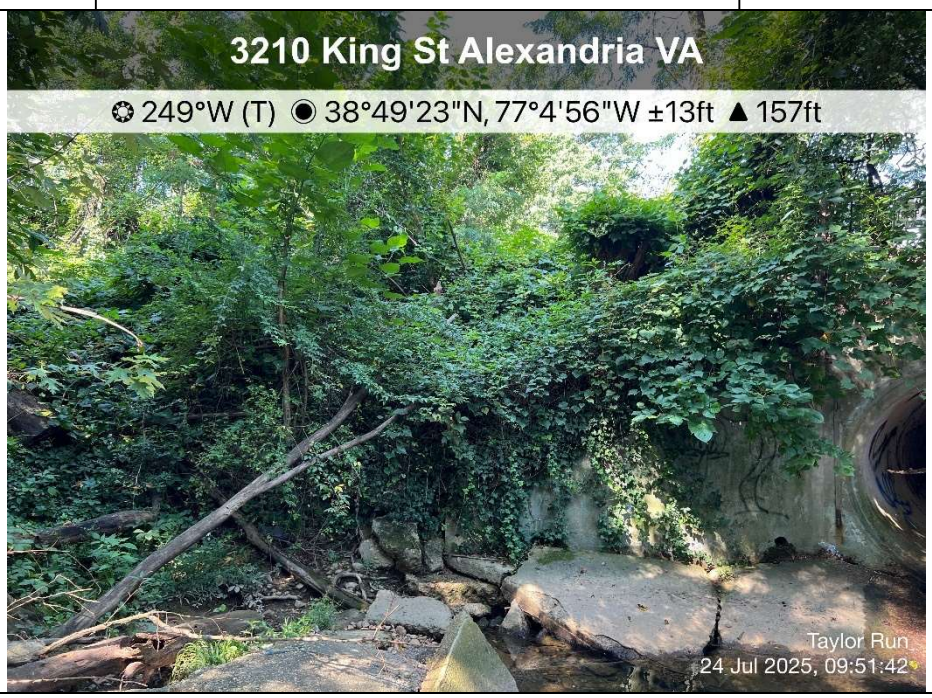
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
2	07/24/25

Direction Photo Taken:
Right Bank

Description:
Left wingwall (looking upstream) condition. (Project Area 1)



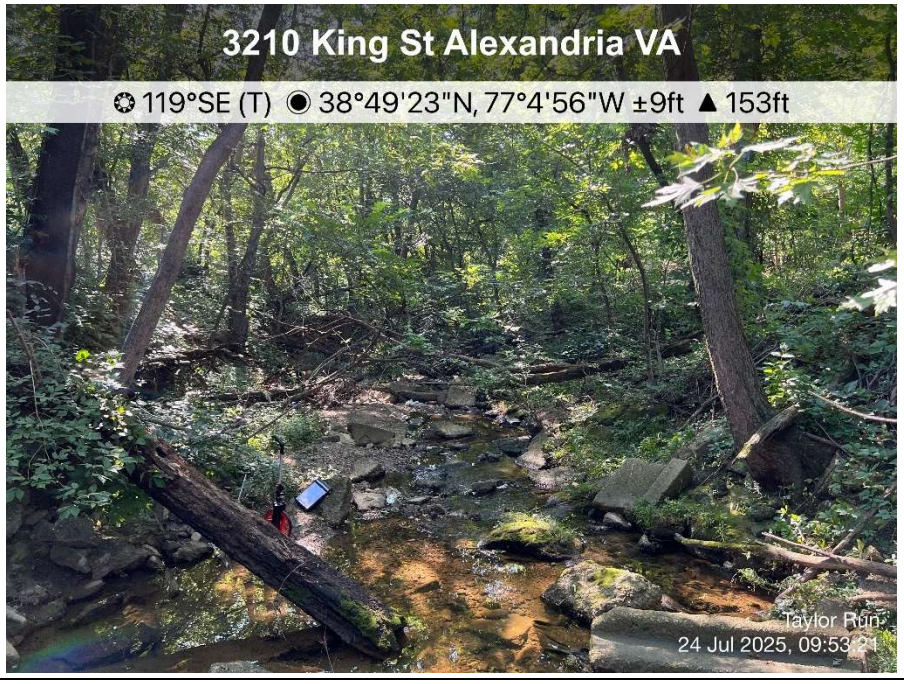
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
3	07/24/25

Direction Photo Taken:
Downstream

Description:
Downstream condition of stream with concrete debris, unstable (soon to fall) trees, woody debris build up



SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
4	07/24/25

Direction Photo Taken:
Left Bank

Description:
Concrete debris in the channel, downstream of Project Area 1

SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
5	07/24/25

Direction Photo Taken:
Left Bank

Description:
Fallen trees causing debris build up in the channel. View from left bank. Between Project Area 1 and 2

SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
6	07/24/25

Direction Photo Taken:
Downstream

Description:
Concrete debris in the channel, fallen trees, bank erosion and woody debris build up in channel between Project Area 1 and 2

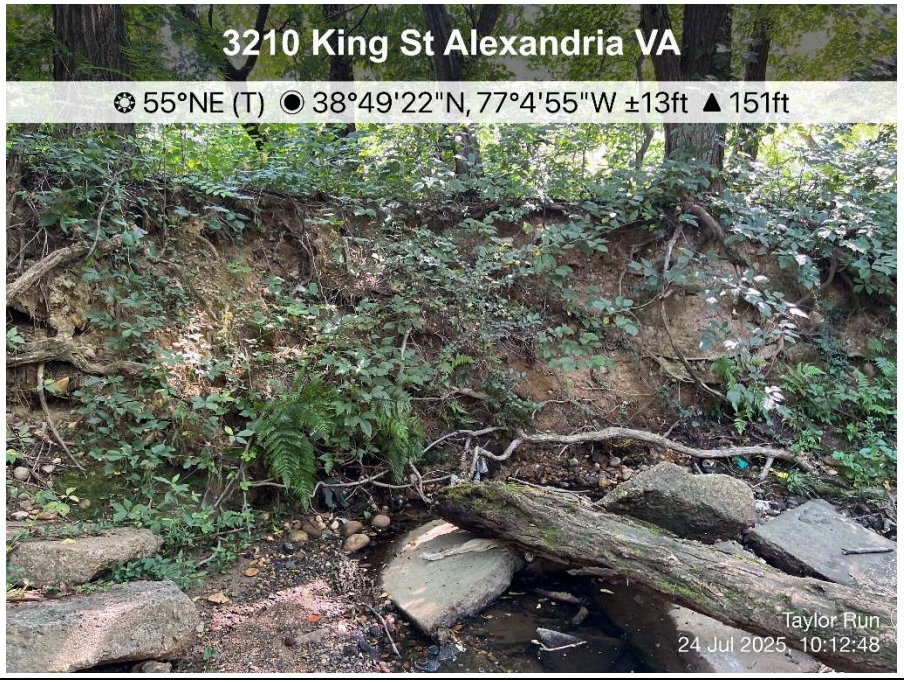
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
7	07/24/25

Direction Photo Taken:
Left Bank

Description:
Eroding channel bank between Project Area 1 and 2



SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
8	07/24/25

Direction Photo Taken:
Downstream

Description:
Falling trees and debris build up in the stream between Project Area 1 and 2

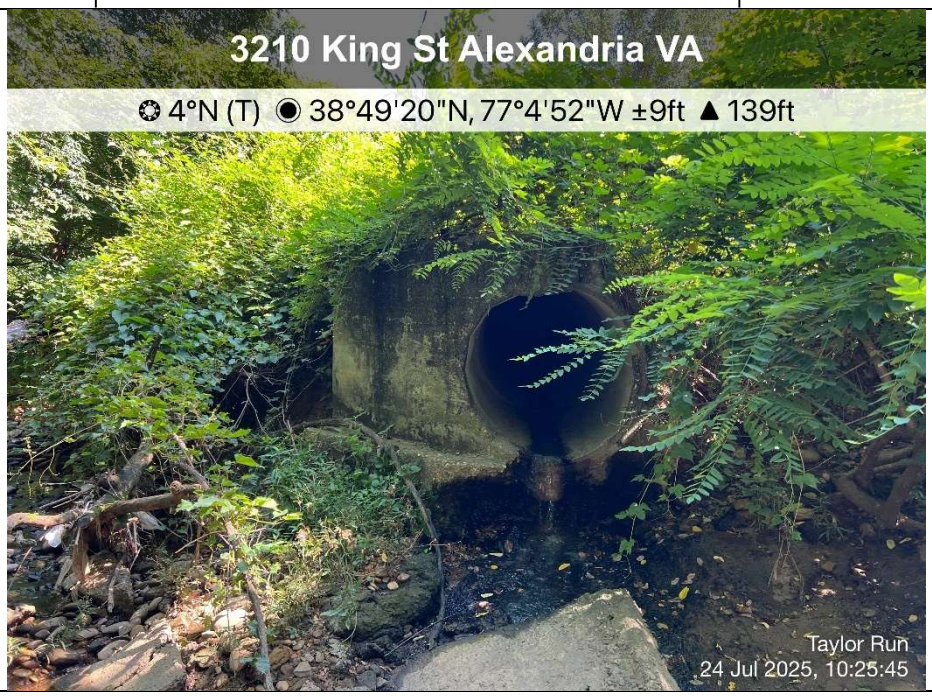
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
9	07/24/25

Direction Photo Taken:
Left Bank

Description:
36-inch outfall showing undercut of headwall and erosion of the left side



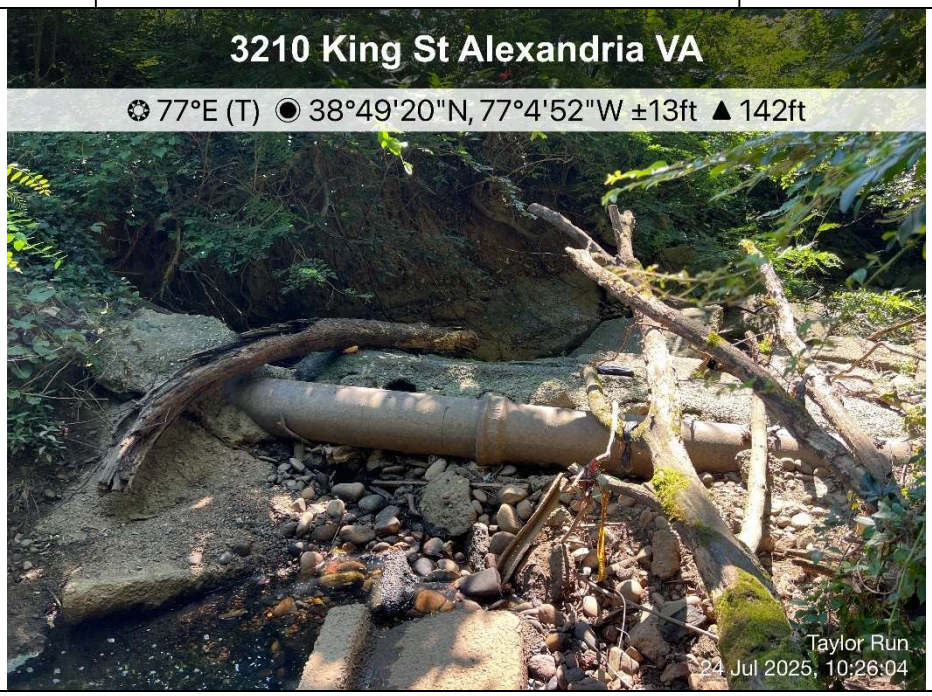
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
10	07/24/25

Direction Photo Taken:
Downstream

Description:
Exposed sanitary sewer pipe next to 36-inch outfall (Project Area 2)



AECOM

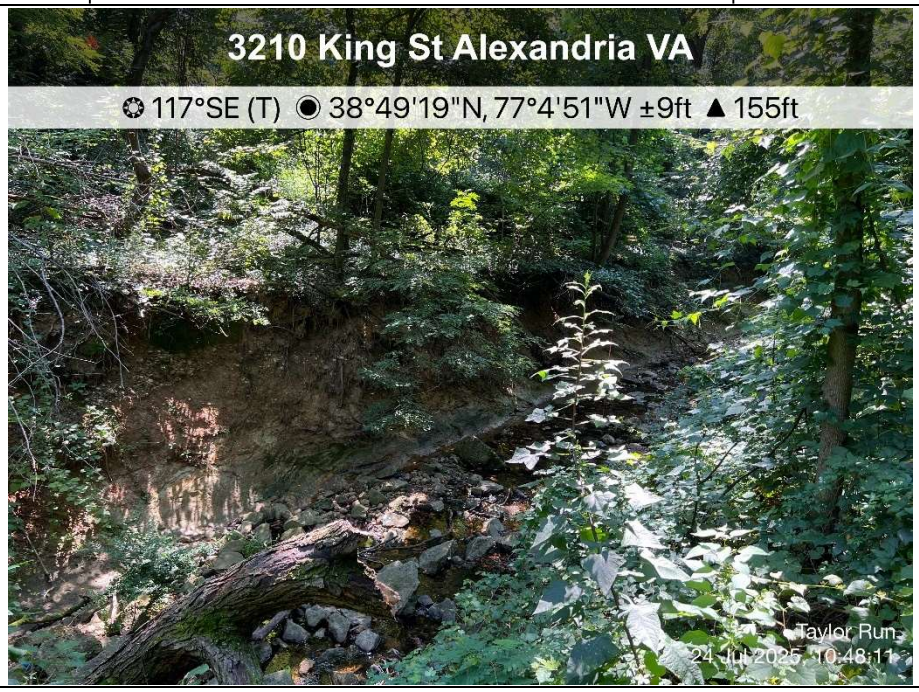
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
11	07/24/25

Direction Photo Taken:
Left Bank

Description:
Severe bank erosion immediately downstream from the 36-inch outfall (Project Area 2)



AECOM

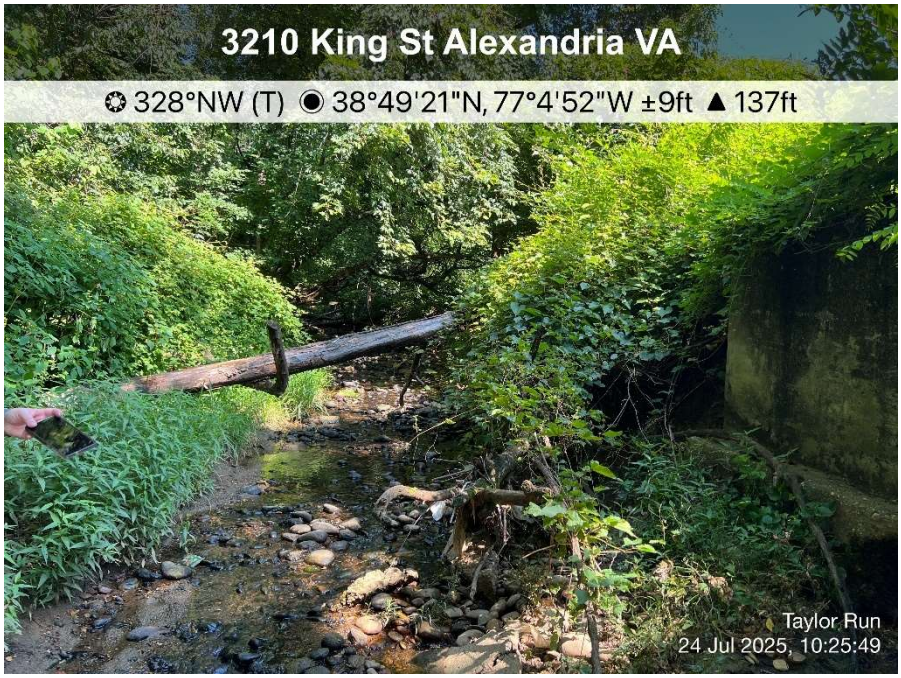
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
12	07/24/25

Direction Photo Taken:
Upstream

Description:
Upstream stream condition, standing at the 36-inch outfall. Fallen tree(s) due to bank instability (Project Area 2)



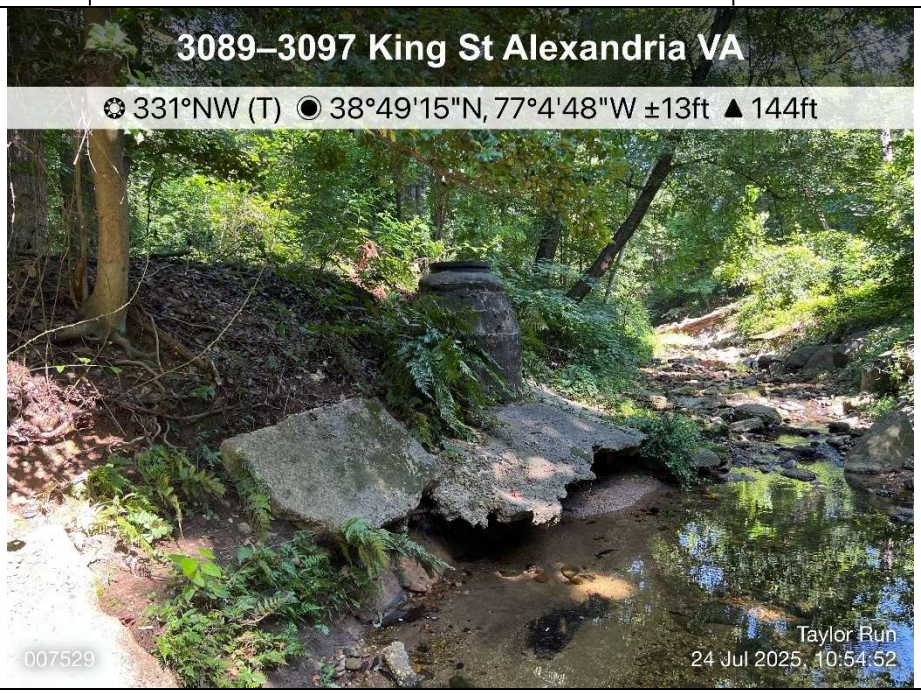
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
13	07/24/25

Direction Photo Taken:
Upstream/Right Bank

Description:
Exposed sanitary sewer manhole with undercut of concrete skirt



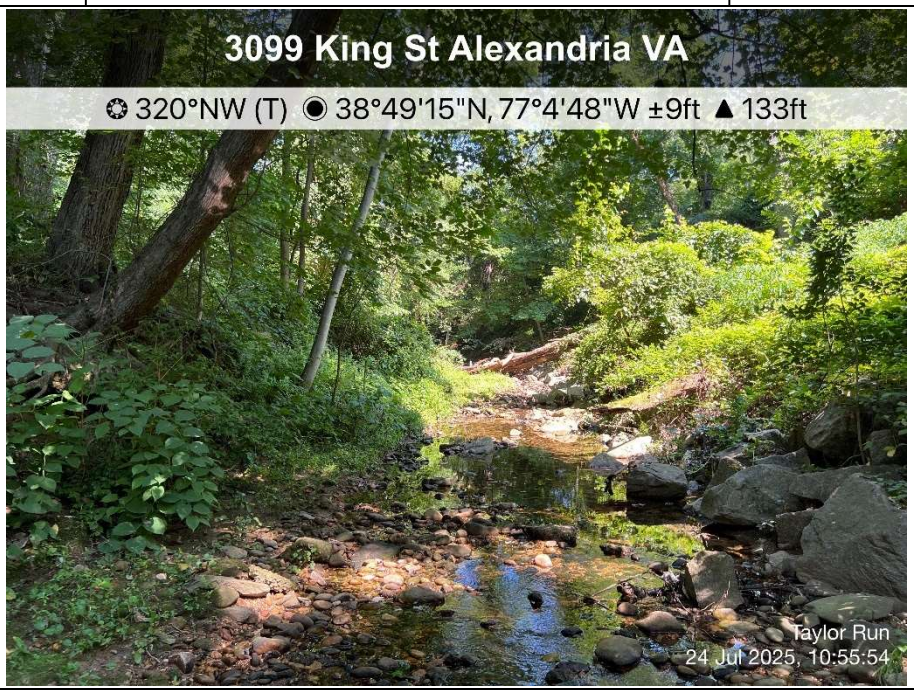
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
14	07/24/25

Direction Photo Taken:
Downstream

Description:
Upstream stream condition from exposed sanitary sewer manhole (Project Area 3)



AECOM

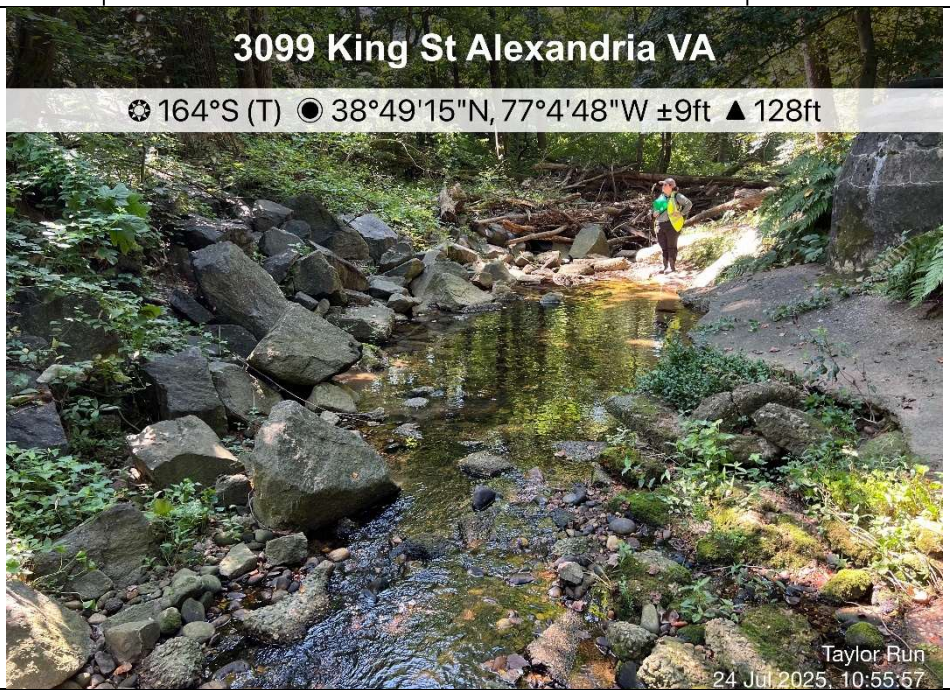
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
15	07/24/25

Direction Photo Taken:
Downstream

Description:
Downstream conditions of the exposed sanitary sewer manhole. Woody Debris build up in the back. (Project Area 3)



AECOM

SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
16	07/24/25

Direction Photo Taken:
Upstream

Description:
Woody debris build up between Project Area 3 and Project Area 4. Falling trees from bank instalbility

AECOM

SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
17	07/24/25

Direction Photo Taken:
Left Bank

Description:
Exposed root exposure of champion tree (Project Area 4)

AECOM

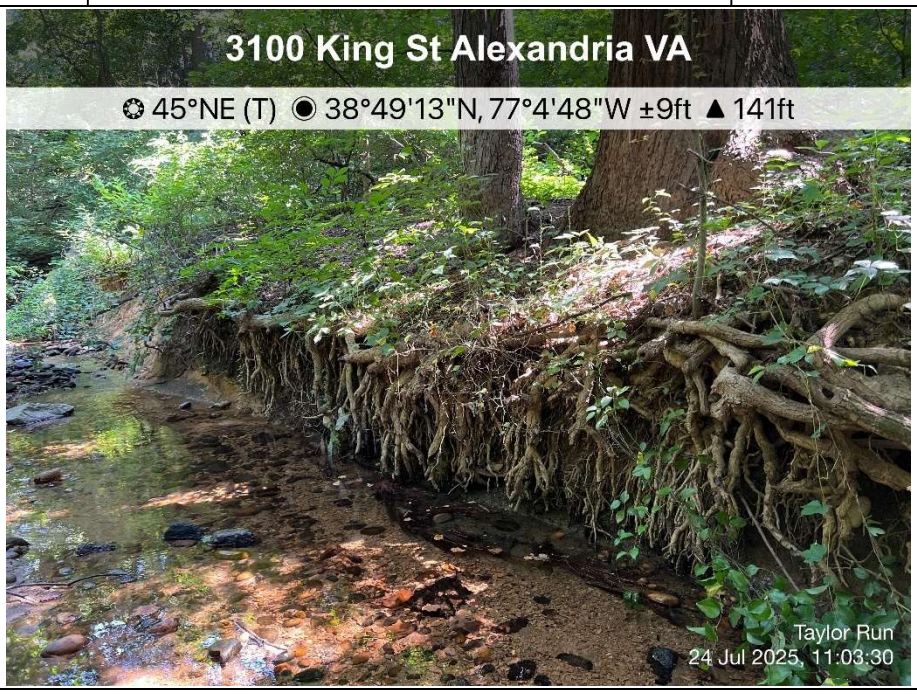
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
18	07/24/25

Direction Photo Taken:
Upstream/Left Bank

Description:
Horizontal extent of root exposure of the champion tree (Project Area 4)



SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
19	07/24/25

Direction Photo Taken:
Downstream/Left Bank

Description:
Leaning sheet pile wall and build of debris within the channel (Project Area 4)

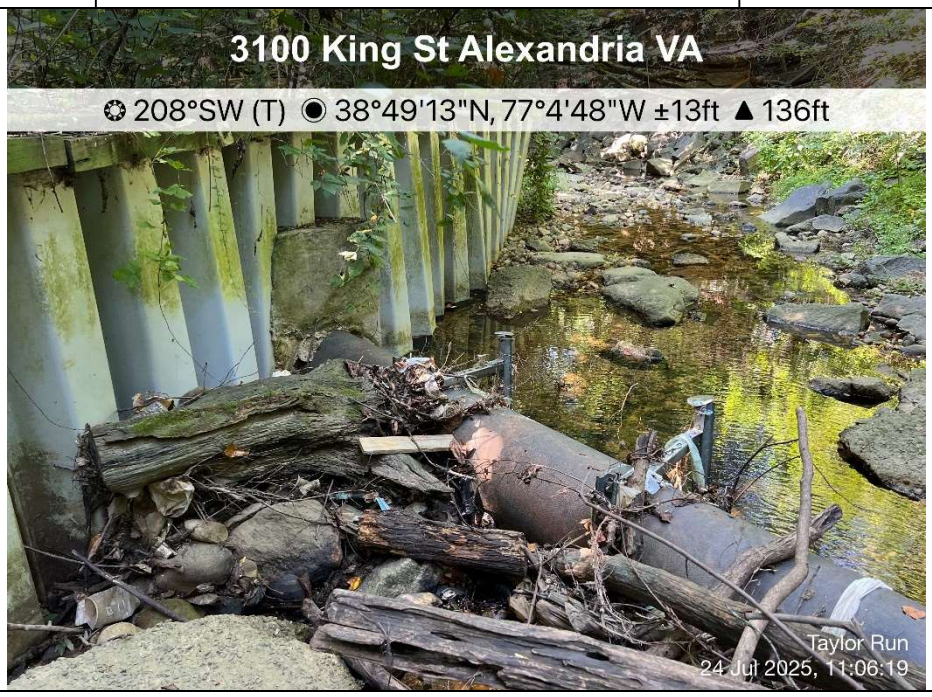
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
20	07/24/25

Direction Photo Taken:
Downstream

Description:
Exposed sanitary sewer pipe near sheet pile wall (Project Area 4)



SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
21	07/24/25

Direction Photo Taken:
Upstream Left Bank

Description:
Exposed roots, stream bank erosion and gully formed from trail side runoff

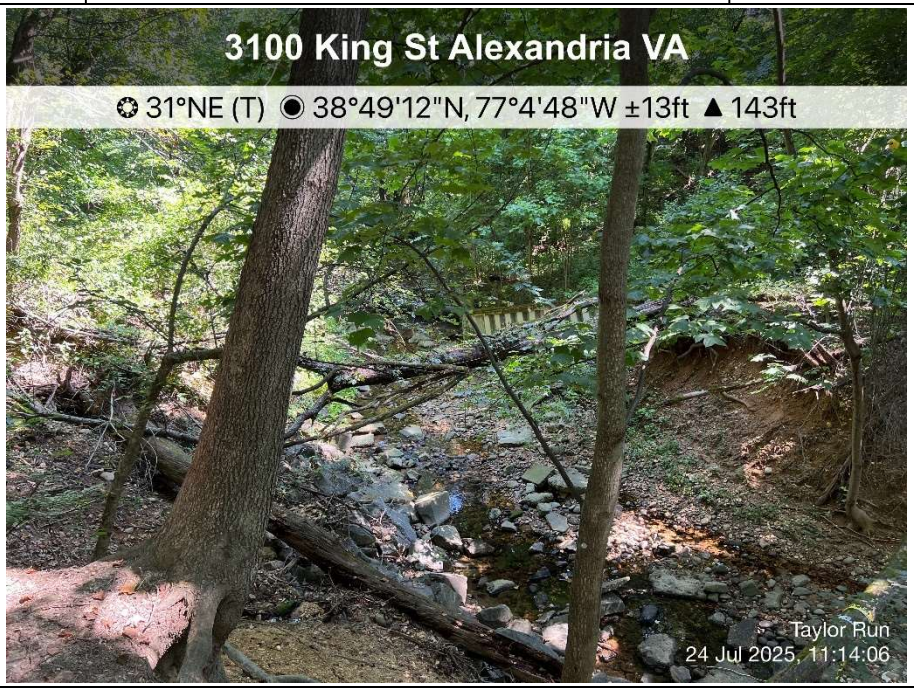
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
22	07/24/25

Direction Photo Taken:
Upstream

Description:
Condition of right bank, downstream of study extent



SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
23	07/24/25

Direction Photo Taken:
Downstream

Description:
Condition of the stream downstream of study extent

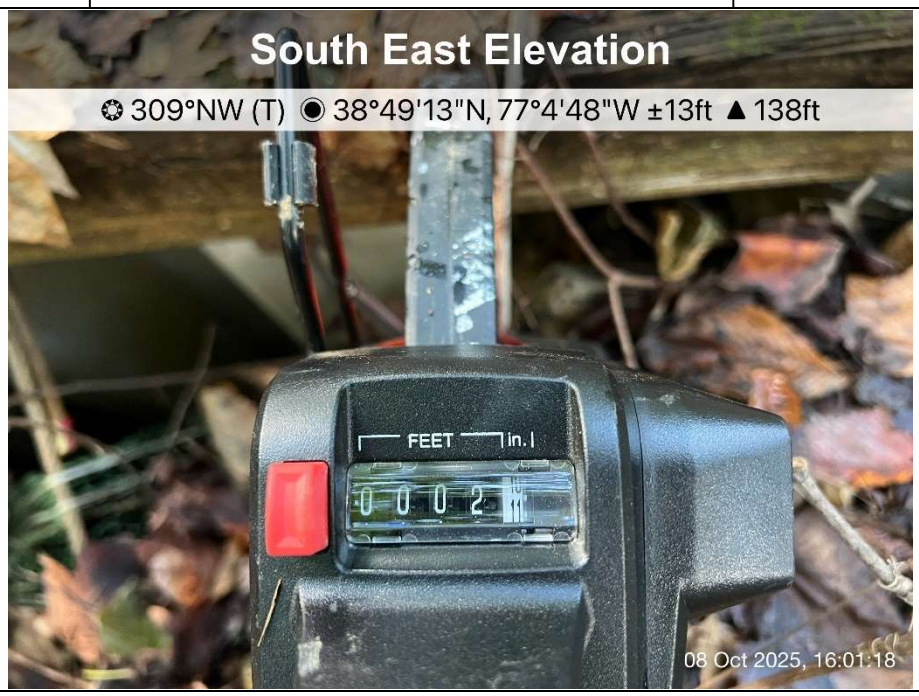
SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
24	10/08/25

Direction Photo Taken:
Right Bank

Description:
From center of sanitary manhole it is 2 feet from the sheet pile wall



SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
25	10/08/25

Direction Photo Taken:
Downstream

Description:
Outer extent of sanitary sewer manhole is 10 inches from the sheet pile wall

SITE PHOTOGRAPH LOG

Project Name:		Project No.
Taylor Run Stream Restoration		60742359

Photo No.	Date:
26	10/08/25

Direction Photo Taken:
Right Bank

Description:

Sanitary Sewer manhole is 19 feet from the start of the sheet pile wall

Appendix F Hydrology and Hydraulics

Hydrologic and Hydraulics Report
Taylor Run Stream Stabilization Design

City of Alexandria, Virginia

Client Project Reference: Task Order #07
Description: 60% Design
AECOM Project Number: 60742359

May 2026

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1 Executive Summary 1

2 Introduction 1

2.1 Project Location 1

2.2 FEMA Effective Data 3

3 Hydrology 3

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4.2 Proposed Conditions 4

4.3 Results 5

5 References 6

Figures

Figure 1: Taylor Run Infrastructure Stablization Project Location Map 2

Tables

Table 1: Existing Conditions Peak Discharge at Outlet Point of Project Area 4

Attachments

Attachment A: HEC-HMS Excess Precipitation Graphs

1 Executive Summary

The City of Alexandria (City) has tasked AECOM to use “minimal stabilization” approach to provide stream stabilization in four areas on Taylor Run. The objective of the Hydrology and Hydraulics (H&H) tasks were to update the previously completed one-dimensional HEC-RAS model to model existing hydraulics using the updated topographic survey data and to develop a proposed conditions model concurrently with the 60% design submission. The existing and proposed conditions models were run for the 10-, 50-, and 100 -year, 24-hour storm events.

The Hydrologic Engineering Center – River Analysis System (HEC-RAS) existing and proposed conditions models were run for the 10-, 50-, and 100 -year, 24-hour storm events. Comparison between existing and proposed conditions results in an average reduction in velocity across the project reach for all storm events. A water surface elevation rise is noted at all storm events, with an average rise of 0.7 feet across the project reach during the 100-year storm. This rise is located entirely on City of Alexandria property and does not affect adjoining properties. Hydraulic conditions downstream of the project area remain the same in the existing and proposed conditions.

2 Introduction

The City of Alexandria (City) has tasked AECOM to use “minimal stabilization” approach to provide stream stabilization in four areas on Taylor Run. The objective of the Hydrology and Hydraulics (H&H) tasks were to update the previously completed one-dimensional HEC-RAS model to model existing hydraulics using the updated topographic survey data and to develop a proposed conditions model concurrently with the 60% design submission. The existing and proposed conditions models were run for the 2-, 10-, and 100-, -year, 24-hour storm events.

2.1 Project Location

Taylor Run begins at a 72-inch outfall to the east of Chinquapin Park Recreation Cetner and Aquatics Facility in the City. The stream runs parallel to Kings Street for approximately 700 linear feet before turning south and flowing onto the First Baptist Church of Alexandria property. The extent of the study limits is shown in Figure 1.

Taylor Run is within the Mid Atlantic Region within the Middle Potomac-Anacostia-Occoquan (HUC8:02070010), Cameron Run-Potomac River (HUC10:0207001003), and Cameron Run (HUC12:020700100302) watersheds. The Taylor Run watershed consists of approximately 333 acres of densely developed urban land. The total watershed imperviousness is estimated to be approximately 38%.

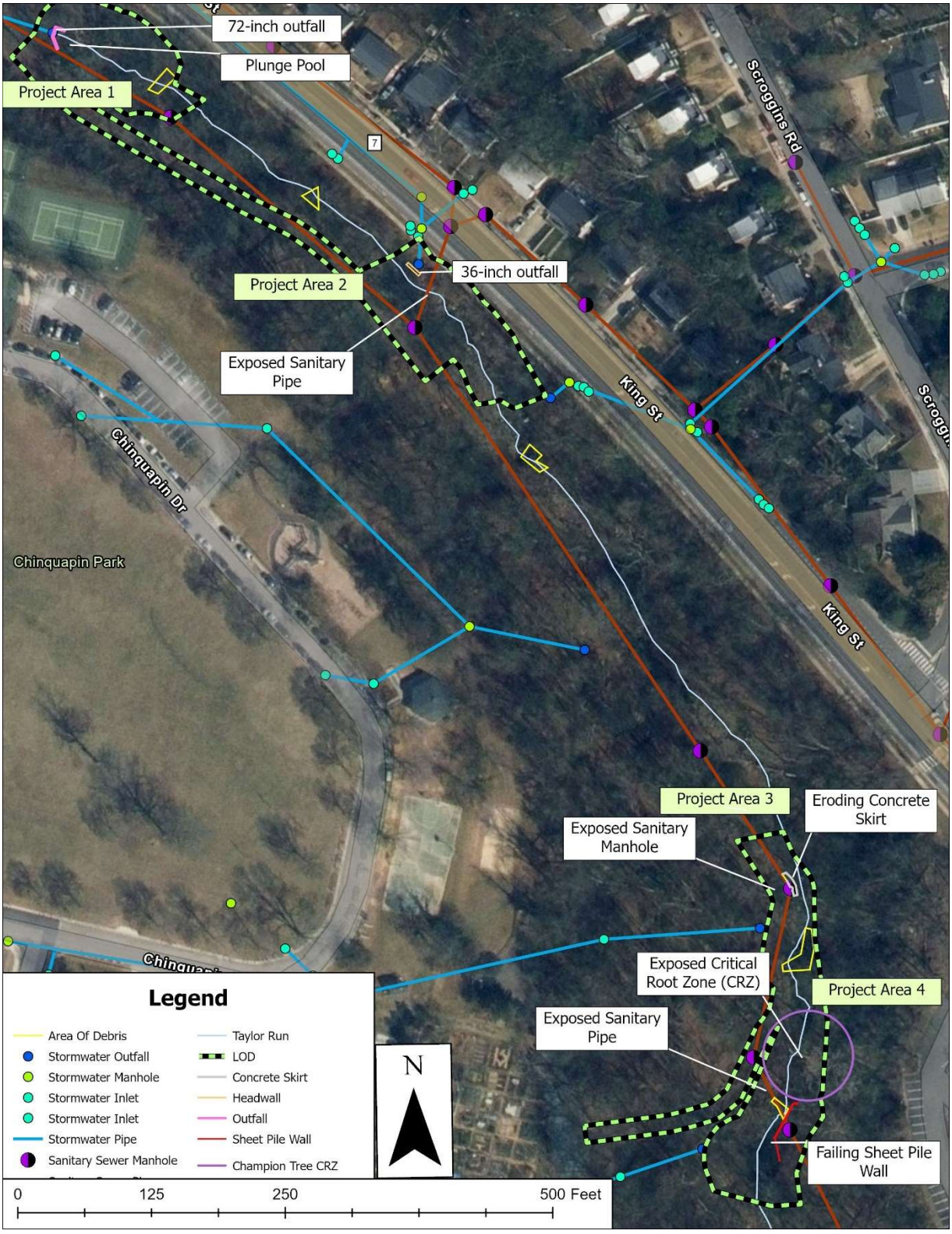


Figure 1: Taylor Run Infrastructure Stablization Project Location Map

2.2 FEMA Effective Data

Taylor Run is a regulatory Zone AE stream and was originally studied as part of the Cameron Run watershed analysis (USACE 2007). The most recent Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) was published January 11, 2024. The hydrologic assessment was completed using HEC-HM 3.1.1 and the hydraulic analysis was completed using HEC-RAS 3.1.1. Flood hazards were re-delineated in 2020 as part of the revised 2024 FIS. The effective Flood Insurance Risk Map with the Taylor Run floodplain is shown in Figure 2.

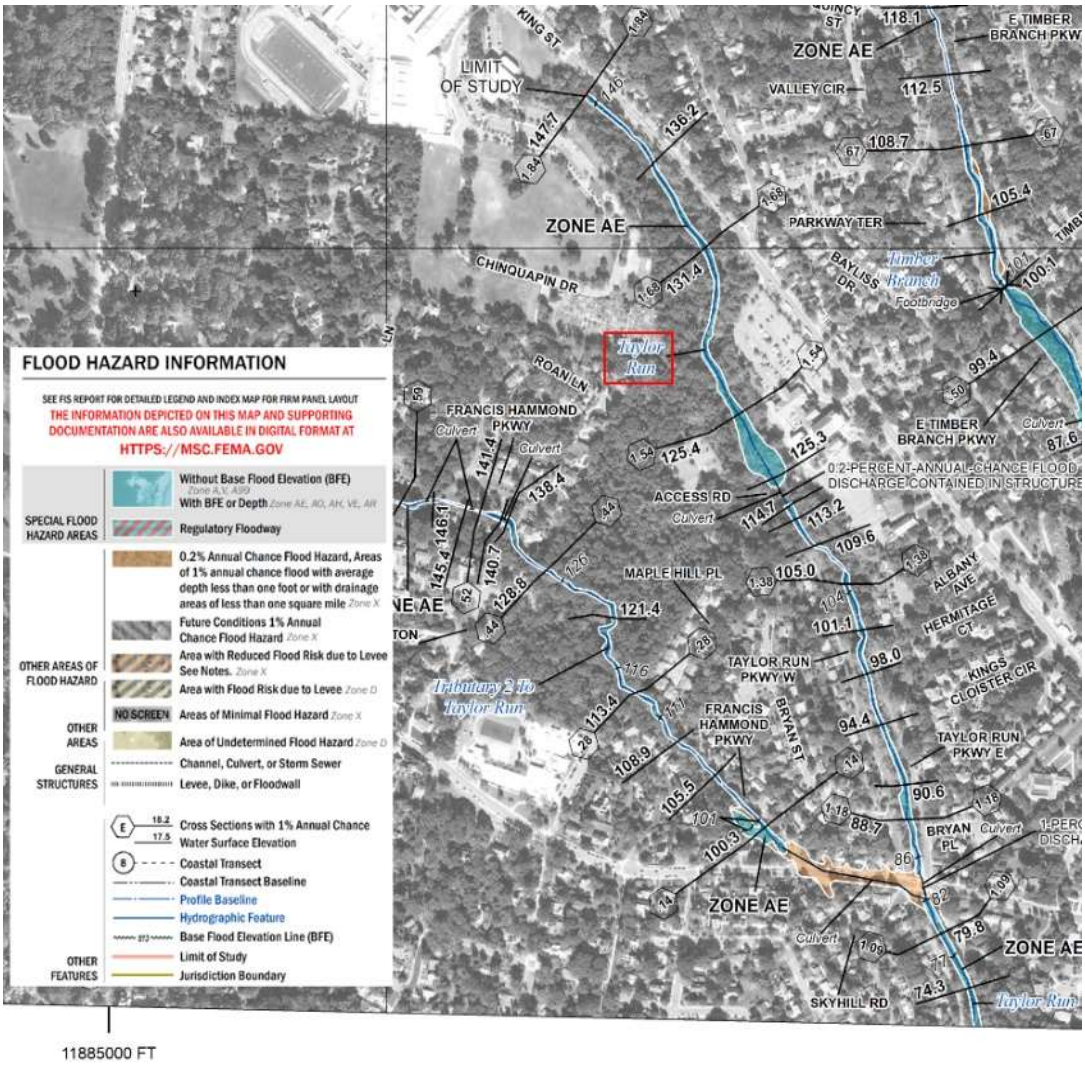


Figure 2: Taylor Run Effective FIRM

3 Hydrology

AECOM was originally scoped to perform a hydrologic assessment of Taylor Run using a runoff model such as HEC-HMS or equvialent. On September 23, 2025, during a bi-weekly meeting, AECOM and the City agreed that the FEMA effictive flows at Janneys Lane would be utilized.

Flows to be applied are provided in Table 1.

Table 1: Existing Conditions Peak Discharge at Outlet Point of Project Area

Scenario	Peak Discharge (cfs)
10-year	343
50-year	538
100-year	672

4 Hydraulics

A hydraulic analysis was conducted using HEC River Analysis System (RAS) version 6.5 to evaluate changes in water surface elevations, lateral floodplain boundaries, and shear stresses between existing and proposed conditions for the 2-, 10-, and 100-year storms. One-dimensional steady-state models were developed to compare water surface elevations along each stream channel.

Taylor Run has a FEMA designated Zone AE floodplain, necessitating that proposed solutions do not result in adverse impacts, such as increases downstream water surface elevations.

4.1 Existing Conditions

A previously completed one-dimensional Hydrologic Engineering Center River Analysis System (HEC-RAS) model from Task Order No 22 was reviewed and updated with recent survey data. The existing conditions hydraulic analysis was performed to analyze changes in water surface elevations and shear stresses for the 2-, 10-, and 100-year storms using HEC River Analysis System (RAS) version 6.5. One-dimensional steady-state models were developed. The existing conditions model was run with using a subcritical flow regime.

The HEC-RAS model includes areas outside of our Project. Stations 2304-1805 encompass the upstream portion of study (Project Area 1 and Project Area 2) and stations 1209-925 encompass the downstream protion of our study (Project Area 3 and Project Area 4. Observed shear stresses were taken into consideration for substrate design, but limitations of the model were also factored in. Detailed outputs from the existing conditions HEC-RAS simulation for the 2-, 10-, and 100-year storms can be found in Appendix B.

4.2 Proposed Conditions

The terrain for the proposed conditions hydraulic model was developed using a topographic surface which combined the proposed design surface with the 2019 survey, 2025 survey, and available LiDAR data. Similar Manning's n values were used for the proposed conditions model, with 0.1 applied for overbank areas, 0.04 applied for the existing channel, and 0.051 applied for placed riprap within the channel. Computational parameters and cross section locations were selected similarly to existing

conditions parameters, with additional cross sections being placed at areas of instability or abrupt grade change. The proposed conditions model was run using a mixed flow regime.

4.3 Results

The comparison of water surface elevations and shear stresses for existing and proposed conditions informed design parameters and provided a general understanding of the Project impact. Comparison between existing and proposed conditions results in an average reduction in velocity across the project reach for all storm events. Localized increases can be noted in the proposed boulder cascades. A water surface elevation rise is noted at all storm events, with an average rise of 0.7 feet across the project reach during the 100-year storm. A maximum rise of 2.85 feet was noted at proposed cross section 1073, located directly upstream of design area 4, due to backwater conditions. This rise is located entirely on City of Alexandria property and does not affect adjoining properties. Hydraulic conditions downstream of the project area remain the same in the existing and proposed conditions.

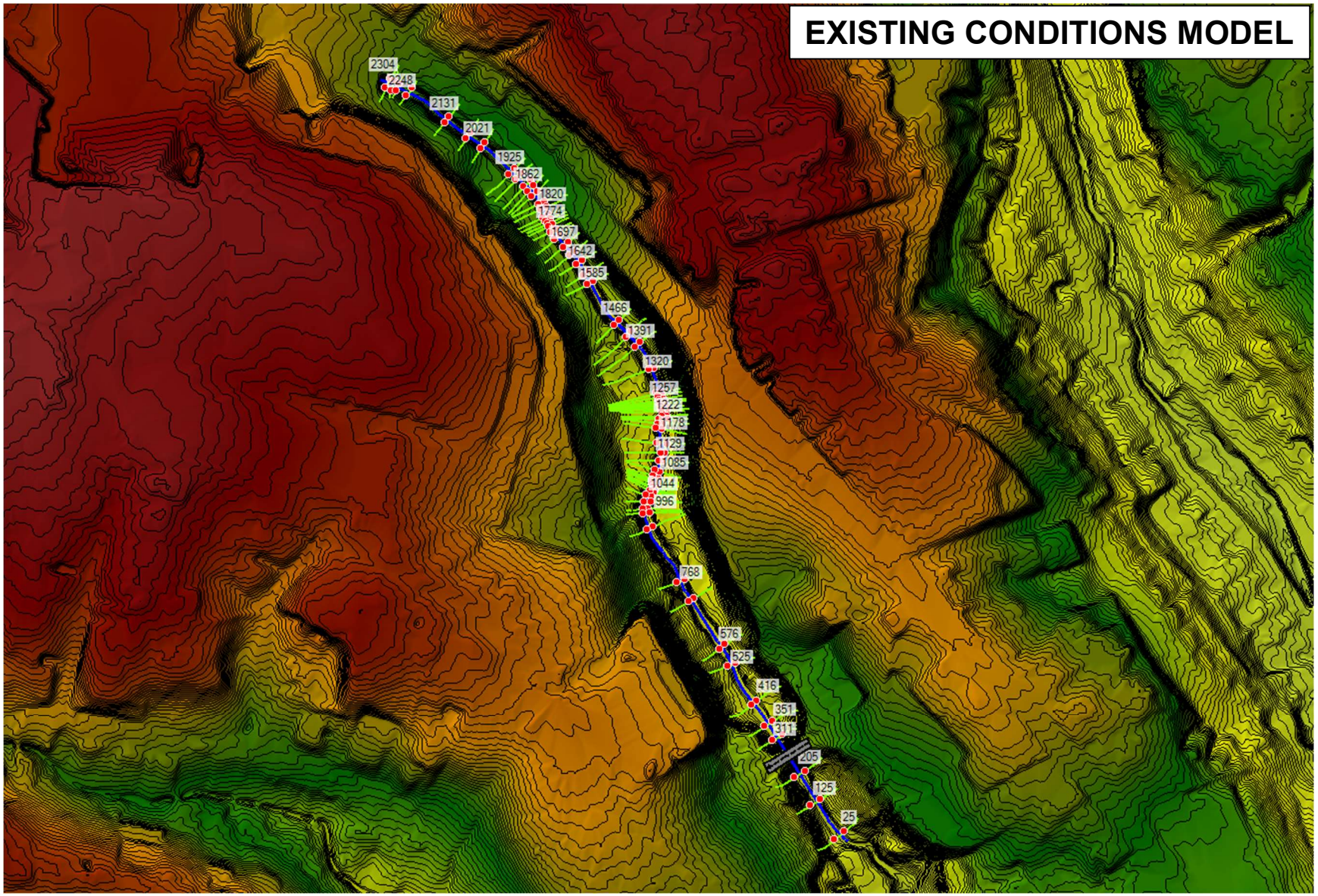
5 References

City of Alexandria, Virginia. Open Data. Accessed at: City of Alexandria Open Data (https://www.alexandriava.gov/gis/open-data).

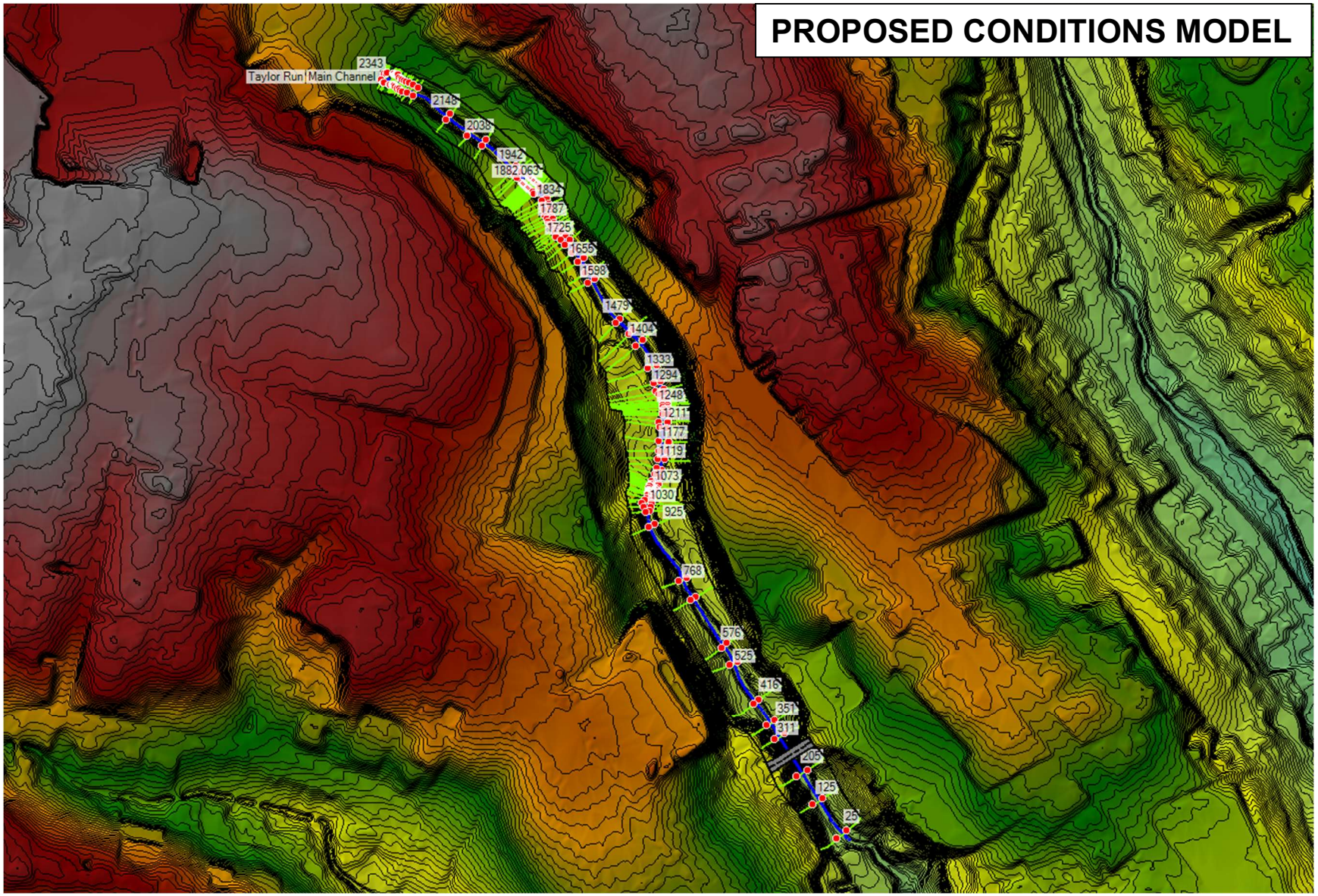
Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains, United States Geological Survey Water-Supply Paper 2339. Accessed at: https://pubs.usgs.gov/wsp/2339/report.pdf

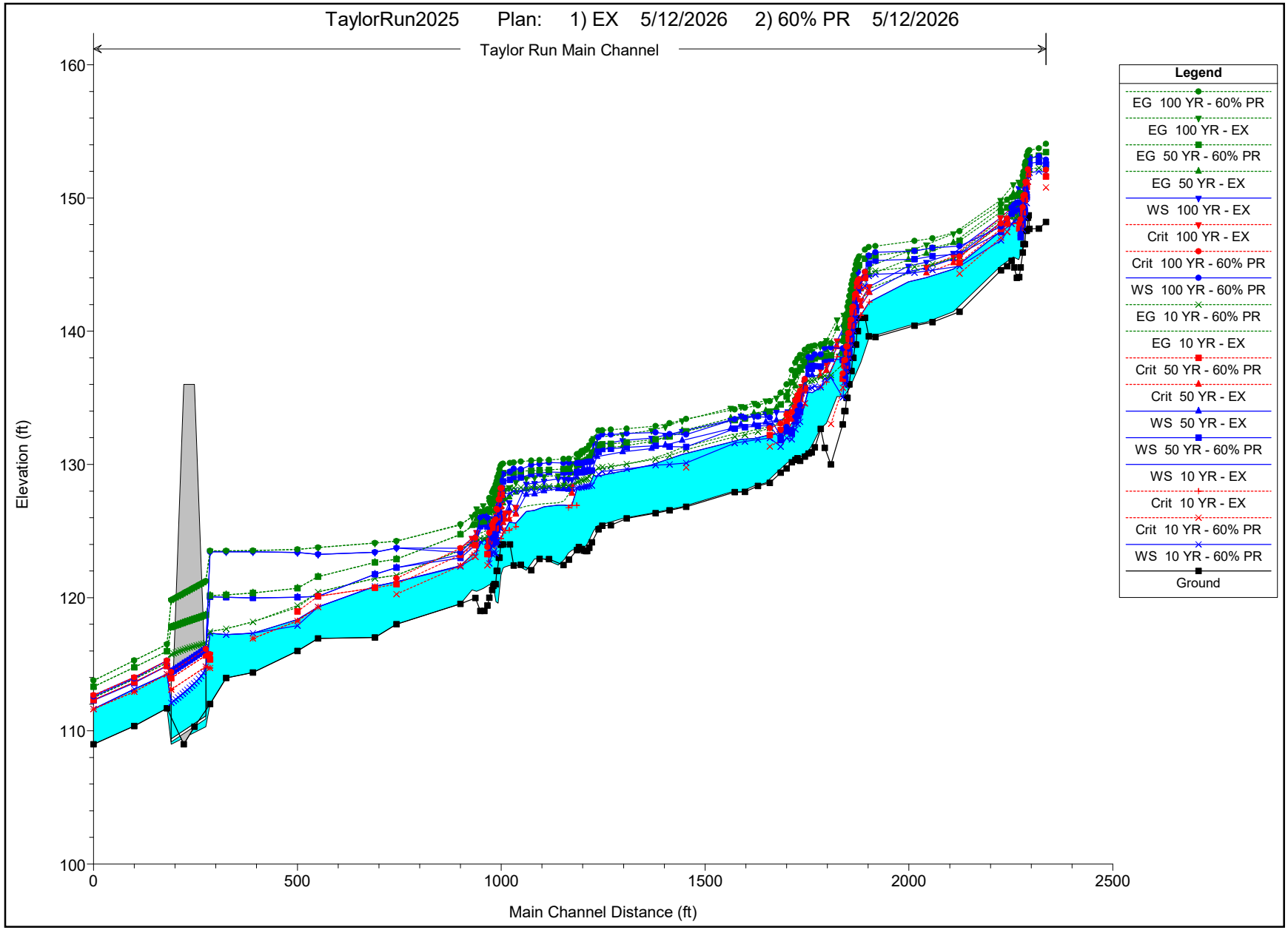
Appendix A: HEC-RAS Results

EXISTING CONDITIONS MODEL



PROPOSED CONDITIONS MODEL




TaylorRun2025 Plan: 1) EX 5/12/2026 2) 60% PR 5/12/2026
Taylor Run Main Channel
Elevation (ft)
160
150
140
130
120
110
100
0
500
1000
1500
2000
2500
Main Channel Distance (ft)
Legend
EG 100 YR - 60% PR
EG 100 YR - EX
EG 50 YR - 60% PR
EG 50 YR - EX
WS 100 YR - EX
Crit 100 YR - EX
Crit 100 YR - 60% PR
WS 100 YR - 60% PR
EG 10 YR - 60% PR
EG 10 YR - EX
Crit 50 YR - 60% PR
Crit 50 YR - EX
WS 50 YR - EX
WS 50 YR - 60% PR
WS 10 YR - EX
Crit 10 YR - EX
Crit 10 YR - 60% PR
WS 10 YR - 60% PR
Ground

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Shear Chan (lb/sq ft)
Main Channel	2343	10 YR	60% PR	343	148.2	151.93	150.79	152.44	0.00771	5.79	63.18	20.59	0.55	1.28	1.64
Main Channel	2343	50 YR	60% PR	538	148.2	152.54	151.61	153.44	0.010948	7.69	76.1	21.78	0.67	2.04	2.74
Main Channel	2343	100 YR	60% PR	672	148.2	152.87	152.11	154.06	0.013103	8.86	83.38	22.37	0.74	2.58	3.54
Main Channel	2333.581 10+27.24	10 YR	60% PR	343	147.7	151.99		152.27	0.00411	4.24	83.45	25.15	0.4	0.73	0.88
Main Channel	2333.581 10+27.24	50 YR	60% PR	538	147.7	152.71		153.18	0.005403	5.51	101.58	25.54	0.47	1.11	1.39
Main Channel	2333.581 10+27.24	100 YR	60% PR	672	147.7	153.13		153.73	0.006127	6.25	112.32	25.77	0.51	1.35	1.74
Main Channel	2331.964	10 YR	60% PR	343	147.69	151.9		152.17	0.004421	4.24	83.76	26.61	0.41	0.76	0.89
Main Channel	2331.964	50 YR	60% PR	538	147.69	152.58		153.05	0.00578	5.5	102.17	27.03	0.49	1.16	1.41
Main Channel	2331.964	100 YR	60% PR	672	147.69	152.99		153.58	0.006532	6.23	113.1	27.23	0.52	1.41	1.76
Main Channel	2316.598	10 YR	60% PR	343	148.7	151.59		152.13	0.016757	5.9	58.59	29.98	0.74	1.89	2.05
Main Channel	2316.598	50 YR	60% PR	538	148.7	152.26		153	0.015644	6.92	78.69	30.27	0.75	2.27	2.56
Main Channel	2316.598	100 YR	60% PR	672	148.7	152.67		153.54	0.015144	7.49	91.05	30.44	0.76	2.48	2.86
Main Channel	2313.904	10 YR	60% PR	343	148.52	151.22	151.22	152.06	0.033136	7.33	47.11	29.29	1.01	3.18	3.36
Main Channel	2313.904	50 YR	60% PR	538	148.52	151.8	151.8	152.92	0.029991	8.52	64.05	29.69	1.01	3.76	4.11
Main Channel	2313.904	100 YR	60% PR	672	148.52	152.15	152.15	153.45	0.028552	9.17	74.57	29.85	1.01	4.07	4.53
Main Channel	2313.068	10 YR	60% PR	343	147.55	149.62	150.25	151.77	0.14551	11.77	29.3	28.04	1.98	9.35	9.9
Main Channel	2313.068	50 YR	60% PR	538	147.55	150.09	150.83	152.65	0.108746	12.88	43	29.89	1.81	9.5	10.53
Main Channel	2313.068	100 YR	60% PR	672	147.55	150.38	151.19	153.18	0.095392	13.51	51.72	30.07	1.75	9.83	10.95
Main Channel	2309.556	10 YR	60% PR	343	147.55	149.93	150.25	151.22	0.061981	9.12	38.69	30.39	1.35	4.8	5.45
Main Channel	2309.556	50 YR	60% PR	538	147.55	150.38	150.83	152.16	0.060406	10.79	52.28	30.64	1.39	6.13	6.97
Main Channel	2309.556	100 YR	60% PR	672	147.55	150.67	151.2	152.72	0.057625	11.6	61.2	30.76	1.39	6.72	7.68
Main Channel	2307.988	10 YR	60% PR	343	146.53	148.57	149.26	150.96	0.172113	12.41	27.68	26.79	2.13	10.89	11.18
Main Channel	2307.988	50 YR	60% PR	538	146.53	149.01	149.87	151.92	0.131733	13.7	39.73	28	1.98	11.28	12.13
Main Channel	2307.988	100 YR	60% PR	672	146.53	149.29	150.24	152.49	0.115417	14.38	47.68	28.88	1.9	11.4	12.62
Main Channel	2304.475	10 YR	60% PR	343	146.55	148.84	149.24	150.3	0.082453	9.7	35.73	30.14	1.52	5.99	6.43
Main Channel	2304.475	50 YR	60% PR	538	146.55	149.21	149.83	151.33	0.085269	11.72	46.97	30.44	1.62	7.93	8.6
Main Channel	2304.475	100 YR	60% PR	672	146.55	149.44	150.16	151.96	0.085015	12.78	54.07	30.61	1.65	8.96	9.8
Main Channel	2304 10+27.24	10 YR	EX	343	146.45	149.3	149.3	150.18	0.019567	7.52	46.63	29.3	0.99	1.88	2.13
Main Channel	2304 10+27.24	50 YR	EX	538	146.45	149.92	149.92	151.08	0.017662	8.71	65.16	30.99	0.99	2.22	2.58
Main Channel	2304 10+27.24	100 YR	EX	672	146.45	150.44	150.31	151.64	0.014111	8.87	81.75	32.6	0.91	2.1	2.51
Main Channel	2292.245	10 YR	60% PR	343	145.91	147.62	148.32	150	0.141409	12.38	28.45	27.65	1.98	8.98	10.61
Main Channel	2292.245	50 YR	60% PR	538	145.91	148.06	148.93	151.04	0.1197	14	41.47	30.54	1.92	9.93	12.23
Main Channel	2292.245	100 YR	60% PR	672	145.91	148.32	149.31	151.68	0.11214	14.93	49.44	30.75	1.9	10.89	13.26
Main Channel	2292	10 YR	EX	343	145.38	149.04		149.36	0.003691	4.55	77.65	27.91	0.46	0.59	0.68
Main Channel	2292	50 YR	EX	538	145.38	150.08		150.51	0.00332	5.27	107.81	29.98	0.46	0.67	0.82
Main Channel	2292	100 YR	EX	672	145.38	150.72		151.21	0.003168	5.67	127.2	31.46	0.46	0.72	0.91
Main Channel	2290	10 YR	60% PR	343	144.79	148.36	147.39	148.72	0.007254	4.89	74.81	30.2	0.52	1.04	1.25
Main Channel	2290	50 YR	60% PR	538	144.79	147.07	148.03	150.35	0.147293	14.56	37.39	26.43	2.09	12.63	13.66
Main Channel	2290	100 YR	60% PR	672	144.79	147.32	148.4	151.03	0.135106	15.49	44.31	27.47	2.06	13.1	14.67
Main Channel	2288	10 YR	60% PR	343	144.05	148.39		148.68	0.004904	4.4	84.27	30.17	0.43	0.78	0.97
Main Channel	2288	50 YR	60% PR	538	144.05	149.17	147.7	149.62	0.005714	5.49	108.01	30.57	0.48	1.12	1.4
Main Channel	2288	100 YR	60% PR	672	144.05	149.64	148.1	150.19	0.00609	6.1	122.46	30.81	0.51	1.31	1.67
Main Channel	2286.217	10 YR	60% PR	343	144	148.38		148.65	0.004206	4.2	87.46	29.58	0.4	0.72	0.87
Main Channel	2286.217	50 YR	60% PR	538	144	149.16		149.58	0.00511	5.31	110.6	30	0.46	1.05	1.3
Main Channel	2286.217	100 YR	60% PR	672	144	149.62		150.15	0.005548	5.94	124.7	30.28	0.49	1.25	1.57
Main Channel	2280	10 YR	60% PR	343	144.78	148.28		148.61	0.006304	4.64	77.32	29.72	0.48	0.96	1.12
Main Channel	2280	50 YR	60% PR	538	144.78	149.04		149.54	0.007006	5.71	100.09	30.17	0.53	1.32	1.57
Main Channel	2280	100 YR	60% PR	672	144.78	149.5		150.1	0.007296	6.31	114.07	30.45	0.55	1.52	1.84
Main Channel	2279	10 YR	EX	343	145.56	148.09	148.09	149.19	0.019094	8.48	42.87	21.39	0.99	2.24	2.66
Main Channel	2279	50 YR	EX	538	145.56	148.87	148.87	150.32	0.017145	9.78	60.35	23.26	0.99	2.55	3.21
Main Channel	2279	100 YR	EX	672	145.56	149.36	149.36	151.01	0.01612	10.47	71.96	24.41	0.98	2.7	3.5
Main Channel	2275	10 YR	60% PR	343	145.28	148.06		148.55	0.008507	5.63	61.82	30.04	0.67	1.02	1.12
Main Channel	2275	50 YR	60% PR	538	145.28	148.81		149.47	0.007721	6.53	85	30.93	0.67	1.21	1.37
Main Channel	2275	100 YR	60% PR	672	145.28	149.28		150.04	0.007348	7.03	99.58	31.31	0.67	1.31	1.51
Main Channel	2264.664	10 YR	60% PR	343	144.88	147.46	147.46	148.36	0.019172	7.68	47.45	28.57	0.99	1.91	2.18
Main Channel	2264.664	50 YR	60% PR	538	144.88	148.09	148.09	149.29	0.01751	8.91	65.75	29.78	1	2.28	2.67
Main Channel	2264.664	100 YR	60% PR	672	144.88	148.47	148.47	149.86	0.016674	9.58	77.43	30.51	1	2.47	2.94
Main Channel	2249.758	10 YR	60% PR	343	144.58	146.82	147.02	148	0.027688	8.74	40.54	25.84	1.18	2.61	2.91
Main Channel	2249.758	50 YR	60% PR	538	144.58	147.46	147.68	148.96	0.023334	9.91	57.64	27.76	1.14	2.88	3.36

Main Channel			2249.758	100 YR	60% PR	672	144.58	147.85	148.1	149.55	0.021547	10.56	68.76	28.94	1.12	3.03	3.62
Main Channel			2248	10 YR	EX	343	144.88	147.49	147.49	148.38	0.020392	7.65	48.38	30.85	0.99	1.93	2.34
Main Channel			2248	50 YR	EX	538	144.88	148.14	148.14	149.29	0.017963	8.75	69.76	34.94	0.97	2.16	2.78
Main Channel			2248	100 YR	EX	672	144.88	148.52	148.52	149.83	0.017093	9.38	83.45	36.59	0.97	2.34	3.05
Main Channel	2148	11+94.00		10 YR	60% PR	343	141.46	144.88	144.33	145.6	0.009309	6.82	51.48	20.37	0.72	1.34	1.53
Main Channel	2148	11+94.00		50 YR	60% PR	538	141.46	145.81	145.13	146.78	0.008609	7.96	71.42	22.51	0.73	1.53	1.88
Main Channel	2148	11+94.00		100 YR	60% PR	672	141.46	146.38	145.61	147.5	0.00823	8.56	84.7	23.8	0.73	1.62	2.08
Main Channel	2131	11+94.00		10 YR	EX	343	141.46	144.67		145.51	0.011668	7.41	47.32	19.96	0.81	1.59	1.83
Main Channel	2131	11+94.00		50 YR	EX	538	141.46	145.42	145.13	146.64	0.012131	8.94	62.88	21.59	0.86	1.99	2.45
Main Channel	2131	11+94.00		100 YR	EX	672	141.46	145.86	145.62	147.32	0.01247	9.83	72.51	22.62	0.89	2.23	2.84
Main Channel	2082	12+60.00		10 YR	60% PR	343	140.68	144.59		145.05	0.005504	5.46	63.66	23.05	0.56	0.86	0.96
Main Channel	2082	12+60.00		50 YR	60% PR	538	140.68	145.63		146.25	0.004953	6.32	89.09	25.61	0.55	0.96	1.16
Main Channel	2082	12+60.00		100 YR	60% PR	672	140.68	146.27		146.98	0.004727	6.8	105.84	27.78	0.55	1	1.28
Main Channel	2065	12+60.00		10 YR	EX	343	140.68	144.02		144.77	0.010168	6.95	50.89	21.62	0.75	1.37	1.6
Main Channel	2065	12+60.00		50 YR	EX	538	140.68	144.76	144.37	145.84	0.010781	8.43	67.51	23.44	0.81	1.75	2.17
Main Channel	2065	12+60.00		100 YR	EX	672	140.68	145.18	144.82	146.49	0.011253	9.31	77.57	24.48	0.84	2	2.55
Main Channel	2038	13+04.00		10 YR	60% PR	343	140.42	144.4		144.84	0.003973	5.43	71.46	24.6	0.5	0.66	0.88
Main Channel	2038	13+04.00		50 YR	60% PR	538	140.42	145.41		146.05	0.00419	6.56	98.1	28.31	0.54	0.83	1.18
Main Channel	2038	13+04.00		100 YR	60% PR	672	140.42	146.01		146.77	0.00426	7.18	116.02	31	0.55	0.91	1.35
Main Channel	2021	13+04.00		10 YR	EX	343	140.42	143.71		144.34	0.007778	6.46	55.22	22.49	0.67	1.11	1.35
Main Channel	2021	13+04.00		50 YR	EX	538	140.42	144.46		145.38	0.008387	7.83	73.04	24.79	0.72	1.42	1.83
Main Channel	2021	13+04.00		100 YR	EX	672	140.42	144.9		145.99	0.008706	8.61	84.25	26.28	0.75	1.59	2.13
Main Channel	1942	14+00.00		10 YR	60% PR	343	139.56	144.27		144.53	0.001939	4.19	96.85	29	0.36	0.37	0.5
Main Channel	1942	14+00.00		50 YR	60% PR	538	139.56	145.29		145.69	0.002235	5.2	133.66	39.83	0.4	0.43	0.71
Main Channel	1942	14+00.00		100 YR	60% PR	672	139.56	145.93		146.39	0.0023	5.69	160.31	44.99	0.41	0.48	0.82
Main Channel			1925.537	10 YR	60% PR	343	139.62	144.14		144.48	0.004092	4.73	82.1	24.21	0.41	0.74	1.03
Main Channel			1925.537	50 YR	60% PR	538	139.62	145.1		145.62	0.004957	5.97	107.62	30.17	0.46	0.95	1.54
Main Channel			1925.537	100 YR	60% PR	672	139.62	145.68		146.32	0.005292	6.62	126.66	35.8	0.49	1.01	1.83
Main Channel	1925	14+00.00		10 YR	EX	343	139.56	142.2	142.2	143.2	0.018696	8.06	43.42	22.96	0.99	2.08	2.33
Main Channel	1925	14+00.00		50 YR	EX	538	139.56	142.91	142.91	144.23	0.016779	9.3	60.37	24.83	0.98	2.37	2.81
Main Channel	1925	14+00.00		100 YR	EX	672	139.56	143.35	143.35	144.85	0.015709	9.94	71.7	26.06	0.98	2.49	3.06
Main Channel			1916.562	10 YR	60% PR	343	141	143.41	143.24	144.34	0.024226	7.8	46.19	21.47	0.89	2.88	3.41
Main Channel			1916.562	50 YR	60% PR	538	141	144.01	144.01	145.44	0.027867	9.71	59.41	22.7	0.99	3.95	4.91
Main Channel			1916.562	100 YR	60% PR	672	141	144.45	144.45	146.12	0.027242	10.52	69.64	23.95	1	4.26	5.5
Main Channel			1904	10 YR	EX	343	137.65	141.2	141.2	142.17	0.025181	7.9	43.51	23.12	1	2.71	2.82
Main Channel			1904	50 YR	EX	538	137.65	141.89	141.89	143.18	0.022414	9.13	60.03	24.87	0.99	3.06	3.4
Main Channel			1904	100 YR	EX	672	137.65	142.29	142.29	143.79	0.021586	9.86	70.31	25.92	1	3.29	3.78
Main Channel			1901.692	10 YR	60% PR	343	141	142.97	142.97	143.93	0.032122	7.9	44.71	24.42	0.99	3.33	3.73
Main Channel			1901.692	50 YR	60% PR	538	141	143.44	143.65	144.96	0.038302	9.95	56.35	25.24	1.13	4.76	5.51
Main Channel			1901.692	100 YR	60% PR	672	141	143.71	143.9	145.61	0.041519	11.13	63.37	25.72	1.19	5.63	6.65
Main Channel			1899.055	10 YR	60% PR	343	140	143.08	142.76	143.78	0.018913	6.76	52.89	25.61	0.79	2.25	2.59
Main Channel			1899.055	50 YR	60% PR	538	140	143.06	143.44	144.82	0.048022	10.71	52.35	25.57	1.26	5.67	6.51
Main Channel			1899.055	100 YR	60% PR	672	140	144.43	143.81	145.41	0.014547	8.1	96.93	43.45	0.75	1.87	3.18
Main Channel			1896.671	10 YR	60% PR	343	140	142.76	142.76	143.7	0.030948	7.83	45.65	26.11	0.99	3.18	3.65
Main Channel			1896.671	50 YR	60% PR	538	140	143.13	143.4	144.73	0.041898	10.24	55.47	26.95	1.19	5	5.88
Main Channel			1896.671	100 YR	60% PR	672	140	143.62	143.62	145.29	0.03385	10.47	69.26	29.64	1.1	4.54	5.77
Main Channel			1894.245	10 YR	60% PR	343	139	141.06	141.75	143.42	0.148019	12.31	27.87	23.67	2	10.5	10.64
Main Channel			1894.245	50 YR	60% PR	538	139	141.55	142.41	144.44	0.114997	13.65	39.67	24.8	1.87	10.87	11.66
Main Channel			1894.245	100 YR	60% PR	672	139	141.88	142.82	145.01	0.098055	14.21	47.94	25.55	1.78	10.75	11.9
Main Channel			1891.769	10 YR	60% PR	343	139	141.29	141.76	142.95	0.079379	10.36	33.81	25.41	1.51	6.35	7.02
Main Channel			1891.769	50 YR	60% PR	538	139	141.77	142.42	144.03	0.074134	12.11	46.28	26.45	1.53	7.65	8.73
Main Channel			1891.769	100 YR	60% PR	672	139	142.1	142.75	144.63	0.067843	12.86	55.07	27.15	1.51	8.02	9.34
Main Channel	1888.732	14+54.00		10 YR	60% PR	343	138	140.05	140.76	142.45	0.145919	12.43	27.7	23.67	1.99	10.31	10.75
Main Channel	1888.732	14+54.00		50 YR	60% PR	538	138	140.52	141.43	143.56	0.119427	14	39.09	24.84	1.9	11.14	12.22
Main Channel	1888.732	14+54.00		100 YR	60% PR	672	138	140.83	141.84	144.19	0.106696	14.77	46.71	25.59	1.85	11.42	12.88
Main Channel			1886.455	10 YR	60% PR	343	138	140.25	140.74	141.99	0.092798	10.59	32.5	24.64	1.6	7.33	7.55
Main Channel			1886.455	50 YR	60% PR	538	138	140.66	141.41	143.16	0.093559	12.7	42.91	25.67	1.68	9.22	9.94
Main Channel			1886.455	100 YR	60% PR	672	138	140.94	141.79	143.83	0.089026	13.66	50.2	26.37	1.68	9.89	10.95
Main Channel			1884.334	10 YR	60% PR	343	137	139	139.76	141.63	0.168162	13.02	26.41	23.16	2.13	11.62	11.94
Main Channel			1884.334	50 YR	60% PR	538	137	139.45	140.43	142.83	0.140707	14.76	36.82	23.79	2.05	12.9	13.79

Main Channel			1884.334	100 YR	60% PR	672	137	139.73	140.86	143.52	0.126903	15.63	43.68	24.2	2	13.38	14.65
Main Channel			1882.063	10 YR	60% PR	343	137	139.19	139.75	141.12	0.103657	11.17	30.86	24.03	1.71	8	8.41
Main Channel			1882.063	50 YR	60% PR	538	137	139.59	140.41	142.37	0.104515	13.39	40.72	24.62	1.79	10.19	11.06
Main Channel			1882.063	100 YR	60% PR	672	137	139.86	140.83	143.1	0.101022	14.48	47.31	25.01	1.81	11.13	12.33
Main Channel			1878.929	10 YR	60% PR	343	136	138	138.75	140.64	0.172328	13.05	26.29	23.03	2.15	11.88	12.06
Main Channel			1878.929	50 YR	60% PR	538	136	138.42	139.43	141.91	0.150163	15	36.01	23.42	2.11	13.61	14.35
Main Channel			1878.929	100 YR	60% PR	672	136	138.68	139.85	142.66	0.138934	16.01	42.27	23.77	2.08	14.38	15.52
Main Channel			1877	10 YR	EX	343	135.75	139.56	139.56	140.47	0.07327	7.66	44.84	25.36	1	7.47	7.66
Main Channel			1877	50 YR	EX	538	135.75	140.21	140.21	141.41	0.064033	8.79	62.03	27.16	0.99	8.34	9.11
Main Channel			1877	100 YR	EX	672	135.75	140.59	140.59	141.98	0.061767	9.49	72.45	28.25	0.99	8.98	10.13
Main Channel			1876.626	10 YR	60% PR	343	136	138.18	138.76	140.14	0.104599	11.21	30.61	23.06	1.71	8.25	8.48
Main Channel			1876.626	50 YR	60% PR	538	136	138.59	139.43	141.42	0.107038	13.52	40.02	23.88	1.81	10.48	11.28
Main Channel			1876.626	100 YR	60% PR	672	136	138.84	139.85	142.19	0.105462	14.7	46.2	24.46	1.84	11.53	12.75
Main Channel			1874.49	10 YR	60% PR	343	135	136.97	137.75	139.76	0.189521	13.42	25.57	22.98	2.24	12.72	12.88
Main Channel			1874.49	50 YR	60% PR	538	135	137.37	138.42	141.06	0.164714	15.4	35.02	23.23	2.2	14.6	15.29
Main Channel			1874.49	100 YR	60% PR	672	135	137.63	138.85	141.84	0.152757	16.46	41.02	23.39	2.17	15.5	16.57
Main Channel			1871.866	10 YR	60% PR	343	135	137.17	137.75	139.17	0.107919	11.33	30.31	23.07	1.74	8.43	8.68
Main Channel			1871.866	50 YR	60% PR	538	135	137.56	138.42	140.48	0.112133	13.72	39.35	23.33	1.85	10.98	11.67
Main Channel			1871.866	100 YR	60% PR	672	135	137.81	138.85	141.28	0.111168	14.95	45.18	23.51	1.88	12.23	13.26
Main Channel			1869.26	10 YR	60% PR	343	134	135.97	136.75	138.72	0.183724	13.3	25.79	22.94	2.21	12.46	12.61
Main Channel			1869.26	50 YR	60% PR	538	134	136.37	137.42	140.06	0.164013	15.39	34.99	23.07	2.2	14.6	15.26
Main Channel			1869.26	100 YR	60% PR	672	134	136.63	137.84	140.86	0.154188	16.52	40.78	23.16	2.18	15.66	16.7
Main Channel			1866.814	10 YR	60% PR	343	134	136.17	136.74	138.15	0.110903	11.29	30.37	23.03	1.73	8.67	8.69
Main Channel			1866.814	50 YR	60% PR	538	134	136.55	137.42	139.5	0.12108	13.8	39.06	23.33	1.87	11.76	12
Main Channel			1866.814	100 YR	60% PR	672	134	136.79	137.83	140.32	0.122832	15.08	44.7	23.52	1.91	13.36	13.77
Main Channel			1862.54	10 YR	60% PR	343	133	135.03	135.76	137.53	0.161585	12.68	27.05	23	2.06	11.36	11.36
Main Channel			1862.54	50 YR	60% PR	538	133	137.83	136.42	138.36	0.007645	5.85	94.2	25.87	0.52	1.45	1.66
Main Channel			1862.54	100 YR	60% PR	672	133	138.72	136.82	139.26	0.006033	5.94	117.95	27.69	0.48	1.31	1.6
Main Channel			1862	10 YR	EX	343	135.07	138.97		139.49	0.010958	5.78	60.34	21.93	0.58	1.69	1.91
Main Channel			1862	50 YR	EX	538	135.07	139.8		140.57	0.011875	7.07	79.59	24.2	0.63	2.16	2.64
Main Channel			1862	100 YR	EX	672	135.07	140.29		141.22	0.01234	7.8	91.77	25.69	0.66	2.43	3.08
Main Channel			1846	10 YR	EX	343	135.1	138.08	138.08	139.13	0.037802	8.22	41.92	21.17	1	4.37	4.63
Main Channel			1846	50 YR	EX	538	135.1	138.83	138.83	140.21	0.033201	9.45	58.52	23.32	0.99	4.79	5.53
Main Channel			1846	100 YR	EX	672	135.1	139.28	139.28	140.86	0.031164	10.11	69.45	24.64	0.98	5.01	6.02
Main Channel			1834	10 YR	60% PR	343	130	136.53	133.04	136.7	0.001374	3.52	130.08	26.35	0.25	0.34	0.5
Main Channel			1834	50 YR	60% PR	538	130	137.93		138.19	0.001641	4.42	168.21	28.18	0.29	0.47	0.74
Main Channel			1834	100 YR	60% PR	672	130	138.79		139.11	0.001746	4.9	192.81	29.01	0.3	0.54	0.88
Main Channel			1820	10 YR	EX	343	133.09	136.31	136.18	137.38	0.023733	8.31	42.92	19.24	0.91	3.06	3.63
Main Channel			1820	50 YR	EX	538	133.09	137.04	137.04	138.58	0.024942	10.06	57.59	21.17	0.98	3.86	4.89
Main Channel			1820	100 YR	EX	672	133.09	137.56	137.56	139.31	0.023274	10.73	69.15	22.57	0.97	4.02	5.3
Main Channel	1818	15+20.00		10 YR	60% PR	343	131.25	136.44		136.67	0.002313	3.82	96.67	25.47	0.31	0.47	0.65
Main Channel	1818	15+20.00		50 YR	60% PR	538	131.25	137.86		138.16	0.002062	4.31	133.86	26.83	0.31	0.52	0.76
Main Channel	1818	15+20.00		100 YR	60% PR	672	131.25	138.74		139.08	0.001926	4.56	157.8	27.63	0.31	0.54	0.81
Main Channel			1808.69	10 YR	60% PR	343	132.66	135.79		136.56	0.016511	7.25	54.93	23	0.77	2.19	2.78
Main Channel			1808.69	50 YR	60% PR	538	132.66	137.36		138.08	0.008606	7.08	92.75	25.16	0.6	1.66	2.28
Main Channel			1808.69	100 YR	60% PR	672	132.66	138.26		139	0.006991	7.24	115.82	26.14	0.56	1.57	2.23
Main Channel	1805	15+20.00		10 YR	EX	343	132.66	135.78	135.78	136.94	0.037167	8.65	40.39	18.72	0.99	4.62	5.21
Main Channel	1805	15+20.00		50 YR	EX	538	132.66	136.62	136.62	138.13	0.032739	9.92	57.05	20.88	0.97	5.07	6.21
Main Channel	1805	15+20.00		100 YR	EX	672	132.66	137.32	137.12	138.86	0.02607	10.09	72.17	22.59	0.9	4.65	6.01
Main Channel			1795	10 YR	60% PR	343	131.28	135.89		136.37	0.004347	5.58	64.15	19.66	0.51	0.77	0.93
Main Channel			1795	50 YR	60% PR	538	131.28	137.38		137.97	0.003438	6.19	95.79	22.66	0.48	0.76	1.03
Main Channel			1795	100 YR	60% PR	672	131.28	138.26		138.91	0.003156	6.57	116.49	24.5	0.47	0.78	1.1
Main Channel			1787	10 YR	60% PR	343	130.9	135.77		136.33	0.004145	6.03	63.27	18.02	0.51	0.75	1.04
Main Channel			1787	50 YR	60% PR	538	130.9	137.18		137.92	0.003845	7.01	90.46	20.55	0.52	0.85	1.28
Main Channel			1787	100 YR	60% PR	672	130.9	138.01		138.87	0.00375	7.58	108.18	22.24	0.52	0.91	1.42
Main Channel			1785	10 YR	EX	343	131.45	135.38		136.18	0.009913	7.17	48.84	18.38	0.74	1.46	1.67
Main Channel			1785	50 YR	EX	538	131.45	136.7		137.61	0.006969	7.69	75.03	21.26	0.66	1.33	1.7
Main Channel			1785	100 YR	EX	672	131.45	137.48		138.47	0.006112	8.06	92.33	22.97	0.63	1.31	1.76
Main Channel	1779	15+59.00		10 YR	60% PR	343	130.81	135.76		136.29	0.004527	5.87	62.17	18.68	0.52	0.8	1.02
Main Channel	1779	15+59.00		50 YR	60% PR	538	130.81	137.2		137.87	0.003879	6.66	91.36	21.72	0.5	0.85	1.18

Main Channel	1779	15+59.00		100 YR	60% PR	672	130.81	138.05		138.81	0.003667	7.13	110.58	23.71	0.5	0.88	1.29
Main Channel			1774	10 YR	EX	343	130.96	135.44		136.04	0.005223	6.22	58.58	17.72	0.56	0.9	1.15
Main Channel			1774	50 YR	EX	538	130.96	136.71		137.52	0.004912	7.27	82.39	19.89	0.56	1.03	1.43
Main Channel			1774	100 YR	EX	672	130.96	137.46		138.4	0.004791	7.87	97.88	21.22	0.57	1.1	1.6
Main Channel			1770	10 YR	60% PR	343	130.59	134.58	134.58	136.12	0.015375	10.56	45.49	17.33	0.98	2.23	3.33
Main Channel			1770	50 YR	60% PR	538	130.59	135.7	135.7	137.68	0.014228	12.18	66.38	19.96	0.99	2.56	4.05
Main Channel			1770	100 YR	60% PR	672	130.59	136.4	136.4	138.61	0.013459	12.99	80.86	21.64	0.99	2.69	4.4
Main Channel	1766	15+59.00		10 YR	EX	343	130.81	134.44	134.44	135.88	0.020669	9.76	39.36	15.85	0.98	2.81	3.78
Main Channel	1766	15+59.00		50 YR	EX	538	130.81	135.5	135.5	137.34	0.018221	11.16	57.37	18.14	0.97	3.08	4.48
Main Channel	1766	15+59.00		100 YR	EX	672	130.81	136.11	136.11	138.21	0.017524	11.99	68.86	19.42	0.97	3.28	4.94
Main Channel			1759	10 YR	EX	343	130.6	134.27	134.27	135.65	0.01738	9.48	39.01	16.44	0.98	2.29	2.92
Main Channel			1759	50 YR	EX	538	130.6	135.28	135.28	137.06	0.015254	10.85	56.75	18.77	0.97	2.51	3.46
Main Channel			1759	100 YR	EX	672	130.6	135.86	135.86	137.9	0.014644	11.66	68.09	20.1	0.97	2.67	3.82
Main Channel			1758	10 YR	60% PR	343	130.27	133.2	133.92	135.74	0.039691	13.38	33.39	17.98	1.5	4.31	6.02
Main Channel			1758	50 YR	60% PR	538	130.27	133.96	134.94	137.29	0.037499	15.55	47.68	19.51	1.52	5.22	7.44
Main Channel			1758	100 YR	60% PR	672	130.27	134.44	135.52	138.21	0.03592	16.67	57.19	20.46	1.52	5.63	8.17
Main Channel			1751	10 YR	60% PR	343	130.46	133.04	133.72	135.4	0.04155	12.89	34.53	20.19	1.52	4.22	5.76
Main Channel			1751	50 YR	60% PR	538	130.46	133.62	134.62	137.01	0.044981	15.64	46.59	21.41	1.64	5.71	7.85
Main Channel			1751	100 YR	60% PR	672	130.46	134.01	135.19	137.92	0.044337	16.92	55.06	22.19	1.66	6.34	8.8
Main Channel			1746	10 YR	60% PR	343	130.34	132.64	133.37	135.14	0.049283	13.32	33.17	20.03	1.63	4.86	6.32
Main Channel			1746	50 YR	60% PR	538	130.34	133.22	134.27	136.74	0.050898	15.96	45.13	21.25	1.73	6.32	8.35
Main Channel			1746	100 YR	60% PR	672	130.34	133.6	134.8	137.65	0.049297	17.2	53.46	22	1.74	6.92	9.27
Main Channel			1744	10 YR	EX	343	130.36	133.5	133.5	134.67	0.017611	8.72	41.42	19.39	0.99	2.18	2.58
Main Channel			1744	50 YR	EX	538	130.36	134.34	134.34	135.89	0.015882	10.08	58.3	21.01	0.98	2.49	3.13
Main Channel			1744	100 YR	EX	672	130.36	134.84	134.84	136.63	0.015283	10.86	68.98	22	0.99	2.67	3.47
Main Channel	1738	16+00.00		10 YR	60% PR	343	130.16	131.89	132.68	134.59	0.084217	13.2	26.22	19.77	1.98	6.71	7.12
Main Channel	1738	16+00.00		50 YR	60% PR	538	130.16	132.32	133.44	136.16	0.083516	15.75	34.91	20.62	2.06	8.36	9.26
Main Channel	1738	16+00.00		100 YR	60% PR	672	130.16	132.6	133.92	137.08	0.080828	17.03	40.69	21.17	2.08	9.1	10.34
Main Channel	1725	16+00.00		10 YR	EX	343	130.16	132.67	132.67	133.72	0.026993	8.24	42.21	21.31	1	3.12	3.43
Main Channel	1725	16+00.00		10 YR	60% PR	343	129.69	132	132.37	133.67	0.031081	10.49	35.37	19.22	1.29	3.31	3.93
Main Channel	1725	16+00.00		50 YR	EX	538	130.16	133.41	133.41	134.81	0.024118	9.52	58.54	22.8	0.99	3.54	4.14
Main Channel	1725	16+00.00		50 YR	60% PR	538	129.69	132.49	133.2	135.12	0.036701	13.17	45.08	19.95	1.46	4.7	5.77
Main Channel	1725	16+00.00		100 YR	EX	672	130.16	133.96	133.86	135.47	0.02071	9.92	71.37	23.9	0.95	3.48	4.24
Main Channel	1725	16+00.00		100 YR	60% PR	672	129.69	132.82	133.71	136.01	0.03818	14.54	51.6	20.4	1.51	5.4	6.76
Main Channel			1710	10 YR	60% PR	343	129.37	131.33	131.8	133.12	0.044159	10.75	31.93	18.43	1.43	4.4	4.45
Main Channel			1710	50 YR	60% PR	538	129.37	131.82	132.58	134.5	0.047229	13.13	41.26	19.3	1.55	5.71	6.11
Main Channel			1710	100 YR	60% PR	672	129.37	132.11	133.06	135.38	0.049156	14.51	46.89	19.8	1.61	6.51	7.18
Main Channel			1697	10 YR	EX	343	129.38	132.29		133.03	0.010159	6.9	50.55	20.15	0.74	1.42	1.59
Main Channel			1697	50 YR	EX	538	129.38	133.3		134.25	0.008648	7.85	71.66	21.95	0.72	1.53	1.85
Main Channel			1697	100 YR	EX	672	129.38	133.92		135	0.007953	8.36	85.77	23.08	0.71	1.58	1.99
Main Channel			1684	10 YR	60% PR	343	128.62	131.97	131.34	132.73	0.008472	7.02	52.42	19.76	0.7	1.25	1.56
Main Channel			1684	50 YR	60% PR	538	128.62	132.9	132.2	133.97	0.00852	8.39	71.58	21.51	0.74	1.53	2.03
Main Channel			1684	100 YR	60% PR	672	128.62	133.52	132.72	134.74	0.008106	9	85.38	22.7	0.74	1.63	2.24
Main Channel			1671	10 YR	EX	343	128.62	132.16		132.78	0.006911	6.33	56.25	20.08	0.63	1.07	1.27
Main Channel			1671	50 YR	EX	538	128.62	133.17		134.02	0.006673	7.48	77.44	22	0.65	1.26	1.61
Main Channel			1671	100 YR	EX	672	128.62	133.79		134.79	0.006471	8.08	91.56	23.2	0.65	1.35	1.8
Main Channel	1655	16+83.00		10 YR	60% PR	343	128.38	131.87		132.45	0.007246	6.1	57.09	21.39	0.63	1.09	1.21
Main Channel	1655	16+83.00		50 YR	60% PR	538	128.38	132.9		133.66	0.006357	7.01	80.27	23.47	0.62	1.19	1.44
Main Channel	1655	16+83.00		100 YR	60% PR	672	128.38	133.59		134.43	0.005732	7.41	96.89	24.89	0.61	1.21	1.53
Main Channel	1642	16+83.00		10 YR	EX	343	128.38	131.94		132.58	0.00669	6.49	58.56	21.53	0.64	1.02	1.3
Main Channel	1642	16+83.00		50 YR	EX	538	128.38	132.97		133.84	0.006277	7.59	81.91	23.61	0.65	1.19	1.62
Main Channel	1642	16+83.00		100 YR	EX	672	128.38	133.61		134.6	0.006022	8.17	97.43	24.94	0.65	1.28	1.79
Main Channel			1623	10 YR	60% PR	343	127.94	131.73		132.22	0.005416	5.69	63.9	22.86	0.56	0.84	1.01
Main Channel			1623	50 YR	60% PR	538	127.94	132.79		133.45	0.004981	6.61	89.23	24.91	0.57	0.97	1.25
Main Channel			1623	100 YR	60% PR	672	127.94	133.49		134.24	0.004581	7.03	107.35	26.43	0.56	1	1.34
Main Channel			1610	10 YR	EX	343	127.94	131.89		132.35	0.004585	5.46	67.65	23.14	0.53	0.74	0.91
Main Channel			1610	50 YR	EX	538	127.94	132.98		133.6	0.004328	6.4	93.91	25.34	0.54	0.87	1.14
Main Channel			1610	100 YR	EX	672	127.94	133.65		134.36	0.004168	6.9	111.36	26.81	0.54	0.93	1.27
Main Channel	1598	17+40.00		10 YR	60% PR	343	127.92	131.6		132.08	0.005705	5.59	62.04	21.5	0.56	0.91	1
Main Channel	1598	17+40.00		50 YR	60% PR	538	127.92	132.68		133.32	0.00511	6.46	86.36	23.54	0.56	1.01	1.21
Main Channel	1598	17+40.00		100 YR	60% PR	672	127.92	133.4		134.12	0.004644	6.85	103.85	25.02	0.55	1.03	1.29

Main Channel	1585	17+40.00		10 YR	EX	343	127.92	131.67		132.22	0.005185	6.01	63.66	21.64	0.57	0.84	1.1
Main Channel	1585	17+40.00		50 YR	EX	538	127.92	132.69		133.46	0.005234	7.19	86.71	23.57	0.6	1.04	1.43
Main Channel	1585	17+40.00		100 YR	EX	672	127.92	133.32		134.23	0.005173	7.81	102	24.87	0.61	1.13	1.62
Main Channel	1479	18+59.00		10 YR	60% PR	343	126.81	130.11	129.77	131.1	0.011291	8.13	48.29	19.54	0.82	1.58	2.08
Main Channel	1479	18+59.00		50 YR	60% PR	538	126.81	131.32		132.49	0.008692	8.92	73.84	22.66	0.76	1.57	2.24
Main Channel	1479	18+59.00		100 YR	60% PR	672	126.81	132.23		133.41	0.006845	9.01	95.69	25.09	0.7	1.43	2.15
Main Channel	1466	18+59.00		10 YR	EX	343	126.81	130.74		131.27	0.013458	5.88	61.07	21.16	0.56	2.18	2.66
Main Channel	1466	18+59.00		50 YR	EX	538	126.81	131.8		132.52	0.01294	6.9	84.9	23.96	0.58	2.53	3.35
Main Channel	1466	18+59.00		100 YR	EX	672	126.81	132.49		133.3	0.01213	7.36	102.11	25.72	0.57	2.64	3.63
Main Channel	1438	19+00.00		10 YR	60% PR	343	126.56	129.99		130.65	0.006711	6.6	58.25	21.29	0.65	1.03	1.34
Main Channel	1438	19+00.00		50 YR	60% PR	538	126.56	131.33		132.1	0.005034	7.19	88.69	24.13	0.59	1.01	1.42
Main Channel	1438	19+00.00		100 YR	60% PR	672	126.56	132.27		133.08	0.004155	7.4	113.39	29.94	0.56	0.86	1.41
Main Channel	1425	19+00.00		10 YR	EX	343	126.56	130.31		130.76	0.010595	5.34	65.18	21.96	0.52	1.75	1.96
Main Channel	1425	19+00.00		50 YR	EX	538	126.56	131.44		132.02	0.009462	6.16	91.32	24.41	0.52	1.92	2.36
Main Channel	1425	19+00.00		100 YR	EX	672	126.56	132.18		132.83	0.008668	6.54	110.57	29.17	0.51	1.8	2.52
Main Channel	1404	19+34.13		10 YR	60% PR	343	126.34	129.95		130.39	0.005023	5.32	67.49	25.57	0.54	0.76	0.9
Main Channel	1404	19+34.13		50 YR	60% PR	538	126.34	131.4		131.88	0.003283	5.57	108.58	31.93	0.46	0.64	0.87
Main Channel	1404	19+34.13		100 YR	60% PR	672	126.34	132.41		132.87	0.002533	5.59	144.14	37.76	0.42	0.55	0.82
Main Channel	1391	19+34.13		10 YR	EX	343	126.34	129.97		130.42	0.009103	5.46	67.95	25.63	0.53	1.39	1.75
Main Channel	1391	19+34.13		50 YR	EX	538	126.34	131.18		131.73	0.007398	6.07	101.72	30.23	0.51	1.42	1.95
Main Channel	1391	19+34.13		100 YR	EX	672	126.34	131.97		132.56	0.006484	6.33	128.18	36.18	0.49	1.32	2.01
Main Channel	1333	20+05.00		10 YR	60% PR	343	125.94	129.66		130.03	0.004464	4.94	71.45	27.05	0.51	0.69	0.78
Main Channel	1333	20+05.00		50 YR	60% PR	538	125.94	131.27		131.64	0.002475	4.93	119.39	33.62	0.41	0.51	0.67
Main Channel	1333	20+05.00		100 YR	60% PR	672	125.94	132.32		132.69	0.001876	4.93	159.01	41.28	0.37	0.42	0.63
Main Channel	1320	20+05.00		10 YR	EX	343	125.94	129.51		129.96	0.004857	5.91	67.55	26.67	0.56	0.72	1.05
Main Channel	1320	20+05.00		50 YR	EX	538	125.94	130.94		131.37	0.003088	5.93	108.49	31.46	0.47	0.61	0.94
Main Channel	1320	20+05.00		100 YR	EX	672	125.94	131.8		132.24	0.002571	6.02	138.27	37.92	0.44	0.54	0.92
Main Channel			1294	10 YR	60% PR	343	125.44	129.52		129.88	0.0033	4.8	77.17	26.54	0.45	0.56	0.69
Main Channel			1294	50 YR	60% PR	538	125.44	131.18		131.55	0.002123	4.99	126.21	32.85	0.39	0.47	0.66
Main Channel			1294	100 YR	60% PR	672	125.44	132.24		132.62	0.00169	5.05	176.81	76.58	0.36	0.23	0.63
Main Channel			1273	10 YR	60% PR	343	125.39	129.48		129.8	0.002989	4.58	79.7	27.04	0.43	0.5	0.63
Main Channel			1273	50 YR	60% PR	538	125.39	131.16		131.5	0.001899	4.74	132.42	45.13	0.37	0.32	0.59
Main Channel			1273	100 YR	60% PR	672	125.39	132.25		132.57	0.00144	4.69	208.32	93.68	0.33	0.19	0.55
Main Channel			1264	10 YR	60% PR	343	125.13	129.28		129.75	0.004066	5.61	67.76	22.01	0.51	0.67	0.92
Main Channel			1264	50 YR	60% PR	538	125.13	130.94		131.46	0.0028	5.95	109.99	29.43	0.45	0.55	0.92
Main Channel			1264	100 YR	60% PR	672	125.13	132.05		132.54	0.002116	5.86	180.71	88.99	0.41	0.25	0.84
Main Channel			1257	10 YR	EX	343	125.38	129.1		129.63	0.005282	6.16	74.47	28.43	0.58	0.82	1.14
Main Channel			1257	50 YR	EX	538	125.38	130.59		131.15	0.003638	6.48	121.91	35.58	0.51	0.73	1.12
Main Channel			1257	100 YR	EX	672	125.38	131.45		132.04	0.003151	6.71	155.14	40.7	0.49	0.7	1.14
Main Channel			1249	10 YR	EX	343	125.01	129.18		129.55	0.003467	5.42	76.25	27.69	0.48	0.56	0.84
Main Channel			1249	50 YR	EX	538	125.01	130.7		131.06	0.00242	5.63	124.04	36	0.43	0.49	0.82
Main Channel			1249	100 YR	EX	672	125.01	131.58		131.96	0.002126	5.83	158.62	44.71	0.41	0.44	0.83
Main Channel			1248	10 YR	60% PR	343	124.15	128.43		129.37	0.013089	7.9	47.91	14.4	0.7	2.05	2.98
Main Channel			1248	50 YR	60% PR	538	124.15	129.54		130.89	0.01362	9.51	64.75	15.76	0.74	2.51	3.98
Main Channel			1248	100 YR	60% PR	672	124.15	130.21		131.8	0.013789	10.39	75.6	16.65	0.76	2.75	4.56
Main Channel			1241	10 YR	60% PR	343	123.75	128.4		129.09	0.010205	6.72	53.79	15.55	0.59	1.67	2.2
Main Channel			1241	50 YR	60% PR	538	123.75	129.53		130.53	0.010745	8.13	72.3	17.2	0.63	2.06	2.96
Main Channel			1241	100 YR	60% PR	672	123.75	130.21		131.42	0.011037	8.94	84.45	20.2	0.65	2.13	3.44
Main Channel			1240	10 YR	EX	343	124.37	128.45		129.24	0.006932	7.42	59.75	22.26	0.67	1.06	1.61
Main Channel			1240	50 YR	EX	538	124.37	129.59		130.62	0.006581	8.62	86.63	24.91	0.69	1.28	1.99
Main Channel			1240	100 YR	EX	672	124.37	130.2		131.42	0.006711	9.41	102.29	26.28	0.71	1.44	2.28
Main Channel			1236	10 YR	60% PR	343	123.49	128.37		128.95	0.010259	6.48	63.47	17.86	0.55	1.8	2.08
Main Channel			1236	50 YR	60% PR	538	123.49	129.51		130.34	0.012014	7.8	84.74	19.57	0.59	2.48	2.86
Main Channel			1236	100 YR	60% PR	672	123.49	130.19		131.17	0.012952	8.52	99.02	21.61	0.61	2.81	3.33
Main Channel			1235	10 YR	EX	343	124.02	128.45		129.05	0.004808	6.39	62.42	20.67	0.56	0.79	1.17
Main Channel			1235	50 YR	EX	538	124.02	129.59		130.42	0.004864	7.6	87.59	23.41	0.59	0.98	1.53
Main Channel			1235	100 YR	EX	672	124.02	130.21		131.2	0.005079	8.37	102.44	25.04	0.62	1.11	1.78
Main Channel			1233	10 YR	60% PR	343	123.49	128.34		128.9	0.009481	6.23	64.16	18.55	0.54	1.65	1.93
Main Channel			1233	50 YR	60% PR	538	123.49	129.48		130.26	0.010666	7.47	86.27	20.23	0.57	2.2	2.61
Main Channel			1233	100 YR	60% PR	672	123.49	130.16		131.08	0.010783	8.15	100.41	21.04	0.59	2.43	2.98

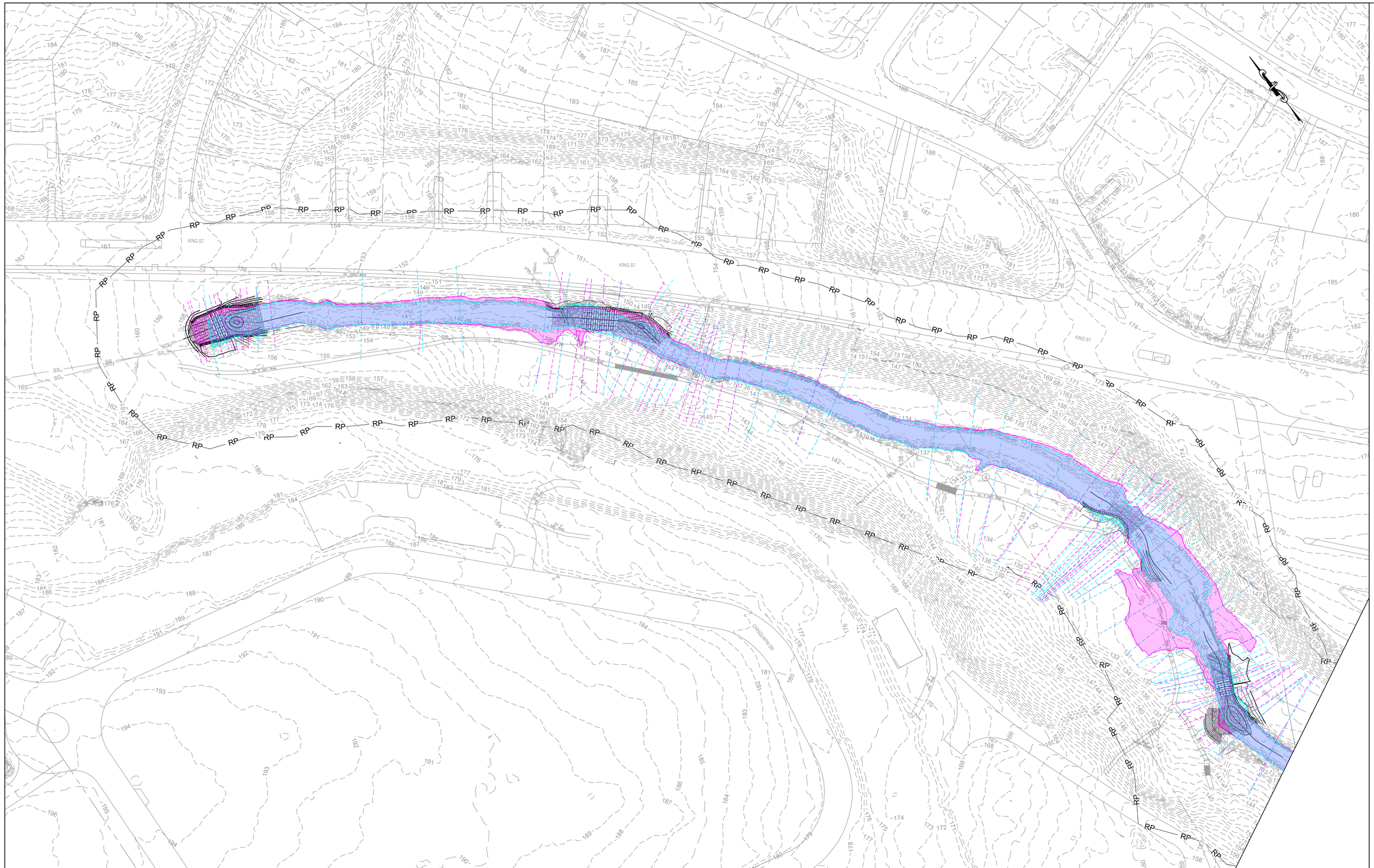
Main Channel			1228	10 YR	EX	343	123.74	128.46		128.89	0.003414	5.45	69.92	21.4	0.48	0.61	0.85
Main Channel			1228	10 YR	60% PR	343	123.53	128.31		128.85	0.006763	6.07	65.01	19.22	0.53	1.16	1.7
Main Channel			1228	50 YR	EX	538	123.74	129.61		130.22	0.00352	6.53	96.3	24.39	0.5	0.75	1.12
Main Channel			1228	50 YR	60% PR	538	123.53	129.44		130.22	0.007142	7.33	87.77	20.92	0.56	1.46	2.29
Main Channel			1228	100 YR	EX	672	123.74	130.23		130.98	0.00372	7.24	112.2	28.32	0.53	0.8	1.33
Main Channel			1228	100 YR	60% PR	672	123.53	130.12		131.04	0.007255	8.01	102.84	26.13	0.58	1.42	2.63
Main Channel			1222	10 YR	EX	343	123.47	128.33		128.83	0.003827	5.99	76.85	23.93	0.51	0.69	1
Main Channel			1222	10 YR	60% PR	343	123.65	128.28		128.82	0.00434	6.17	73.34	23.91	0.53	0.74	1.08
Main Channel			1222	50 YR	EX	538	123.47	129.37		130.12	0.004344	7.37	103.22	26.66	0.56	0.93	1.42
Main Channel			1222	50 YR	60% PR	538	123.65	129.41		130.17	0.004503	7.38	102.34	26.7	0.57	0.94	1.43
Main Channel			1222	100 YR	EX	672	123.47	129.92		130.85	0.004752	8.24	118.48	28.17	0.6	1.1	1.71
Main Channel			1222	100 YR	60% PR	672	123.65	130.09		131	0.004641	8.13	121.16	31.1	0.59	0.98	1.67
Main Channel			1215	10 YR	60% PR	343	123.8	128.26		128.74	0.004217	5.67	73.57	28.47	0.51	0.63	0.95
Main Channel			1215	50 YR	60% PR	538	123.8	129.41		130.02	0.004008	6.57	111.3	35.98	0.51	0.72	1.17
Main Channel			1215	100 YR	60% PR	672	123.8	130.11		130.79	0.003872	7.03	138.04	41.13	0.52	0.76	1.28
Main Channel			1214	10 YR	EX	343	123.53	128.33		128.69	0.00302	5.22	75.55	24.5	0.45	0.53	0.77
Main Channel			1214	50 YR	EX	538	123.53	129.39		129.89	0.003188	6.24	103.25	27.54	0.48	0.67	1.02
Main Channel			1214	100 YR	EX	672	123.53	129.96		130.56	0.003386	6.88	119.35	29.01	0.5	0.78	1.2
Main Channel			1211	10 YR	60% PR	343	123.57	128.25		128.71	0.003865	5.63	77.38	30.74	0.49	0.57	0.92
Main Channel			1211	50 YR	60% PR	538	123.57	129.4		129.99	0.003736	6.53	117.45	37.92	0.5	0.68	1.14
Main Channel			1211	100 YR	60% PR	672	123.57	130.1		130.76	0.003631	7	145.47	42.85	0.51	0.72	1.25
Main Channel	1209	21+16.00		10 YR	EX	343	123.65	128.12	126.93	128.6	0.004296	6.01	70.34	24.77	0.53	0.7	1.04
Main Channel	1209	21+16.00		50 YR	EX	538	123.65	129.04		129.74	0.004927	7.39	94.94	28.41	0.59	0.94	1.47
Main Channel	1209	21+16.00		100 YR	EX	672	123.65	129.48		130.36	0.005601	8.34	107.64	29.68	0.63	1.15	1.82
Main Channel			1198	10 YR	EX	343	123.57	126.97	126.91	128.12	0.013816	8.91	44.35	22.06	0.9	1.62	2.52
Main Channel			1198	50 YR	EX	538	123.57	128.12	127.82	129.35	0.01032	9.52	73.45	29.38	0.82	1.51	2.58
Main Channel			1198	100 YR	EX	672	123.57	128.86	128.39	130.08	0.00861	9.69	97.45	35.05	0.77	1.4	2.53
Main Channel			1191	10 YR	60% PR	343	122.86	128.27		128.44	0.001032	3.36	124.62	37.35	0.27	0.2	0.3
Main Channel			1191	50 YR	60% PR	538	122.86	129.43		129.68	0.001175	4.14	171.89	43.91	0.3	0.26	0.43
Main Channel			1191	100 YR	60% PR	672	122.86	130.13		130.43	0.001239	4.57	205.19	57.68	0.31	0.28	0.51
Main Channel			1189	10 YR	EX	343	123.36	126.91	126.75	127.75	0.015939	7.38	46.58	22.98	0.9	1.88	1.96
Main Channel			1189	50 YR	EX	538	123.36	128.12		128.93	0.008418	7.27	79.3	31.91	0.7	1.23	1.64
Main Channel			1189	100 YR	EX	672	123.36	128.88		129.68	0.006419	7.27	105.68	37.74	0.63	1.06	1.53
Main Channel			1178	10 YR	EX	343	122.85	126.95		127.26	0.002967	4.88	81.66	27.24	0.44	0.5	0.69
Main Channel			1178	50 YR	EX	538	122.85	128.16		128.54	0.002688	5.59	120.17	36.54	0.44	0.5	0.83
Main Channel			1178	100 YR	EX	672	122.85	128.91		129.32	0.002484	5.89	149.5	41.19	0.43	0.51	0.88
Main Channel	1177	21+61.00		10 YR	60% PR	343	122.44	128.24		128.42	0.001073	3.54	125.99	41.56	0.28	0.19	0.33
Main Channel	1177	21+61.00		50 YR	60% PR	538	122.44	129.39		129.66	0.001226	4.34	179.62	52.03	0.31	0.25	0.47
Main Channel	1177	21+61.00		100 YR	60% PR	672	122.44	130.11		130.41	0.001254	4.72	217.97	78.64	0.32	0.29	0.53
Main Channel	1164	21+61.00		10 YR	EX	343	122.44	126.95		127.12	0.001426	3.64	106.09	31.92	0.31	0.27	0.37
Main Channel	1164	21+61.00		50 YR	EX	538	122.44	128.16		128.39	0.001377	4.23	149.16	43.2	0.32	0.27	0.46
Main Channel	1164	21+61.00		100 YR	EX	672	122.44	128.92		129.16	0.001312	4.51	183.53	48.1	0.32	0.29	0.5
Main Channel			1142	10 YR	60% PR	343	122.89	128.25		128.37	0.000712	2.82	144.56	46.59	0.23	0.13	0.21
Main Channel			1142	50 YR	60% PR	538	122.89	129.42		129.6	0.000798	3.45	203.48	72.74	0.25	0.17	0.3
Main Channel			1142	100 YR	60% PR	672	122.89	130.14		130.34	0.000814	3.75	242.91	105.27	0.26	0.21	0.34
Main Channel			1129	10 YR	EX	343	122.89	126.81		127.05	0.002296	4.01	90.37	30.1	0.38	0.4	0.48
Main Channel			1129	50 YR	EX	538	122.89	128.01		128.32	0.00199	4.56	133.45	44.69	0.37	0.35	0.57
Main Channel			1129	100 YR	EX	672	122.89	128.76		129.1	0.001802	4.8	168.3	47.92	0.37	0.37	0.6
Main Channel	1119	22+19.00		10 YR	60% PR	343	122.9	128.16		128.34	0.001184	3.52	121.07	48.39	0.29	0.18	0.34
Main Channel	1119	22+19.00		50 YR	60% PR	538	122.9	129.32		129.57	0.001253	4.2	179.82	86.07	0.31	0.25	0.45
Main Channel	1119	22+19.00		100 YR	60% PR	672	122.9	130.03		130.31	0.001243	4.52	218.14	110.32	0.31	0.29	0.5
Main Channel	1106	22+19.00		10 YR	EX	343	122.9	126.55		126.96	0.004933	5.66	69.42	26.38	0.55	0.74	0.98
Main Channel	1106	22+19.00		50 YR	EX	538	122.9	127.78		128.24	0.003777	6.12	105.49	34.63	0.51	0.66	1.04
Main Channel	1106	22+19.00		100 YR	EX	672	122.9	128.57		129.03	0.00327	6.34	142.72	60.05	0.49	0.46	1.05
Main Channel			1099	10 YR	60% PR	343	122.05	128.14		128.32	0.001175	3.6	130.19	41.32	0.28	0.23	0.35
Main Channel			1099	50 YR	60% PR	538	122.05	129.27		129.54	0.00135	4.42	174.11	66.87	0.31	0.34	0.49
Main Channel			1099	100 YR	60% PR	672	122.05	129.97		130.28	0.00141	4.85	201.48	98.16	0.33	0.41	0.57
Main Channel			1085	10 YR	EX	343	122.05	126.46		126.87	0.00436	5.69	71.3	31.59	0.51	0.56	0.96
Main Channel			1085	50 YR	EX	538	122.05	127.74		128.16	0.003228	5.94	115.44	37.68	0.46	0.56	0.95
Main Channel			1085	100 YR	EX	672	122.05	128.54		128.95	0.002783	6.08	148.52	45.38	0.44	0.52	0.95
Main Channel	1073	22+65.00		10 YR	60% PR	343	122.47	128		128.28	0.001524	4.42	106.5	27.7	0.33	0.32	0.51

Main Channel	1073	22+65.00		50 YR	60% PR	538	122.47	129.03		129.48	0.00201	5.7	136.77	41.84	0.4	0.48	0.79
Main Channel	1073	22+65.00		100 YR	60% PR	672	122.47	129.63		130.21	0.002323	6.5	157.62	67.75	0.43	0.53	1
Main Channel	1060	22+65.00		10 YR	EX	343	122.47	125.59	125.32	126.63	0.011963	8.39	48.97	20.54	0.85	1.6	2.22
Main Channel	1060	22+65.00		50 YR	EX	538	122.47	126.32	126.25	127.9	0.013779	10.4	64.81	22.56	0.95	2.19	3.17
Main Channel	1060	22+65.00		100 YR	EX	672	122.47	126.78	126.78	128.67	0.014322	11.45	75.48	23.82	0.98	2.5	3.7
Main Channel			1056	10 YR	60% PR	343	122.41	128.02		128.24	0.001211	3.96	117.15	30	0.3	0.27	0.41
Main Channel			1056	50 YR	60% PR	538	122.41	129.06		129.42	0.001586	5.09	150.32	33.46	0.35	0.4	0.63
Main Channel			1056	100 YR	60% PR	672	122.41	129.68		130.14	0.001788	5.75	171.97	52.19	0.38	0.46	0.78
Main Channel			1046.031	10 YR	60% PR	343	124	127.86		128.21	0.001287	4.8	78.41	24.15	0.43	0.22	0.31
Main Channel			1046.031	50 YR	60% PR	538	124	128.85		129.39	0.001454	5.95	103.49	26.51	0.48	0.29	0.43
Main Channel			1046.031	100 YR	60% PR	672	124	129.44		130.1	0.001528	6.59	119.66	27.97	0.5	0.33	0.51
Main Channel			1044	10 YR	EX	343	122.42	125.66	125.05	126.36	0.008337	6.81	54.84	22.41	0.7	1.17	1.48
Main Channel			1044	50 YR	EX	538	122.42	126.57	125.87	127.54	0.00812	8.04	76.67	25.33	0.72	1.4	1.89
Main Channel			1044	100 YR	EX	672	122.42	127.13	126.37	128.26	0.007931	8.69	91.31	27.11	0.73	1.51	2.11
Main Channel			1033.5	10 YR	EX	343	122.31	125.04	125.04	126.2	0.017505	8.7	42.82	21.19	0.98	2.07	2.58
Main Channel			1033.5	50 YR	EX	538	122.31	125.88	125.88	127.38	0.015617	10	61.68	24.07	0.98	2.31	3.08
Main Channel			1033.5	100 YR	EX	672	122.31	126.38	126.38	128.09	0.014769	10.71	74.28	25.8	0.97	2.44	3.37
Main Channel			1030	10 YR	60% PR	343	124	127.77		128.18	0.001569	5.17	70.97	22.29	0.47	0.25	0.36
Main Channel			1030	50 YR	60% PR	538	124	128.71		129.35	0.001809	6.44	93.23	24.94	0.52	0.33	0.52
Main Channel			1030	100 YR	60% PR	672	124	129.28		130.06	0.001918	7.15	107.76	26.52	0.55	0.38	0.61
Main Channel			1028.25	10 YR	EX	343	122.21	124.85	124.85	125.96	0.018178	8.49	42.35	20.74	1	2.14	2.5
Main Channel			1028.25	50 YR	EX	538	122.21	125.64	125.64	127.1	0.016249	9.8	59.35	22.75	0.99	2.39	3.02
Main Channel			1028.25	100 YR	EX	672	122.21	126.12	126.12	127.8	0.015286	10.49	70.75	24.22	0.99	2.5	3.3
Main Channel			1026.224	10 YR	60% PR	343	124	127.34	126.93	128.13	0.017715	7.18	49.26	20.44	0.78	2.3	2.79
Main Channel			1026.224	50 YR	60% PR	538	124	128.22	127.72	129.29	0.016375	8.36	68.4	22.73	0.78	2.59	3.43
Main Channel			1026.224	100 YR	60% PR	672	124	128.79	128.23	130	0.015398	8.95	81.64	24.33	0.78	2.68	3.74
Main Channel			1023.528	10 YR	60% PR	343	123.98	126.91	126.91	128.04	0.030621	8.53	41.06	19.44	0.99	3.5	4.14
Main Channel			1023.528	50 YR	60% PR	538	123.98	127.71	127.71	129.2	0.027245	9.83	57.35	21.18	0.99	3.88	4.97
Main Channel			1023.528	100 YR	60% PR	672	123.98	128.21	128.21	129.9	0.025476	10.5	68.19	22.27	0.98	4.04	5.4
Main Channel			1023	10 YR	EX	343	121.7	124.44	124.44	125.6	0.017649	8.88	44.89	20.86	1	2.12	2.66
Main Channel			1023	50 YR	EX	538	121.7	125.25	125.25	126.81	0.016255	10.32	62.21	21.73	1.01	2.5	3.27
Main Channel			1023	100 YR	EX	672	121.7	125.84	125.75	127.55	0.014367	10.85	75.24	22.45	0.98	2.53	3.41
Main Channel			1020.646	10 YR	60% PR	343	123	125.23	125.97	127.75	0.112892	12.72	26.99	16.67	1.75	10.14	10.44
Main Channel			1020.646	50 YR	60% PR	538	123	125.96	126.82	128.92	0.081786	13.82	39.2	17.32	1.59	9.78	10.91
Main Channel			1020.646	100 YR	60% PR	672	123	126.42	127.35	129.63	0.069452	14.38	47.54	18.29	1.51	9.36	11.11
Main Channel			1018.817	10 YR	60% PR	343	123	125.46	125.98	127.44	0.066572	11.3	30.83	16.74	1.44	6.62	7.66
Main Channel			1018.817	50 YR	60% PR	538	123	126.29	126.85	128.63	0.048752	12.3	45.09	17.9	1.31	6.34	8.05
Main Channel			1018.817	100 YR	60% PR	672	123	126.93	127.38	129.29	0.037204	12.38	57.07	19.27	1.19	5.57	7.59
Main Channel			1016.78	10 YR	EX	343	119.58	124.55		125.28	0.005957	7.63	72.83	20.67	0.63	1.07	1.61
Main Channel			1016.78	50 YR	EX	538	119.58	125.41		126.6	0.007901	9.86	90.82	21.29	0.75	1.65	2.54
Main Channel			1016.78	100 YR	EX	672	119.58	125.9		127.42	0.009083	11.2	101.36	21.82	0.81	2.03	3.19
Main Channel			1015.576	10 YR	60% PR	343	122	124.26	125.1	127.08	0.105811	13.48	25.72	14.95	1.78	9.93	11.21
Main Channel			1015.576	50 YR	60% PR	538	122	125.06	126.02	128.34	0.075604	14.57	37.94	15.8	1.6	9.4	11.58
Main Channel			1015.576	100 YR	60% PR	672	122	125.62	126.61	129.04	0.060671	14.89	47.04	16.51	1.48	8.69	11.32
Main Channel			1013.799	10 YR	60% PR	343	122	124.52	125.14	126.77	0.068233	12.07	29.22	15.26	1.48	6.98	8.5
Main Channel			1013.799	50 YR	60% PR	538	122	125.39	126.07	128.05	0.050824	13.18	43.19	16.79	1.36	6.71	9.02
Main Channel			1013.799	100 YR	60% PR	672	122	126.06	126.65	128.74	0.039152	13.27	54.89	17.99	1.23	5.97	8.54
Main Channel			1012.33	10 YR	EX	343	119.7	124.54		125.24	0.005242	7.56	74.3	19.85	0.61	0.97	1.54
Main Channel			1012.33	50 YR	EX	538	119.7	125.38		126.56	0.007264	9.9	91.22	20.58	0.74	1.53	2.51
Main Channel			1012.33	100 YR	EX	672	119.7	125.85		127.38	0.008501	11.31	101.12	21.08	0.81	1.91	3.18
Main Channel			1011.329	10 YR	60% PR	343	121	123.32	124.26	126.47	0.105458	14.29	24.93	14.24	1.82	9.99	12.22
Main Channel			1011.329	50 YR	60% PR	538	121	124.15	125.24	127.79	0.076303	15.45	37.39	15.7	1.64	9.42	12.68
Main Channel			1011.329	100 YR	60% PR	672	121	124.73	125.85	128.5	0.061887	15.8	46.76	16.71	1.53	8.75	12.44
Main Channel			1008.253	10 YR	60% PR	343	121	123.47	124.21	126.01	0.078559	12.87	28.05	15.03	1.57	7.83	9.7
Main Channel			1008.253	50 YR	60% PR	538	121	124.24	125.16	127.44	0.065963	14.55	40.1	16.26	1.52	8.35	11.17
Main Channel			1008.253	100 YR	60% PR	672	121	124.78	125.76	128.23	0.056989	15.17	49.02	17.11	1.45	8.19	11.46
Main Channel			1007	10 YR	EX	343	120.72	124.44		125.2	0.0072	7.19	57.58	18.78	0.67	1.13	1.55
Main Channel			1007	50 YR	EX	538	120.72	125.36		126.5	0.008032	8.87	75.22	19.67	0.74	1.51	2.18
Main Channel			1007	100 YR	EX	672	120.72	125.89		127.29	0.008567	9.86	85.75	20.46	0.78	1.74	2.6
Main Channel			1006	10 YR	60% PR	343	120.88	123.39	124.08	125.8	0.072615	12.52	28.55	14.97	1.52	7.46	9.13

Main Channel			1006	50 YR	60% PR	538	120.88	124.13	125.03	127.28	0.064172	14.39	40.05	16.12	1.5	8.25	10.9
Main Channel			1006	100 YR	60% PR	672	120.88	124.66	125.63	128.08	0.056199	15.07	48.7	16.97	1.45	8.15	11.3
Main Channel			1003	10 YR	60% PR	343	120.58	123.26	123.88	125.53	0.064632	12.19	29.61	15.07	1.45	6.83	8.52
Main Channel			1003	50 YR	60% PR	538	120.58	123.99	124.84	127.03	0.059279	14.16	41.18	16.24	1.46	7.78	10.43
Main Channel			1003	100 YR	60% PR	672	120.58	124.48	125.44	127.9	0.054835	15.07	49.21	17.01	1.44	8.03	11.24
Main Channel			996	10 YR	EX	343	120.97	124.36		125.11	0.009206	6.95	51.08	18.94	0.7	1.32	1.57
Main Channel			996	10 YR	60% PR	343	120	122.57	123.28	125.06	0.073804	12.75	28.51	15.13	1.53	7.53	9.41
Main Channel			996	50 YR	EX	538	120.97	125.36		126.37	0.00866	8.14	70.76	20.66	0.72	1.52	1.95
Main Channel			996	50 YR	60% PR	538	120	123.29	124.24	126.59	0.067307	14.77	39.98	16.53	1.53	8.55	11.47
Main Channel			996	100 YR	EX	672	120.97	125.95		127.13	0.008463	8.82	83.29	21.79	0.72	1.64	2.19
Main Channel			996	100 YR	60% PR	672	120	123.76	124.86	127.47	0.062382	15.72	47.95	17.43	1.51	8.86	12.37
Main Channel	990.8881	23+44.00		10 YR	60% PR	343	119.4	124.2	122.43	124.56	0.00444	4.96	78.44	22.87	0.43	0.8	1.13
Main Channel	990.8881	23+44.00		50 YR	60% PR	538	119.4	125.33	123.27	125.86	0.004765	6.01	105.76	25.42	0.46	1.02	1.54
Main Channel	990.8881	23+44.00		100 YR	60% PR	672	119.4	125.99	123.8	126.63	0.004914	6.61	123.17	26.75	0.47	1.14	1.78
Main Channel			983.4701	10 YR	60% PR	343	119	124.34		124.48	0.001439	3.03	120.75	29.41	0.25	0.32	0.41
Main Channel			983.4701	50 YR	60% PR	538	119	125.53		125.74	0.001627	3.75	156.91	31.26	0.27	0.43	0.58
Main Channel			983.4701	100 YR	60% PR	672	119	126.23		126.49	0.001719	4.15	179.3	32.37	0.29	0.49	0.68
Main Channel	981	23+44.00		10 YR	EX	343	120.69	124.42		124.93	0.005705	5.78	65.67	25.2	0.58	0.85	1.05
Main Channel	981	23+44.00		50 YR	EX	538	120.69	125.51		126.17	0.004976	6.61	94.11	26.99	0.57	0.96	1.24
Main Channel	981	23+44.00		100 YR	EX	672	120.69	126.16		126.91	0.004722	7.09	112.04	28.06	0.57	1.02	1.36
Main Channel			974	10 YR	60% PR	343	119	124.21		124.45	0.002621	3.93	95.91	25.49	0.32	0.53	0.7
Main Channel			974	50 YR	60% PR	538	119	125.35		125.71	0.002977	4.87	126.29	27.88	0.36	0.71	1
Main Channel			974	100 YR	60% PR	672	119	126.02		126.45	0.003149	5.39	145.42	29.19	0.38	0.82	1.18
Main Channel			964	10 YR	EX	343	120.47	123.51	123.51	124.71	0.01749	9.24	47.97	22.52	1	2.17	2.82
Main Channel			964	50 YR	EX	538	120.47	124.37	124.37	125.94	0.01606	10.68	68.28	24.78	1.01	2.53	3.43
Main Channel			964	100 YR	EX	672	120.47	124.9	124.9	126.68	0.015244	11.44	81.84	26.21	1	2.7	3.75
Main Channel			962	10 YR	60% PR	343	119.97	123.07	123.07	124.28	0.02745	9.29	45.95	21.25	0.99	3.42	4.57
Main Channel			962	50 YR	60% PR	538	119.97	123.95	123.95	125.51	0.025167	10.69	65.75	23.79	0.99	3.95	5.53
Main Channel			962	100 YR	60% PR	672	119.97	124.49	124.49	126.24	0.023761	11.41	79.19	25.45	0.98	4.17	6.01
Main Channel			953	10 YR	EX	343	120.58	123.22	123.22	124.29	0.017815	8.42	44.53	23.07	0.99	2.03	2.46
Main Channel			953	50 YR	EX	538	120.58	123.98	123.98	125.4	0.016074	9.73	63.01	25.21	0.99	2.34	2.98
Main Channel			953	100 YR	EX	672	120.58	124.45	124.45	126.07	0.015268	10.43	75.1	26.51	0.99	2.5	3.27
Main Channel	925	24+00.00		10 YR	EX	343	119.53	122.4	122.4	123.55	0.013834	8.64	42.42	20.5	0.99	1.65	1.97
Main Channel	925	24+00.00		10 YR	60% PR	343	119.53	122.34	122.4	123.55	0.015085	8.87	41.21	20.37	1.03	1.77	2.09
Main Channel	925	24+00.00		50 YR	EX	538	119.53	123.21	123.21	124.73	0.01247	9.99	59.73	22.34	0.99	1.89	2.38
Main Channel	925	24+00.00		50 YR	60% PR	538	119.53	122.98	123.21	124.76	0.016121	10.8	54.67	21.81	1.11	2.3	2.86
Main Channel	925	24+00.00		100 YR	EX	672	119.53	123.7	123.7	125.44	0.011839	10.73	71.06	23.46	0.99	2.01	2.62
Main Channel	925	24+00.00		100 YR	60% PR	672	119.53	123.39	123.7	125.5	0.016066	11.77	63.84	22.75	1.14	2.54	3.25
Main Channel	768	25+57.00		10 YR	EX	343	118	121.19		121.69	0.004378	5.67	62.87	23.5	0.58	0.67	0.78
Main Channel	768	25+57.00		10 YR	60% PR	343	118	121.19	120.27	121.69	0.004378	5.67	62.87	23.5	0.58	0.67	0.78
Main Channel	768	25+57.00		50 YR	EX	538	118	122.24		122.9	0.003912	6.54	89.68	28.5	0.57	0.7	0.94
Main Channel	768	25+57.00		50 YR	60% PR	538	118	122.24	121	122.9	0.003912	6.54	89.68	28.5	0.57	0.7	0.94
Main Channel	768	25+57.00		100 YR	EX	672	118	123.72		124.24	0.002071	5.85	139.33	38.19	0.44	0.43	0.68
Main Channel	768	25+57.00		100 YR	60% PR	672	118	123.72	121.46	124.24	0.002071	5.85	139.33	38.19	0.44	0.43	0.68
Main Channel	715	26+10.00		10 YR	EX	343	117	120.85		121.45	0.004246	6.3	63.13	21.89	0.6	0.69	0.91
Main Channel	715	26+10.00		10 YR	60% PR	343	117	120.85		121.45	0.004246	6.3	63.13	21.89	0.6	0.69	0.91
Main Channel	715	26+10.00		50 YR	EX	538	117	121.75	120.73	122.64	0.004766	7.77	83.5	23.79	0.66	0.93	1.28
Main Channel	715	26+10.00		50 YR	60% PR	538	117	121.75	120.73	122.64	0.004766	7.77	83.5	23.79	0.66	0.93	1.28
Main Channel	715	26+10.00		100 YR	EX	672	117	123.4		124.1	0.002439	6.89	125.89	27.3	0.5	0.6	0.91
Main Channel	715	26+10.00		100 YR	60% PR	672	117	123.4		124.1	0.002439	6.89	125.89	27.3	0.5	0.6	0.91
Main Channel	576	27+49.00		10 YR	EX	343	116.94	119.3	119.3	120.42	0.01371	8.54	42.84	21.15	0.99	1.6	1.93
Main Channel	576	27+49.00		10 YR	60% PR	343	116.94	119.3	119.3	120.42	0.01371	8.54	42.84	21.15	0.99	1.6	1.93
Main Channel	576	27+49.00		50 YR	EX	538	116.94	120.1	120.1	121.58	0.01232	9.86	60.39	23.07	0.99	1.82	2.33
Main Channel	576	27+49.00		50 YR	60% PR	538	116.94	120.1	120.1	121.58	0.01232	9.86	60.39	23.07	0.99	1.82	2.33
Main Channel	576	27+49.00		100 YR	EX	672	116.94	123.25		123.76	0.00172	5.89	149.66	38.97	0.42	0.37	0.66
Main Channel	576	27+49.00		100 YR	60% PR	672	116.94	123.25		123.76	0.00172	5.89	149.66	38.97	0.42	0.37	0.66
Main Channel	525	28+00.00		10 YR	EX	343	116	118.36	118.26	119.27	0.012454	7.68	45.87	23.27	0.93	1.43	1.6
Main Channel	525	28+00.00		10 YR	60% PR	343	116	117.9	118.26	119.4	0.028495	9.85	35.27	22.38	1.35	2.66	2.87
Main Channel	525	28+00.00		50 YR	EX	538	116	120.03		120.71	0.004327	6.67	87.5	26.87	0.6	0.79	1
Main Channel	525	28+00.00		50 YR	60% PR	538	116	120.03	118.97	120.71	0.004327	6.67	87.5	26.87	0.6	0.79	1
Main Channel	525	28+00.00		100 YR	EX	672	116	123.39		123.63	0.000696	4.08	250.87	73.07	0.27	0.14	0.3
Main Channel	525	28+00.00		100 YR	60% PR	672	116	123.39		123.63	0.000696	4.08	250.87	73.07	0.27	0.14	0.3
Main Channel	416	29+09.00		10 YR	EX	343	114.37	117.34	116.93	118.18	0.007978	7.42	50.88	24.95	0.79	0.94	1.36
Main Channel	416	29+09.00		10 YR	60% PR	343	114.37	117.34	116.93	118.18	0.007978	7.42	50.88	24.95	0.79	0.94	1.36
Main Channel	416	29+09.00		50 YR	EX	538	114.37	119.97		120.35	0.001652	5.28	175.32	73.58	0.4	0.24	0.55

Main Channel	416	29+09.00	50 YR	60% PR	538	114.37	119.97		120.35	0.001652	5.28	175.32	73.58	0.4	0.24	0.55
Main Channel	416	29+09.00	100 YR	EX	672	114.37	123.44		123.54	0.000279	3.02	539.43	125.73	0.18	0.07	0.15
Main Channel	416	29+09.00	100 YR	60% PR	672	114.37	123.44		123.54	0.000279	3.02	539.43	125.73	0.18	0.07	0.15
Main Channel	351	29+75.01	10 YR	EX	343	113.97	117.23		117.67	0.00455	5.36	67.22	32.08	0.56	0.55	0.73
Main Channel	351	29+75.01	10 YR	60% PR	343	113.97	117.23		117.67	0.00455	5.36	67.22	32.08	0.56	0.55	0.73
Main Channel	351	29+75.01	50 YR	EX	538	113.97	120.04		120.21	0.000818	3.61	239.49	73.99	0.27	0.16	0.26
Main Channel	351	29+75.01	50 YR	60% PR	538	113.97	120.04		120.21	0.000818	3.61	239.49	73.99	0.27	0.16	0.26
Main Channel	351	29+75.01	100 YR	EX	672	113.97	123.45		123.51	0.000195	2.41	519.48	90.02	0.14	0.07	0.1
Main Channel	351	29+75.01	100 YR	60% PR	672	113.97	123.45		123.51	0.000195	2.41	519.48	90.02	0.14	0.07	0.1
Main Channel	311	30+13.88	10 YR	EX	343	112.01	117.33	114.71	117.45	0.000694	2.78	128.42	37.31	0.24	0.14	0.17
Main Channel	311	30+13.88	10 YR	60% PR	343	112.01	117.33	114.71	117.45	0.000694	2.78	128.42	37.31	0.24	0.14	0.17
Main Channel	311	30+13.88	50 YR	EX	538	112.01	120.06	115.36	120.16	0.000294	2.55	247.17	50.01	0.17	0.09	0.12
Main Channel	311	30+13.88	50 YR	60% PR	538	112.01	120.06	115.36	120.16	0.000294	2.55	247.17	50.01	0.17	0.09	0.12
Main Channel	311	30+13.88	100 YR	EX	672	112.01	123.44	115.74	123.5	0.000109	2.03	444.88	66.36	0.11	0.04	0.07
Main Channel	311	30+13.88	100 YR	60% PR	672	112.01	123.44	115.74	123.5	0.000109	2.03	444.88	66.36	0.11	0.04	0.07
Main Channel			261		Culvert											
Main Channel	205	31+20.09	10 YR	EX	343	111.7	114.25	114.25	115.1	0.015778	7.42	46.24	27.45	1.01	1.62	1.62
Main Channel	205	31+20.09	10 YR	60% PR	343	111.7	114.25	114.25	115.1	0.015778	7.42	46.24	27.45	1.01	1.62	1.62
Main Channel	205	31+20.09	50 YR	EX	538	111.7	114.87	114.87	115.97	0.014359	8.41	64.43	30.91	1	1.81	1.9
Main Channel	205	31+20.09	50 YR	60% PR	538	111.7	114.87	114.87	115.97	0.014359	8.41	64.43	30.91	1	1.81	1.9
Main Channel	205	31+20.09	100 YR	EX	672	111.7	115.26	115.26	116.48	0.013537	8.88	76.87	33.04	0.99	1.9	2.04
Main Channel	205	31+20.09	100 YR	60% PR	672	111.7	115.26	115.26	116.48	0.013537	8.88	76.87	33.04	0.99	1.9	2.04
Main Channel	125	32+00.00	10 YR	EX	343	110.36	113.14	112.94	113.88	0.011447	6.89	49.78	25.67	0.87	1.34	1.34
Main Channel	125	32+00.00	10 YR	60% PR	343	110.36	113.14	112.94	113.88	0.011441	6.89	49.79	25.67	0.87	1.33	1.33
Main Channel	125	32+00.00	50 YR	EX	538	110.36	113.64	113.64	114.76	0.014543	8.49	63.36	28.5	1	1.94	1.94
Main Channel	125	32+00.00	50 YR	60% PR	538	110.36	113.59	113.64	114.76	0.015494	8.69	61.92	28.23	1.03	2.04	2.04
Main Channel	125	32+00.00	100 YR	EX	672	110.36	114.02	114.02	115.29	0.013816	9.05	74.44	30.63	1	2.01	2.11
Main Channel	125	32+00.00	100 YR	60% PR	672	110.36	113.94	114.01	115.29	0.015492	9.34	72	30.16	1.05	2.21	2.27
Main Channel	25	33+00.00	10 YR	EX	343	109	111.64	111.64	112.5	0.015923	7.43	46.17	27.47	1.01	1.62	1.62
Main Channel	25	33+00.00	10 YR	60% PR	343	109	111.64	111.64	112.5	0.01593	7.43	46.16	27.47	1.01	1.62	1.62
Main Channel	25	33+00.00	50 YR	EX	538	109	112.32	112.32	113.31	0.01301	8.02	72.85	47.01	0.97	1.23	1.68
Main Channel	25	33+00.00	50 YR	60% PR	538	109	112.28	112.32	113.31	0.014581	8.21	70.68	46.46	1	1.36	1.84
Main Channel	25	33+00.00	100 YR	EX	672	109	112.67	112.67	113.77	0.012218	8.52	89.73	51.65	0.96	1.3	1.83
Main Channel	25	33+00.00	100 YR	60% PR	672	109	112.59	112.67	113.77	0.013946	8.81	85.88	50.71	1	1.45	2.03

Appendix B: Floodplain Exhibits


KING ST
QUINCY ST
Chesapeake Dr
Scroggins Road
RP
EX. CONC. BOX
EX. 6' DIA. RCP
EX. 6' DIA. CMP
EX. 6' DIA. CMP
EX. 6' DIA. RCP
EX. 6' DIA. RCP
EX. 6' DIA. RC

AECOM
12420 Milestone Center Drive
Suite 150
Germantown, Maryland 20876
aecom.com

Appendix G Joint Permit Application Package

STANDARD JOINT PERMIT APPLICATION

United States Army Corps of Engineers (USACE) - Norfolk District
803 Front Street, ATTN: CENAO-WR-R
Norfolk, Virginia 23510-1011
Phone: (757) 201-7652, Fax: (757) 201-7678
Website: http://www.nao.usace.army.mil/Missions/Regulatory.aspx

Virginia Marine Resources Commission (VMRC)
Habitat Management Division
380 Fenwick Road, Building 96
Fort Monroe, VA 23651
Phone: (757) 247-2200, Fax: (757) 247-8062
Website: http://www.mrc.virginia.gov/hmac/hmoverview.shtm

Virginia Department of Environmental Quality (DEQ)
Virginia Water Protection Permit Program
Post Office Box 1105
Richmond, Virginia 23218
Phone: (804) 698-4000
Websites: http://www.deq.virginia.gov/
http://www.deq.virginia.gov/Locations.aspx

The following instructions and information are designed to assist you in applying for permits from federal, state, and local regulatory agencies for work in waters and/or wetlands within the Commonwealth of Virginia. The intent is to provide general information on the permit process, not to act as a complete legal and technical reference. Refer to the applicable laws, regulations, and/or guidance materials of each agency for a complete understanding of each agency's application requirements.

JOINT PERMIT APPLICATION PROCESS

The Joint Permit Application (JPA) process and Standard JPA form are used by the United States Army Corps of Engineers (USACE), the Virginia Marine Resources Commission (VMRC), the Virginia Department of Environmental Quality (DEQ), and the Local Wetlands Boards (LWB) for permitting purposes involving water, wetlands, and dune/beach resources, including water supply and water withdrawals projects (as defined in DEQ Regulation 9 VAC 25-210).

The Tidewater Joint Permit Application form is used for proposed private or commercial aquaculture projects and most commercial and noncommercial projects in **tidal waters, tidal wetlands, and coastal primary sand dunes and beaches in Virginia** that require the review and/or authorization by the LWB, the VMRC, the DEQ, and/or the USACE. The Tidewater JPA may be downloaded from the same web page on which the Standard JPA is located: http://www.nao.usace.army.mil/Missions/Regulatory/JPA.aspx. *If using the Tidewater JPA, follow the instructions provided with that form.*

Please note that some health departments and local agencies, such as local building officials and erosion and sediment control authorities, do not use the Joint Permit Application process or forms and may have different informational requirements. The applicant is responsible for contacting these agencies for information regarding those permitting requirements.

REGULATORY AUTHORITIES OF PARTICIPATING AGENCIES: The USACE regulates activities in waters of the United States, including wetlands, under Section 404 of the Clean Water Act (33 U.S.C. §1344), Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §403), and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 (33 U.S.C. §1413).

The VMRC regulates activities on state-owned submerged lands, tidal wetlands, and dunes/beaches under Code of Virginia Title 28.2, Chapters 12, 13, and 14.

The DEQ regulates activities in state surface waters and wetlands under Section 401 of the Clean Water Act (33 U.S.C. §1341), under State Water Control Law (Code of Virginia Title 62.1), and Virginia Administrative Code Regulations 9VAC25-210 et seq., 9VAC25-660 et seq., 9VAC25-670 et seq., 9VAC25-680 et seq., and 9VAC25-690 et seq.

The LWBs regulate activities in tidal wetlands and dunes/beaches under Code of Virginia Title 28.2, Chapters 13 and 14.

LOCAL WETLANDS BOARD CONTACT INFORMATION: Links to LWB information on the Web can be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

USACE FIELD OFFICE INFORMATION AND DEQ REGIONAL OFFICE INFORMATION: Answers to technical questions and detailed information about specific aspects of the various permit programs may be obtained from the USACE field office in your project area (please refer to the Contact Information on the Regulatory web page at: http://www.nao.usace.army.mil/Missions/Regulatory.aspx or call 757-201-7652), or from the DEQ regional office in your project area (please refer to http://www.deq.virginia.gov/Locations.aspx or call 804-698-4000). Applicants may also seek assistance with completing the informational requirements and/or submittals from private consulting and/or engineering firms for hire.

CHESAPEAKE BAY PRESERVATION ACT INFORMATION: Development within the 84 Counties, Cities, and Towns of "Tidewater Virginia" (as defined in §62.1-44.15:68 of the Code of Virginia) is subject to the requirements of the Chesapeake Bay Preservation

Act. If your project is located in a Bay Act locality and will involve activities, including land disturbance or removal of vegetation, within a designated Resource Protection Area (RPA), these actions will require approval from your local government and completion of Appendix C. The individual localities, not the DEQ, USACE, or Local Wetlands Boards, are responsible for enforcing Bay Act requirements and, therefore, local approval for any activity in an RPA is not granted through this JPA process. Each Tidewater locality has adopted a program based on the Chesapeake Bay Preservation Act and the *Chesapeake Bay Preservation Area Designation & Management Regulations*.

The Act and regulations require Bay Act local governments to administer specific criteria for the use, development and redevelopment of land within locally designated Chesapeake Bay Preservation Areas. Since the requirements of the Bay Act may affect the ultimate design and construction of projects, applicants should contact their local government as early in the process as possible, in order to ensure that these requirements are considered early in the permitting process, and to avoid unnecessary and costly delays. Individual localities will request information regarding existing vegetation within the RPA as well as a description and site drawings of any proposed activity within the RPA. This information will be used by local staff charged with ensuring compliance with the Bay Act during the local approval process. Any use, development and redevelopment or land disturbance within the RPA must receive local approval PRIOR to the initiation of any land disturbance.

To determine if your project is located in a Bay Act locality (see map on page 31 or http://www.deq.virginia.gov/Programs/Water/ChesapeakeBay/ChesapeakeBayPreservationAct/LocalGovernmentOrdinances.aspx), learn more about Bay Act requirements, or find local government contacts, please visit the Virginia Department of Environmental Quality at http://www.deq.virginia.gov/Programs/Water/ChesapeakeBay/ChesapeakeBayPreservationAct.aspx.

HOW TO APPLY

Sections A through D below provide a general list of information and drawings that are required, depending on the type of project being proposed. Prepare all required drawings or sketches as detailed in the lists provided in Appendix D (Drawings) and according to the sample drawings provided in Appendix D.

Application materials should be submitted to VMRC:

1. ***If by mail or courier, use the address on page 1.***
2. ***If by electronic mail, address the package to: JPA.permits@mrc.virginia.gov. The application must be provided in the .pdf format.***

When completing this form, use the legal name of the applicant, agent, and/or property owner. For DEQ application purposes, *legal name* means the full legal name of an individual, business, or other organization. For an individual, the legal name is the first name, middle initial, last name, and suffix. For an entity authorized to do business in Virginia, the legal name is the exact name set forth in the entity's articles of incorporation, organization or trust, or formation agreement, as applicable. Also provide the name registered with the State Corporation Commission, if required to register. DEQ issues a permit or grants coverage to the so-named individual or business, who becomes the 'permittee'. Correspondence from some agencies, including permits, authorizations, and/or coverage, may be provided via electronic mail. If the applicant and/or agent wish(es) to receive their permit via electronic mail, please remember to include an e-mail address at the requested place in the application.

A. APPLICATIONS FOR PROJECTS INVOLVING IMPACTS TO *TIDAL* WATERS, WETLANDS, AND DUNES/BEACHES (INCLUDING SHORELINE STABILIZATION, PIERS, MARINAS, BEACH NOURISHMENT, BOATHOUSES, BOAT LIFTS, BREAKWATERS, AQUACULTURE ACTIVITIES, DREDGING, ETC.) SHOULD INCLUDE THE FOLLOWING:

- ❖ All *applicable* portions of Sections 1 through 26 of the JPA, including necessary attachments, information required for projects located in CBPA localities as required in Appendix C (a map of CBPA localities can be found on page 31).
- ❖ Adjacent Property Owner's Acknowledgement Forms(1), as detailed in Appendix A or the name and address of the adjacent landowners.
- ❖ An analysis of the functions of wetlands proposed to be impacted may be required by DEQ. (3).
- ❖ A set of 8 ½ x 11 inch drawings. If you cannot include all of your project site on one page at a scale no smaller than 1" = 200', you **must** submit a set of 8 ½ x 11 inch match-line drawings **and** a set of large-sized drawings at a scale no smaller than 1"= 200'. If oversized drawings are used, attach **five** copies of the oversized drawings to your application.
- ❖ In order for projects requiring LWB authorization to be considered complete, applications must include the following information (per Virginia Code 28.2-1302): *"The permit application shall include the following: the name and address of the applicant; a detailed description of the proposed activities; a map, drawn to an appropriate and uniform scale, showing the area of wetlands directly affected, the location of the proposed work thereon, the area of existing and proposed fill and excavation, the location, width, depth and length of any proposed channel and disposal area, and the location of all existing and proposed structures, sewage collection and treatment facilities, utility installations, roadways, and other related appurtenances of facilities, including those on the adjacent uplands; a description of the type of equipment to be used and the means of access to the activity site; the names and addresses of record of adjacent land and known claimants of water rights in or adjacent to the wetland of whom the applicant has notice; an estimate of cost; the primary purpose of the project; and secondary purpose of the proposed project; a complete description of measures to be taken during and after alteration to reduce detrimental offsite effects; the completion date of the proposed work, project, or structure; and such additional materials and documentation as the wetlands board may require."*

B. APPLICATIONS FOR PROJECTS INVOLVING IMPACTS TO *NONTIDAL* WATERS AND/OR WETLANDS *AND*:

1) **WHERE AUTHORIZATION UNDER *STATE PROGRAM GENERAL PERMIT (SPGP)* IS REQUESTED:**

Programmatic general permits may be issued by the USACE in situations where a state, regional, or local authority has a regulatory program in place that provides similar review and regulation of activities in waters as does the USACE. In such cases, the programmatic general permit allows the state, region, or locality to provide the federal authorization, thus avoiding unnecessary duplication of effort by multiple regulatory authorities. In Virginia, DEQ provides authorization for certain activities regulated by the USACE through the State Program General Permit (SPGP). DEQ's authorization under the SPGP is a separate action from that providing coverage under any Virginia Water Protection permit. Certain Residential/Commercial/Institutional Development activities and Linear Transportation activities will be considered for coverage under the current SPGP. Details about the current SPGP can be found at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional.aspx.

- ❖ Mark the "SPGP" checkbox on page 7 of this application.
- ❖ All *applicable* portions of Sections 1 through 26 of the JPA, including necessary attachments.
- ❖ A conceptual compensatory mitigation plan(2).
- ❖ A copy of the confirmed jurisdictional determination or confirmed delineation, including a waters and wetlands boundary map and data sheets(3).
- ❖ All information required for projects located in CBPA localities as required in Appendix C (a map of CBPA localities can be found on page 31).
- ❖ A copy of the FEMA flood insurance rate map or FEMA-approved local floodplain map for the project site (not applicable to <0.1 acre and < 300 linear feet projects by either USACE or DEQ).
- ❖ A set of 8 ½ x 11 inch drawings. If you cannot include all of your project site on one page at a scale no smaller than 1" = 200', you **must** submit a set of 8 ½ x 11 inch match-line drawings **and** a set of large-sized drawings at a scale no smaller than 1"= 200'. If oversized drawings are used, attach **five** copies of the oversized drawings to your application.

2) **WHERE NO SPGP IS REQUESTED:**

- ❖ All *applicable* portions of Sections 1 through 26 of the JPA, including necessary attachments.
- ❖ A conceptual compensatory mitigation plan(2).
- ❖ A copy of the confirmed jurisdictional determination or confirmed delineation, including a waters and wetlands boundary map and data sheets(3).
- ❖ All information required for projects located in CBPA localities as required in Appendix C (a map of CBPA localities can be found on page 31), and a copy of the FEMA flood insurance rate map or FEMA-approved local floodplain map for the project site.
- ❖ An analysis of the functions of wetlands proposed to be impacted may be required by DEQ (4).
- ❖ A set of 8 ½ x 11 inch drawings. If you cannot include all of your project site on one page at a scale no smaller than 1" = 200', you **must** submit a set of 8 ½ x 11 inch match-line drawings **and** a set of large-sized drawings at a scale no smaller than 1"= 200'. If oversized drawings are used, attach **five** copies of the oversized drawings to your application.

C. APPLICATIONS FOR PROJECTS INVOLVING SURFACE WATER WITHDRAWALS or FERC LICENSE OR RELICENSE ASSOCIATED WITH A SURFACE WATER WITHDRAWAL:

- ❖ Mark the "DEQ Reapplication" checkbox on page 7 of this application and provide the current/existing permit number.
- ❖ All *applicable* portions of Sections 1 through 26 of the JPA, including necessary attachments.
- ❖ All *applicable* portions of Part A and B above if the project involves wetland and/or stream impacts.
- ❖ Copy of any pre-application review panel documentation and summary of the issues raised
- ❖ For new or expanded surface water withdrawals proposing to withdraw 90 million gallons a month or greater, a summary of the steps taken to seek public input as required by 9VAC25-210-320 and an identification of the issues raised during the course of the public information meeting process.

D. ANY APPLICATIONS USING THE JPA FORM AS A PRE-CONSTRUCTION NOTIFICATION (PCN) FOR A USACE NATIONWIDE PERMIT:

- ❖ Mark the "PCN" checkbox on page 7 of this application and insert the number of the intended Nationwide permit. If you fail to mark this box, the PCN will be deemed incomplete and the USACE 45-day time clock will not start.
- ❖ All *applicable* portions of Sections 1 through 26 of the JPA, including necessary attachments and all information required for projects located in CBPA localities as required in Appendix C (a map of CBPA localities can be found on page 31).
- ❖ A set of 8 ½ x 11 inch drawings. If you cannot include all of your project site on one page at a scale no smaller than 1" = 200', you **must** submit a set of 8 ½ x 11 inch match-line drawings **and** a set of large-sized drawings at a scale no smaller than 1"= 200'. If oversized drawings are used, attach **five** copies of the oversized drawings to your application.

WHAT HAPPENS NEXT

Upon receipt of an application, VMRC will assign a permit application number to the JPA and will then distribute a copy of the application and any plan copies submitted to the other regulatory agencies that are involved in the JPA process. All agencies will conduct separate but concurrent reviews of your project. Please be aware that each agency must issue a separate permit (or a notification that no permit is required). Note that in some cases, DEQ may be taking an action on behalf of the USACE, such as when the State Program General Permit (SPGP) applies. Make sure that you have received all necessary authorizations, or documentation that no permit is required, from each agency prior to beginning the proposed work.

During the JPA review process, site inspections may be necessary to evaluate a proposed project. Failure to allow an authorized representative of a regulatory agency to enter the property, or to take photographs of conditions at the project site, may result in either the withdrawal or denial of your permit application.

For certain federal and state permit applications, a public notice is published in a newspaper having circulation in the project area, is mailed to adjacent and/or riparian property owners, and/or is posted on the agency's web page. The public may comment on the project during a designated comment period, if applicable, which varies depending upon the type of permit being applied for and the issuing agency. In certain circumstances, the project may be heard by a governing board, such as a Local Wetlands Board, the State Water Control Board, or VMRC in cases where a locality does not have a wetlands board. You may be responsible for bearing the costs for advertisement of public notices.

Public hearings that are held by VMRC occur at their regularly scheduled monthly commission meetings under the following situations: Protested applications for VMRC permits which cannot be resolved; projects costing over $500,000 involving encroachment over state-owned subaqueous land; and all projects affecting tidal wetlands and dunes/beaches in localities without a LWB. All interested parties will be officially notified regarding the date and time of the hearing and Commission meeting procedures. The Commission will usually make a decision on the project at the meeting unless a decision for continuance is made. If a proposed project is approved, a permit or similar agency correspondence is sent to the applicant. In some cases, notarized signatures, as well as processing fees and royalties, are required before the permit is validated. If the project is denied, the applicant will be notified in writing.

PERMIT APPLICATION OR OTHER FEES

DO NOT send any fees with the JPA. *VMRC is not responsible for accounting for fees required by other agencies.* Please consult agency websites or contact agencies directly for current fee information and submittal instructions.

- USACE: Permit application fees are required for USACE Individual (Standard) permits. A USACE project manager will contact you regarding the proper fee and submittal requirements.
- DEQ: Permit application fees required for Virginia Water Protection permits – while detailed in 9VAC25-20 – are conveyed to the applicant by the applicable DEQ office (http://www.deq.virginia.gov/Locations.aspx). Complete the Permit Application Fee Form and submit it per the instructions listed on the form. Instructions for submitting any other fees will be provided to the applicant by DEQ staff.
- VMRC: An application fee of $300 may be required for projects impacting tidal wetlands, beaches and/or dunes when VMRC acts as the LWB. VMRC will notify the applicant in writing if the fee is required. Permit fees involving subaqueous lands are $25.00 for projects costing $10,000 or less and $100 for projects costing more than $10,000. Royalties may also be required for some projects. The proper permit fee and any required royalty is paid at the time of permit issuance by VMRC. VMRC staff will send the permittee a letter notifying him/her of the proper permit fees and submittal requirements.
- LWB: Permit fees vary by locality. Contact the LWB for your project area or their locality website for fee information and submittal requirements. Contact information for LWB may be found at http://ccrm.vims.edu/permits_web/guidance/local_wetlands_boards.html.

INFORMATION REGARDING THREATENED OR ENDANGERED SPECIES

In order to find preliminary information regarding federal or state threatened or endangered species on your project site, you may contact the following four agencies:

United States Fish and Wildlife Service 6669 Short Lane Gloucester, Virginia 23061 Voice: (804) 693-6694 Fax: (804) 693-9032 http://virginiafieldoffice.fws.gov/	NOAA Fisheries Greater Atlantic Region Fisheries Office National Marine Fisheries Service 55 Great Republic Drive Gloucester, MA 01930 Voice: (978) 281-9300 https://www.greateratlantic.fisheries.noaa.gov/contact_us/index.html
Project Review Coordinator Virginia Department of Conservation and Recreation Natural Heritage Division 217 Governor Street Richmond, Virginia 23219 Voice: (804) 786-7951 Fax: (804) 371-2674 http://www.dcr.virginia.gov/natural_heritage/index.shtml	Virginia Department of Game and Inland Fisheries Environmental Services Section 4010 West Broad Street Richmond, Virginia 23230-1104 (804) 367-1000 http://www.dgif.virginia.gov/wildlife/

INFORMATION REGARDING FEMA-MAPPED FLOODPLAINS

You may obtain "Online Hazard Maps" for FEMA-mapped floodplains by visiting https://hazards.fema.gov/femaportal/wps/portal. Local governments also keep paper copies of FEMA maps on hand.

FOOTNOTES

(1) Adjacent Property Owner Notification: When determining whether to grant or deny any permit for the use of state-owned submerged lands, the VMRC must consider, among other things, effects of a proposed project on adjacent or nearby properties. Discussing the proposed project with these property owners can be done on your own using the forms in Appendix A of this package. Local Wetlands Boards (LWB) must also consider the effects on adjacent properties and notify adjoining property owners of the required public hearings for all applications. The completed forms will assist VMRC and LWB in processing the application. The forms in Appendix A may be photocopied if more copies are needed. This information will not be used by DEQ to meet the requirements of notifying riparian land owners.

(2) Compensatory mitigation plans. Conceptual compensatory mitigation plans, when required, should include all information stipulated in Sections 80 B and 116 F of DEQ Regulation 9VAC25-210 for Virginia Water Protection individual permit applicants, or in Sections 60 B and/or 70 of DEQ Regulations 9VAC25-660, 9VAC25-670, 9VAC25-680, or 9VAC25-690 for Virginia Water Protection general permit coverage applicants. Regulations may be obtained from DEQ's web site at http://www.deq.virginia.gov/Programs/Water/WetlandsStreams.aspx. Information on wetland and stream compensatory mitigation is available at http://www.deq.virginia.gov/Programs/Water/WetlandsStreams/Mitigation.aspx. The SPGP applicant is required to provide a conceptual mitigation plan in accordance with the current SPGP (http://www.nao.usace.army.mil/Missions/Regulatory/RBregional.aspx). ***Final*** compensatory mitigation plans will be required *prior to commencement of impacts to waters and/or wetlands* on your project site. If no mitigation is planned, submit a detailed statement as to why no mitigation is planned. For projects requiring a LWB or VMRC tidal wetlands permit, please consult the VMRC Wetlands Mitigation-Compensation Policy and Supplemental Guidelines: 4 VAC 20-390 at http://www.mrc.virginia.gov/regulations/regindex.shtm.

(3) Wetland and waters boundary delineation map: Wetlands/waters delineations must be performed using the USACE "Wetland Delineation Manual, Technical Report Y-87-1, January 1987, Final Report" (Federal Manual) and if applicable, the current version of the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual (Atlantic and Gulf Coastal Plain Region or Eastern Mountains and Piedmont Region. The SPGP applicant is required to provide a Corps-confirmed jurisdictional determination or Corps-confirmed delineation approved for use with a permit application, in accordance with the current SPGP (http://www.nao.usace.army.mil/Missions/Regulatory/RBregional.aspx). Contact the appropriate USACE District office or field office to obtain a delineation confirmation by referencing the Contact Information on the Regulatory web page at: http://www.nao.usace.army.mil/Missions/Regulatory.aspx or call the Regulator of the Day (ROD) at 757-201-7652. If a USACE confirmation is not available at the time of application, it must be submitted as soon as it becomes available during the DEQ permit review. For DEQ application purposes, the requirements for delineations apply to all applications, regardless of the amount of impacts. The information to be submitted is detailed in 9VAC25-210-80 B 1 h and is the same regardless of the type of VWP permit being sought.

(4) An analysis of the functions of wetlands, when required for DEQ permitting purposes, shall assess water quality or habitat metrics and shall be coordinated with DEQ in advance of conducting the analysis. For DEQ permitting purposes, please refer to the requirements in 9VAC25-210-80 C, which are the same regardless of the type of VWP permit being sought.

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FOR AGENCY USE ONLY	
	Notes:
JPA#	

APPLICANTS

PLEASE PRINT OR TYPE ALL ANSWERS. If a question does not apply to your project, please print N/A (not applicable) in the space provided. ***If additional space is needed, attach extra 8 ½ x 11 inch sheets of paper.***

Check all that apply			
☐ Pre-Construction Notification ☑ (PCN) NWP # 3, 13, 18 *(For Nationwide Permits ONLY - No DEQ-VWP permit writer will be assigned)*	☐ SPGP ☐ PASDO-PGP SELF VERIFICATION *(Replaces Regional Permit 17 (RP-17))*	☐ DEQ Reapplication Existing permit number: _____	☐ Receiving federal funds Agency providing funding: _____

PREVIOUS ACTIONS RELATED TO THE PROPOSED WORK (Include all federal, state, and local pre application coordination, site visits, previous permits, or applications whether issued, withdrawn, or denied)

Historical information for past permit submittals can be found online with VMRC - https://webapps.mrc.virginia.gov/public/habitat/ - or VIMS - http://ccrm.vims.edu/perms/newpermits.html

Agency	Action / Activity	Permit/Project number, including any non-reporting Nationwide permits previously used (e.g., NWP 13)	Date of Action	If denied, give reason for denial
City of Alexandria, USACE	Pre-application Meeting	N/A	December 12, 2025	

1. APPLICANT, AGENT, PROPERTY OWNER, AND CONTRACTOR INFORMATION
The applicant(s) is/are the legal entity to which the permit may be issued (see How to Apply at beginning of form). The applicant(s) can either be the property owner(s) or the person/people/company(ies) that intend(s) to undertake the activity. The agent is the person or company that is representing the applicant(s). If a company, please also provide the company name that is registered with the State Corporation Commission (SCC), or indicate no registration with the SCC.

Legal Name(s) of Applicant(s)			Agent (if applicable)		
Alex Haptemariam, P.E., CFM			Sean Bernheisel		
Mailing address			Mailing address		
2331 Mill Rd			12420 Milestone Center Drive Suite 150		
City	State	ZIP Code	City	State	ZIP Code
Alexandria	VA	22314	Germantown	MD	20876
Phone number w/area code	Fax		Phone number w/area code	Fax	
(703)746-3223			(717)682-6957		
Mobile	E-mail		Mobile	E-mail	
(703)822-1337	alex.haptemariam@alexandria.gov			sean.bernheisel@aecom.com	
State Corporation Commission Name and ID number (if applicable)			State Corporation Commission Name and ID number (if applicable)		

Certain permits or permit authorizations may be provided via electronic mail. If the applicant wishes to receive their permit via electronic mail, please provide an e-mail address here: _____

1. APPLICANT, AGENT, PROPERTY OWNER, AND CONTRACTOR INFORMATION (Continued)

Property owner(s) legal name, if different from applicant Alex Haptemariam (City of Alexandria)			Contractor, if known N/A		
Mailing address 2331 Mill Rd			Mailing address		
City Alexandria	State VA	ZIP code 22314	City	State	ZIP code
Phone number w/area code (703)746-3223	Fax		Phone number w/area code	Fax	
Mobile (703)822-1337	E-mail alex.haptemariam@alexandria.gov		Mobile	E-mail	
State Corporation Commission Name and ID number (if applicable)			State Corporation Commission Name ID number (if applicable)		

2. PROJECT LOCATION INFORMATION

(Attach a copy of a detailed map, such as a USGS topographic map or street map showing the site location and project boundary, so that it may be located for inspection. Include an arrow indicating the north direction. Include the drainage area if the SPGP box is checked on Page 7.)

Street Address (911 address if available) 3210 King Street, Alexandria, VA	City/County/ZIP Code 22303
Subdivision City of Alexandria Park Property (Chinquapin Park)	Lot/Block/Parcel # # 41.02-02-02

Name of water body(ies) within project boundaries and drainage area (acres or square miles).
Taylor Run (Watershed 333 acres)

Tributary(ies) to: Cameron Run and Hunting Creek
Basin: Potomac River Sub-basin: Cameron Run
(*Example: Basin: James River Sub-basin: Middle James River*)

Special Standards (based on DEQ Water Quality Standards 9VAC25-260 et seq.): _____

Project type (check one)
_____ Single user (private, non-commercial, residential)
X Multi-user (community, commercial, industrial, government)
_____ Surface water withdrawal

Latitude and longitude at center of project site (decimal degrees): 38.822209 / -77.081161
(Example: 37.33164/-77.68200)

USGS topographic map name: Alexandria

8-digit USGS Hydrologic Unit Code (HUC) for your project site (See http://cfpub.epa.gov/surf/locate/index.cfm): HUC10:02070010
If known, indicate the 10-digit and 12-digit USGS HUCs (see http://consapps.dcr.virginia.gov/htdocs/maps/HUExplorer.htm) :
HUC10:0207001003 HUC12:020700100302

Name of your project (*Example: Water Creek driveway crossing*) Taylor Run Stream Stabilization

Is there an access road to the project? ☑ Yes ☐ No. If yes, check all that apply: ☑ public ☐ private ☐ improved ☐ unimproved

Total size of the project area (in acres): _____

2. PROJECT LOCATION INFORMATION (Continued)

Provide driving directions to your site, giving distances from the best and nearest visible landmarks or major intersections:

From I-395 take Exit 5 for King Street (VA-7 East) toward Alexandria. Merge onto King Street East toward Old Town Alexandria. Continue on King Street for about 1.5-2 miles. Turn right into park entrance, Chinquapin Drive. The project is located along Taylor Run, within the limits of Chinquapin Park walking trail about 800 feet southwest of the parking lot.

Does your project site cross boundaries of two or more localities (i.e., cities/counties/towns)? ☐ Yes ☑ No

If so, name those localities:

3. DESCRIPTION OF THE PROJECT, PROJECT PRIMARY AND SECONDARY *PURPOSES*, PROJECT *NEED*, INTENDED USE(S), AND ALTERNATIVES CONSIDERED (Attach additional sheets if necessary)

- The purpose and need must include any new development or expansion of an existing land use and/or proposed future use of residual land.
- Describe the physical alteration of surface waters, including the use of pilings (#, materials), vibratory hammers, explosives, and hydraulic dredging, when applicable, and *whether or not tree clearing will occur* (include the area in square feet and time of year).
- Include a description of alternatives considered and measures taken to avoid or minimize impacts to surface waters, including wetlands, to the maximum extent practicable. Include factors such as, but not limited to, alternative construction technologies, alternative project layout and design, alternative locations, local land use regulations, and existing infrastructure
- For utility crossings, include both alternative routes and alternative construction methodologies considered
- For surface water withdrawals, public surface water supply withdrawals, or projects that will alter in stream flows, include the water supply issues that form the basis of the proposed project.

The Taylor Run Infrastructure Stabilization Design Project (Project) is located in the City of Alexandria,
Virginia. The goal of the project is to implement a 'minimal stabilization' approach to protect at-risk infrastructure and provide stream stabilization along approximately 590 linear feet of non-continuous stream necessary to provide long-term infrastructure protection. Proposed stabilization measures include constructing gravity retaining walls to stabilize stream banks and protect the exposed sanitary infrastructure, replacement of deteriorated outfall headwalls, encasement of exposed sanitary sewer pipes, establishment of a plunge at the start of the project reach, and install boulder cascades to dissipate energy through the project areas supporting long term stability and reduced project grading extents.

Date of proposed commencement of work (MM/DD/YYYY)	Date of proposed completion of work (MM/DD/YYYY)
03/01/2027	09/02/2027
Are you submitting this application at the direction of any state, local, or federal agency? x Yes ____ No City of Alexandria	Has any work commenced or has any portion of the project for which you are seeking a permit been completed? ____ Yes x No

If you answered "yes" to either question above, give details stating when the work was completed and/or when it commenced, who performed the work, and which agency (if any) directed you to submit this application. In addition, you will need to clearly differentiate between completed work and proposed work on your project drawings.

No work has begun.

Are you aware of any unresolved violations of environmental law or litigation involving the property? ____ Yes X No
(If yes, please explain)

4. PROJECT COSTS

Approximate cost of the entire project, including materials and labor: $ 1.79 million
Approximate cost of only the portion of the project affecting state waters (channelward of mean low water in tidal areas and below ordinary high water mark in nontidal areas): $ 904,000

5. PUBLIC NOTIFICATION (Attach additional sheets if necessary)

Complete information for all property owners adjacent to the project site and across the waterway, if the waterway is less than 500 feet in width. If your project is located within a cove, you will need to provide names and mailing addresses for all property owners within the cove. If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line. Per Army Regulation (AR 25-51) outgoing correspondence must be addressed to a person or business.
Failure to provide this information may result in a delay in the processing of your application by VMRC.

Property owner's name	Mailing address	City	State	ZIP code
FIRST BAPTIST CHURCH	2932 KING ST	ALEXANDRIA	VA	22302
REMSKI SARAH	1117 ROAN LN	ALEXANDRIA	VA	22302-3419
GOULD SUZANNE	1111 ROAN LN	ALEXANDRIA	VA	22302-3419
TRACY DAVID P OR LISA B	1105 ROAN LN	ALEXANDRIA	VA	22302-3419
SINCLAIR JOHN R TR JOHN R SINCLAIR TRUST	1101 ROAN LN	ALEXANDRIA	VA	22302-3419
CITY OF ALEXANDRIA (ALEXANDRIA CITY HIGH SCHOOL)	PO BOX 178	ALEXANDRIA	VA	22313-1500

Name of newspaper having general circulation in the area of the project: Alexandria Times
Address and phone number (including area code) of newspaper 908 King Street Suite 200 Alexandria VA 22314; (703)739-0001

Have adjacent property owners been notified with forms in Appendix A? _____Yes X No (attach copies of distributed forms)

6. THREATENED AND ENDANGERED SPECIES INFORMATION

Please provide any information concerning the potential for your project to impact state and/or federally threatened and endangered species (listed or proposed). Attach correspondence from agencies and/or reference materials that address potential impacts, such as database search results or confirmed waters and wetlands delineation/jurisdictional determination. Include information when applicable regarding the location of the project in Endangered Species Act-designated or -critical habitats. Contact information for the U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, Virginia Dept. of Game and Inland Fisheries, and the Virginia Dept. of Conservation and Recreation-Division of Natural Heritage can be found on page 4 of this package.

7. HISTORIC RESOURCES INFORMATION

Note: Historic properties include but are not limited to archeological sites, battlefields, Civil War earthworks, graveyards, buildings, bridges, canals, etc. Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the USACE from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the USACE, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant.

Are any historic properties located within or adjacent to the project site? ____ Yes X No _____ Uncertain
If Yes, please provide a map showing the location of the historic property within or adjacent to the project site.

Are there any buildings or structures 50 years old or older located on the project site? ____ Yes X No _____ Uncertain
If Yes, please provide a map showing the location of these buildings or structures on the project site.

Is your project located within a historic district? ____ Yes X No ____ Uncertain

If Yes, please indicate which district: _____

7. HISTORIC RESOURCES INFORMATION (Continued)

Has a survey to locate archeological sites and/or historic structures been carried out on the property?
___ Yes ___ No _x_ Uncertain

If Yes, please provide the following information: Date of Survey: _____

Name of firm: _____

Is there a report on file with the Virginia Department of Historic Resources? ____ Yes ____ No X Uncertain

Title of Cultural Resources Management (CRM) report: _____

Was any historic property located? ____ Yes ____ No X Uncertain

8. WETLANDS, WATERS, AND DUNES/BEACHES IMPACT INFORMATION

Report each impact site in a separate column. If needed, attach additional sheets using a similar table format. Please ensure that the associated project drawings clearly depict the location and footprint of each numbered impact site. For dredging, mining, and excavating projects, use Section 17.

	Impact site number 1	Impact site number 2	Impact site number 3	Impact site number 4	Impact site number 5
Impact description (use all that apply): F=fill EX=excavation S=Structure T=tidal NT=non-tidal TE=temporary PE=permanent PR=perennial IN=intermittent SB=subaqueous bottom DB=dune/beach IS=hydrologically isolated V=vegetated NV=non-vegetated MC=Mechanized Clearing of PFO (*Example: F, NT, PE, V)*	See impact plate 4 PR PE TE F-Rip Rap	See impact plate 5 PR PE TE F-Rip Rap	See impact plate 6 PR PE TE F-Rip Rap	See impact plate 7 PR PE TE F-Rip Rap	
Latitude / Longitude (in decimal degrees)	38.833832, -77.081935	38.822347, -77.081365	38.821214, -77.080432	38.820650, -77.08064	
Wetland/waters impact area (square feet / acres)					
Dune/beach impact area (square feet)					
Stream dimensions at impact site (length and average width in linear feet, and area in square feet)	Temp: length (lf): 65 average width (lf): 3-6 area (sf): 1,377 Perm: length (lf): 82 average width (lf): 3-6 area (sf): 1,823	Temp: length (lf): 153 average width (lf): 3-6 area (sf): 3,193 Perm: length (lf): 25 average width (lf): 3-6 area (sf): 525	Temp: length (lf): 148 average width (lf): 3-6 area (sf): 2,622 Perm: length (lf): 39 average width (lf): 3-6 area (sf):512	Temp: length (lf): 132 average width (lf): 3-6 area (sf): 2,641 Perm: length (lf): 172 average width (lf): 3-6 area (sf): 1,528	
Volume of fill below Mean High Water or Ordinary High Water (cubic yards)	393 CY	314 CY	64 CY	158 CY	

8. WETLANDS/WATERS IMPACT INFORMATION (Continued)					
Cowardin classification of impacted wetland/water or geomorphological classification of stream *Example wetland: PFO; Example stream: 'C' channel and if tidal, whether vegetated or non-vegetated wetlands per Section 28.2-1300 of the Code of Virginia*	R5UBH	R5UBH	R5UBH	R5UBH	
Average stream flow at site (flow rate under normal rainfall conditions in cubic feet per second) and method of deriving it (gage, estimate, etc.)	0.52 cfs baseflow, 191.11 cfs bankfull (H&H study)	0.52 cfs baseflow, 191.11 cfs bankfull (H&H study)	0.52 cfs baseflow, 191.11 cfs bankfull (H&H study)	0.52 cfs baseflow, 191.11 cfs bankfull (H&H study)	
Contributing drainage area in acres or square miles (*VMRC cannot complete review without this information*)	0.39 square miles	0.39 square miles	0.39 square miles	0.39 square miles	
DEQ classification of impacted resource(s): Estuarine Class II Non-tidal waters Class III Mountainous zone waters Class IV Stockable trout waters Class V Natural trout waters Class VI Wetlands Class VII https://law.lis.virginia.gov	Non-tidal waters Class III	Non-tidal waters Class III	Non-tidal waters Class III	Non-tidal waters Class III	
For DEQ permitting purposes, also submit as part of this section a wetland and waters boundary delineation map – see (3) in the Footnotes section in the form instructions.					
For DEQ permitting purposes, also submit as part of this section a written disclosure of all wetlands, open water, or streams that are located within the proposed project or compensation areas that are also under a deed restriction, conservation easement, restrictive covenant, or other land-use protective instrument.					

9. APPLICANT, AGENT, PROPERTY OWNER, AND CONTRACTOR CERTIFICATIONS

READ ALL OF THE FOLLOWING CAREFULLY BEFORE SIGNING

PRIVACY ACT STATEMENT: The Department of the Army permit program is authorized by Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection Research and Sanctuaries Act of 1972. These laws require that individuals obtain permits that authorize structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters prior to undertaking the activity. Information provided in the Joint Permit Application will be used in the permit review process and is a matter of public record once the application is filed. Disclosure of the requested information is voluntary, but it may not be possible to evaluate the permit application or to issue a permit if the information requested is not provided.

CERTIFICATION: I am hereby applying for permits typically issued by the DEQ, VMRC, USACE, and/or Local Wetlands Boards for the activities I have described herein. I agree to allow the duly authorized representatives of any regulatory or advisory agency to enter upon the premises of the project site at reasonable times to inspect and photograph site conditions, both in reviewing a proposal to issue a permit and after permit issuance to determine compliance with the permit.

In addition, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

9. APPLICANT, AGENT, PROPERTY OWNER, AND CONTRACTOR CERTIFICATIONS (Continued)

Is/Are the Applicant(s) and Owner(s) the same? ☐ *Yes* ☐ *No*

Legal name & title of Applicant Alex Haptemariam, P.E, CFM	Second applicant's legal name & title, if applicable
Applicant's signature	Second applicant's signature
Date	Date
Property owner's legal name, if different from Applicant	Second property owner's legal name, if applicable
Property owner's signature, if different from Applicant	Second property owner's signature
Date	Date

CERTIFICATION OF AUTHORIZATION TO ALLOW AGENT(S) TO ACT ON APPLICANT'S(S') BEHALF (IF APPLICABLE)

I (we), Alex Haptemariam, P.E, CFM _____ (and) _____ ,
APPLICANT'S LEGAL NAME(S) – *complete the second blank if more than one Applicant*

hereby certify that I (we) have authorized Sean Bernheisel _____ (and) _____
AGENT'S NAME(S) – *complete the second blank if more than one Agent*

to act on my (our) behalf and take all actions necessary to the processing, issuance, and acceptance of this permit and any and all standard and special conditions attached. I (we) hereby certify that the information submitted in this application is true and accurate to the best of my (our) knowledge.

Applicant's signature	Second applicant's signature, if applicable
Date	Date
Agent's signature and title	Second agent's signature and title, if applicable
Date	Date

CONTRACTOR ACKNOWLEDGEMENT (IF APPLICABLE)

I (we), _____ (and) _____ ,
APPLICANT'S LEGAL NAME(S) – *complete the second blank if more than one Applicant*

have contracted _____ (and) _____
CONTRACTOR'S NAME(S) – *complete the second blank if more than one Contractor*

to perform the work described in this Joint Permit Application, signed and dated _____.

I (we) will read and abide by all conditions as set forth in all federal, state, and local permits as required for this project. I (we) understand that failure to follow the conditions of the permits may constitute a violation of applicable federal, state, and local statutes and that we will be liable for any civil and/or criminal penalties imposed by these statutes.
In addition, I (we) agree to make available a copy of any permit to any regulatory representative visiting the project site to ensure permit compliance. If I (we) fail to provide the applicable permit upon request, I (we) understand that the representative will have the option of stopping our operation until it has been determined that we have a properly signed and executed permit and are in full compliance with all of the terms and conditions.

Contractor's name or name of firm (printed/typed)	Contractor's or firm's mailing address	
Contractor's signature and title	Contractor's license number	Date
Applicant's signature	Second applicant's signature, if applicable	
Date	Date	

END OF GENERAL INFORMATION

The following sections are activity-specific. Fill out only the sections that apply to your particular project.

10. PRIVATE PIERS, MARGINAL WHARVES, AND UNCOVERED BOAT LIFTS

Regional Permit 17 (RP-17), authorizes the installation and/or construction of open-pile piers, mooring structures/devices, fender piles, covered boathouses/boatslips, boatlifts, osprey pilings/platforms, accessory pier structures, and certain devices associated with shellfish gardening, for private use, subject to strict compliance with all conditions and limitations further set out in the RP-17 enclosure located at http://www.nao.usace.army.mil/Missions/Regulatory/RBregional/. In addition to the information required in this JPA, prospective permittees seeking authorization under RP-17 must complete and submit the 'Regional Permit 17 Checklist' with their JPA. A copy of the 'Regional Permit 17 Checklist' is found in Appendix B of this application package. If the prospective permittee answers "yes" (or "N/A", where applicable) to all of the questions on the 'Regional Permit 17 Checklist', the permittee is in compliance with RP-17 and will not receive any other written authorization from the Corps but may not proceed with construction until they have obtained all necessary state and local permits. ***Note: If the prospective permittee answers "no" to any of the questions on the 'Regional Permit 17 Checklist' then their proposed structure(s) does not meet the terms and conditions of RP-17 and written authorization from the Corps is required before commencement of any work.***

If the prospective permittee answers "no" to any of the questions on the 'Regional Permit 17 Checklist' then their proposed structure(s) does not meet the terms and conditions of RP-17 and written authorization from the Corps is required before commencement of any work. In those circumstances, the following information must be included in the application and/or on the drawings in order for the application to be considered complete:

1. The applicant **MUST** provide written justification/need for the encroachment if the proposed structure(s) will extend greater than one-fourth of the distance across the waterway measured from either mean high water to mean high water (including all channelward wetlands) or ordinary high water to ordinary high water (including all channelward wetlands). The measurement should be based on the narrowest distance across the waterway regardless of the orientation of the proposed structure(s).
2. The applicant **MUST** provide written justification/need if the proposed structure(s) is greater than five (5) feet wide or there will be less than four (4) feet elevation between the decking and the vegetated wetlands substrate.
3. The Corps **MAY** require depth soundings across the waterway at increments designated by the Corps project manager. Inclusion of depth sounding data in the original JPA submittal is highly recommended in order to expedite permit evaluation. Depth soundings are typically taken at 10-foot increments for waterways less than 200 feet wide and 20-foot increments for waterways greater than 200 feet wide. Please include the date and time the measurements were taken, whether the data was collected at mean low water (MLW) or MHW, and how the soundings were taken (e.g., tape, range finder, etc.).

Number of vessels to be moored at the pier or wharf: _____	Do you have an existing pier on your property? ____Yes____ No If yes, will it be removed? ____Yes ____No Is your lot platted to the mean low water shoreline? ____Yes ____No

In the spaces provided below, give the type (e.g., sail, power, skiff, etc.), size, and registration number of the vessel(s) to be moored

TYPE	LENGTH	WIDTH	DRAFT	REGISTRATION #

11. BOATHOUSES, GAZEBOS, COVERED BOAT LIFTS, AND OTHER ROOFED STRUCTURES OVER WATERWAYS

Number of vessels to be moored at the proposed structure: _____	Will the sides of the structure be enclosed? _____Yes _____No Area covered by the roof structure _____ square feet

In the spaces provided below, give the type (e.g., sail, power, skiff, etc.), size, and registration number of the vessel(s) to be moored

TYPE	LENGTH	WIDTH	DRAFT	REGISTRATION #

12. MARINAS AND COMMERCIAL, GOVERNMENTAL, AND COMMUNITY PIERS

Have you obtained the Virginia Department of Health's approval for sanitary facilities? _____Yes _____No
You will need to obtain this authorization or a variance before a VMRC permit will be issued.

Will petroleum products or other hazardous materials be stored or handled at the facility? _____Yes _____No
If your answer is yes, please attach your spill contingency plan.

Will the facility be equipped to off-load sewage from boats? _____Yes _____No

EXISTING: wet slips: _____ dry storage: _____	*PROPOSED:* wet slips: _____ dry storage: _____

13. FREE STANDING MOORING PILES, OSPREY NESTING POLES, MOORING BUOYS, AND DOLPHINS (not associated with piers)

Number of vessels to be moored: _____	Type and number of mooring(s) proposed: _____

In the spaces provided below, give the type (e.g., sail, power, skiff, etc.), size, and registration number of the vessel(s) to be moored

TYPE	LENGTH	WIDTH	DRAFT	REGISTRATION #

Give the name and complete mailing address(es) of the owner(s) of the vessel(s) if not owned by applicant (attach extra sheets if needed):

Do you plan to reach the mooring from your own upland property? _____Yes _____No
If "no," explain how you intend to access the mooring.

14. BOAT RAMPS

Will excavation be required to construct the boat ramp? _____Yes _____No. If "yes," will any of the excavation occur below the plane of the ordinary high water mark/mean high water line or in wetlands? _____Yes _____No. If "yes," you will need to fill out Section 17 for this excavation.
Where will you dispose of the excavated material?

_____

What type of design and materials will be used to construct the ramp (open pile design with salt treated lumber, concrete slab on gravel bedding, etc.)?

Location of nearest public boat ramp	Driving distance to that public ramp _____miles

Will other structures be constructed concurrent with the boat ramp installation? _____Yes _____No
If "yes," please fill out the appropriate sections of this application associated with those other activities.

15. TIDAL/NONTIDAL SHORELINE STABILIZATION STRUCTURES (INCLUDING BULKHEADS AND ASSOCIATED BACKFILL, RIPRAP REVETMENTS AND ASSOCIATED BACKFILL, MARSH TOE STABILIZATION, GROINS, JETTIES, AND BREAKWATERS, ETC.) Information on non structural, vegetative alternatives (i.e., Living Shoreline) for shoreline stabilization is available at http://ccrm.vims.edu/coastal_zone/living_shorelines/index.html.

Is any portion of the project maintenance or replacement of an existing and currently serviceable structure? _____Yes _____No
If yes, give length of existing structure: _____ linear feet

If your maintenance project entails replacement of a bulkhead, is it possible to construct the replacement bulkhead within 2 feet channelward of the existing bulkhead? _____Yes _____No If not, please explain below:

Length of proposed structure, including returns: _____linear feet

Average channelward encroachment of the structure from Mean high water/ordinary high water mark: _____ feet Mean low water: _____feet	*Maximum* channelward encroachment of the structure from Mean high water/ordinary high water mark: _____ feet Mean low water: _____feet
Maximum channelward encroachment form the back edge of the Dune _____feet	*Maximum* channelward encroachment from the back edge of the Beach _____feet

Describe the type of construction including all materials to be used (including all fittings). Will filter cloth be used? ____Yes ____No

What is the source of the backfill material? _____

What is the composition of the backfill material? _____

If rock is to be used, give the average volume of material to be used for every linear foot of construction: _____cubic yards
What is the volume of material to be placed below the plane of ordinary high water mark/mean high water? _____cubic yards

For projects involving stone:
Average weight of core material (bottom layers): _____pounds per stone (Class_____)
Average weight of armor material (top layers): _____pounds per stone (Class_____)

Are there similar shoreline stabilization structures in the vicinity of your project site? _____Yes _____No
If so, describe the type(s) and location(s) of the structure(s):

If you are building a groin or jetty, will the channelward end of the structure be marked to show a hazard to navigation? _____Yes _____No	Has your project been reviewed by the Shoreline Erosion Advisory Service (SEAS)? _____Yes _____No If yes, please attach a copy of their comments.

16. BEACH NOURISHMENT

Source of material and composition (percentage sand, silt, clay): _____	Volume of material: _____cubic yards

Area to be covered _____ square feet channelward of mean low water _____square feet channelward of mean high water

_____ square feet landward of mean low water _____square feet channelward of mean high water

Mode of transportation of material to the project site (truck, pipeline, etc.):

16. BEACH NOURISHMENT (Continued)

Describe the type(s) of vegetation proposed for stabilization and the proposed planting plan, including schedule, spacing, monitoring, etc. Attach additional sheets if necessary.

17. DREDGING, MINING, AND EXCAVATING

FILL OUT THE FOLLOWING TABLE FOR DREDGING PROJECTS

	NEW dredging				**MAINTENANCE dredging**			
	Hydraulic		Mechanical (clamshell, dragline, etc.)		Hydraulic		Mechanical (clamshell, dragline, etc.)	
	Cubic yards	Square feet	Cubic yards	Square feet	Cubic yards	Square feet	Cubic yards	Square feet
Vegetated wetlands								
Non-vegetated wetlands								
Subaqueous land								
Totals								

Is this a one-time dredging event? ☐ Yes _____ No If "no", how many dredging cycles are anticipated: _____
(____ initial cycle in cu. yds.) (_____ subsequent cycles in cu. yds.)

Composition of material (percentage sand, silt, clay, rock):
Provide documentation (i.e., laboratory results or analytical reports) that *dredged* material from on-site areas is free of toxics. If not free of toxics, provide documentation of proper disposal (i.e., bill of lading from commercial supplier or disposal site).

Please include a dredged material management plan that includes specifics on how the dredged material will be handled and retained to prevent its entry into surface waters or wetlands. If on-site dewatering is proposed, please include plan view and cross-sectional drawings of the dewatering area and associated outfall.

Will the dredged material be used for any commercial purpose or beneficial use? _____Yes _____No
If yes, please explain:

If this is a maintenance dredging project, what was the date that the dredging was last performed? _____
Permit number of original permit: _____ *(It is important that you attach a copy of the original permit.)*

17. DREDGING, MINING, AND EXCAVATING (Continued)

For mining projects: On separate sheets of paper, explain the operation plans, including: 1) the frequency (e.g., every six weeks), duration (i.e., April through September), and volume (in cubic yards) to be removed per operation; 2) the temporary storage and handling methods of mined material, including the dimensions of the containment berm used for upland disposal of dredged material and the need (or no need) for a liner or impermeable material to prevent the leaching of any identified contaminants into ground water; 3) how equipment will access the mine site; and 4) verification that dredging: a) will not occur in water body segments that are currently on the effective Section 303(d) Total Maximum Daily Load (TMDL) priority list (available at http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLDevelopment/TMDLProgramPriorities.aspx) or that have an approved TMDL; b) will not exacerbate any impairment; and c) will be consistent with any waste load allocation/limit/conditions imposed by an approved TMDL (see, "What's in my backyard" or subsequent spatial files at http://www.deq.virginia.gov/ConnectWithDEQ/VEGIS.aspx to determine the extent of TMDL watersheds and impairment segments).

Have you applied for a permit from the Virginia Department of Mines, Minerals and Energy? _____Yes _____No If Yes:
Existing permit number:_____ Date permit issued: _____

Contributing drainage area: _____square miles	Average stream flow at site (flow rate under normal rainfall conditions): _____cfs

18. FILL (not associated with backfilled shoreline structures) AND OTHER STRUCTURES (other than piers and boathouses) IN WETLANDS OR WATERS, OR ON DUNES/BEACHES

Source and composition of fill material (percentage sand, silt, clay, rock):

Rip rap/boulder/block wall

Provide documentation (i.e., laboratory results or analytical reports) that *fill* material from *off-site* locations is free of toxics. If not free of toxics, provide documentation of proper disposal (i.e., bill of lading from commercial supplier or disposal site). Documentation is not necessary for fill material obtained from on-site areas.

Explain the purpose of the filling activity and the type of structure to be constructed over the filled area (if any):

Proposed stabilization measures include constructing gravity retaining walls to stabilize stream banks and protect the exposed sanitary infrastructure, replacement of deteriorated outfall headwalls, encasement of exposed sanitary sewer pipes, establishment of a plunge and install boulder cascades to dissipate energy through the project areas supporting long term stability and reduced project grading extents.

Describe any structure that will be placed in wetlands/waters or on a beach dune and its purpose:

See above

Will the structure be placed on pilings? ____ Yes x ____ No	Total area occupied by any structure. 4,388 _____ Square Feet total sf new rip rap in WUS
How far will the structure be placed channelward from the back edge of the dune? _____feet	How far will the structure be placed channelward from the back edge of the beach? _____feet

19. NONTIDAL STREAM CHANNEL MODIFICATIONS FOR RESTORATION OR ENHANCMENT, or TEMPORARY OR PERMANENT RELOCATIONS

If proposed activities are being conducted for the purposes of compensatory mitigation, please attach separate sheets of paper providing all information required by the most recent version of the stream assessment methodology approved by the Norfolk District of the U.S. Army Corps of Engineers and the Virginia Department of Environmental Quality, in lieu of completing the questions below. Required information outlined by the methodology can be found at:
http://www.nao.usace.army.mil/Missions/Regulatory/UnifiedStreamMethodology.aspx *or*
http://www.deq.virginia.gov/Programs/Water/WetlandsStreams/Mitigation.aspx.

For all projects proposing stream restoration provide a completed Natural Channel Design Review Checklist and Selected Morphological Characteristics form. These forms and the associated manual can be located at:
https://www.fws.gov/chesapeakebay/StreamReports/NCD%20Review%20Checklist/Natural%20Channel%20Design%20Checklist%20Doc%20V2%20Final%2011-4-11.pdf

Has the stream restoration project been designed by a local, state, or federal agency? ____ Yes ____ No. If yes, please include the name of the agency here: _____.

Is the agency also providing funding for this project? _____ Yes _____ No

Stream dimensions at impact site (length and average width in linear feet, and area in square feet):
L: _____(feet) AW:_____ (feet) Area:_____ (square feet)

Contributing drainage area: _____acres *or* _____square miles

19. NONTIDAL STREAM CHANNEL MODIFICATIONS FOR RESTORATION OR ENHANCMENT, or TEMPORARY OR PERMANENT RELOCATIONS (Continued) **19. NONTIDAL STREAM CHANNEL MODIFICATIONS FOR RESTORATION OR ENHANCMENT, or TEMPORARY OR PERMANENT RELOCATIONS (Continued)19. NONTIDAL STREAM CHANNEL MODIFICATIONS FOR RESTORATION OR ENHANCMENT, or TEMPORARY OR PERMANENT RELOCATIONS (Continued)**

Existing average stream flow at site (flow rate under normal rainfall conditions): _____cfs	Proposed average stream flow at site after modifications (flow rate under normal rainfall conditions): _____cfs

Explain, in detail, the method to be used to stabilize the banks:

Explain the composition of the existing stream bed (percent cobble, rock, sand, etc.):

Will low-flow channels be maintained in the modified stream channel? _____Yes _____No.
Describe how:

Will any structure(s) be placed in the stream to create riffles, pools, meanders, etc.? _____Yes _____No
If yes, please explain:

20. UTILITY CROSSINGS

Type of crossing: _____overhead _____trenched _____directionally-drilled

Method of clearing corridor of vegetation (check all that apply): ☐ mechanized land clearing that disturbs the soil surface
☐ cutting vegetation above the soil surface

Describe the materials to be used in the installation of the utility line (including gravel bedding for trenched installations, bentonite slurries used during direction-drilling, etc.) and a sequence of events to detail how the installation will be accomplished (including methods used for in-stream and dry crossings).

Will the proposed utility provide empty conduits for any additional utilities that may propose to co-locate at a later date? ____Yes ____ No.

For overhead crossings over navigable waterways (including all tidal waterways), please indicate the height of other overhead crossings or bridges over the waterway relative to mean high water, mean low water, or ordinary high water mark:

Nominal system voltage, if project involves power lines: _____

Total number of electrical circuits: _____

20. UTILITY CROSSINGS (Continued)

Will there be an excess of excavated material? _____Yes _____No
If so, describe the method that will be undertaken to dispose of, and transport, the material to its permanent disposal location and give that location:

Will any excess material be stockpiled in wetlands? _____Yes _____No
If so, will the stockpiled material be placed on filter fabric or some other type of impervious surface? _____Yes _____No

Will permanent access roads be placed through wetlands/streams? ____Yes _____No
If yes, will the roads be (check one) ☐ at grade ☐ above grade?

Will the utility line through wetlands/waters be continually maintained (e.g. via mowing or herbicide)? ____Yes _____No
If maintained, what is the maximum width? _____feet

21. ROAD CROSSINGS

Have you conducted hydraulic studies to verify the adequacy of the culverts? _____Yes _____No
If so, please attach a copy of the hydraulic study/report.
Virginia Department of Transportation (VDOT) standards require that the backwater for a 100 year storm not exceed 1 foot for all road, culvert, and bridge projects within FEMA-designated floodplains. Virginia Department of Environmental Quality (DEQ) requires pipes and culverts 24 inches or less in diameter to be countersunk three inches below the natural stream bed elevations, and pipes and culverts greater than 24 inches to be countersunk at least six inches below the natural stream bed elevations. Hydraulic capacity is determined based on the reduced capacity due to the countersunk position.

Will the culverts be countersunk below the stream bottom? _____Yes _____No. If no, explain:

If the project entails a bridged crossing and there are similar crossings in the area, what is the vertical distance above mean high water, mean low water, or ordinary high water mark of those similar structures? _____feet above _____
For all bridges proposed over navigable waterways (including all tidal water bodies), you will be required to contact the U.S. Coast Guard to determine if a permit is required of their agency.

On separate sheets of paper, describe the materials to be used, the method of construction (including the use of cofferdams), the sequence of construction events, and if bedrock conditions may be encountered. Include cross-sections and profile plans of the culvert crossings including wing walls or rip rap.

22. IMPOUNDMENTS, DAMS, AND STORMWATER MANAGEMENT FACILITIES
If the impoundment or dam is a component of a water withdrawal project, also complete Sections 24 through 26.

Will the proposed impoundment, dam, or stormwater management facility be used for agricultural purposes (e.g., in the operation of a farm)? For DEQ permitting purposes, a farm is considered to be a property or operation that produces goods for market.
___ Yes ___ No

What type of materials will be used in the construction (earth, concrete, rock, etc.)? _____

What is the source of these materials? _____

Provide the dimensions of proposed impoundment, dam, or stormwater management facility, including the height and width of all structures.

Storage capacity* of impoundment: _____acre-feet *should be given for the normal pool of recreational or farm ponds, or design pool for stormwater management ponds or reservoirs (the elevation the pond will be at for the design storm, e.g., 10-year, 24-hour storm)	Surface area** of impoundment: _____acres **should be given for the normal pool of recreational or farm ponds, or design pool for stormwater management ponds or reservoirs (the elevation the pond will be at for the design storm, e.g., 10-year, 24-hour storm)

22. IMPOUNDMENTS, DAMS, AND STORMWATER MANAGEMENT FACILITIES (Continued)

Is the proposed project excluded from the Virginia Dam Safety Regulations? ___ Yes ___ No ___ Uncertain

If not excluded, does your proposed project comply with the Virginia Dam Safety Regulations? ___ Yes ___ No ___ Uncertain

Does the proposed design include a vegetation management area per §10.1-609.2? ___ Yes ___ No ___ Uncertain
If your answer to these questions is no or uncertain, you should contact the Virginia Department of Conservation and Recreation's Dam Safety Program at (804) 371-6095, or reference the regulations on the Web at
http://www.dcr.virginia.gov/dam_safety_and_floodplains/index.shtml

For stormwater management and flood control facilities:

Design storm event: _____year storm Retention time: _____hours

Current average flow (flow rate under normal rainfall conditions): _____cfs

Method used to derive average flow: _____

Proposed peak outflow for the design storm provided above: _____cfs

Has the facility been designed as an Enhanced Extended Detention Basin or an Extended Detention Basin in accordance with the Minimum Standard 3.07 of the Virginia Stormwater Management Handbook, Volume I (published by the Virginia Department of Conservation and Recreation, 1999), or in accordance with the latest version of this handbook? _____Yes _____No

Will the impoundment structure be designed to pass a minimum flow at all times? _____Yes _____No

If so, please give the minimum rate of flow: _____cfs

What is the drainage area upstream of the proposed impoundment? _____square miles

How much of your proposed impoundment structure will be located on the stream bed? _____square feet

What is the area of vegetated wetlands that will be excavated and/or back-flooded by the impoundment? _____ square feet

What is the *area and length* of streambed that will be excavated and/or back-flooded by the impoundment? _____ square feet
_____ linear feet

Are fish ladders being proposed to accommodate the passage of fish? _____Yes _____No

23. OUTFALLS NOT ASSOCIATED WITH PROPOSED WATER WITHDRAWAL ACTIVITIES

Type and size of pipe(s): _____

Daily rate of discharge: _____mgd

If the discharge will be thermally-altered, provide the maximum temperature: _____

Contributing drainage area: _____square miles Average daily stream flow at site:_____cfs

Have you received a Virginia Discharge Elimination System (VPDES) permit for the proposed project? ___ Yes ___ No.

If yes, please provide the VPDES permit number: _____.

If no, is there a permit action pending? ___ Yes ___ No. If pending, what is the facility name? _____.

The following sections are typically related to surface water withdrawal activities; Federal Energy Regulatory Commission license projects; or impacts likely to require instream flow limits. Examples of such projects include, but are not limited to, reservoirs, irrigation projects, power generation facilities, and public water supply facilities that may or may not have associated features, such as dams, intake pipes, outfall structures, berms, etc.

If completing these sections, enter "N/A" in any section that does not apply to the project.

24. INTAKES, OUTFALLS, AND WATER CONTROL STRUCTURES (INCLUDING ALL PROPOSED WATER WITHDRAWAL ACTIVITIES)

For intakes:

Type and size of pipe(s): _____

Type and size of pump(s): _____

Average and Maximum daily rate of withdrawal: _____ and _____ mgd

Velocity of withdrawal: _____ fps

Screen mesh size:_____ inches / _____ mm

If other sizing units, please specify:

_____

Contributing drainage area at withdrawal point(s):

_____ square miles

Average daily stream flow at withdrawal point(s) (flow rate under normal rainfall conditions): _____ cfs

Method(s) used to derive average daily stream flow

_____

Average annual stream flow at withdrawal point(s):

_____ cfs

Latitude and longitude of withdrawal point(s) (degrees, minutes, seconds): _____

For outfalls:

Type, size, and hydraulic capacity (under normal conditions) of pipe(s): _____, _____, and _____

Daily rate of discharge: _____ mgd

If the discharge will be thermally-altered, provide the maximum temperature: _____

Contributing drainage area at discharge point(s):

_____ square miles

Average daily stream flow at discharge point(s) (flow rate under normal rainfall conditions): _____cfs

Method(s) used to derive average daily stream flow

_____

Latitude and longitude of discharge point(s) (degrees, minutes, seconds): _____

For intakes and dams, use the table below to provide the <u>median</u> monthly stream flows in cubic feet per second (cfs) at the water intake or dam site (not at the stream gage; if there is not a gage at the intake or dam site, you will need to interpolate flows to the intake or dam site based upon the most closely related watershed in which there is an operational stream gage monitored by the United States Geologic Survey (USGS)). Median flow is the value at which half of the measurements are above and half of the measurements are below. Median is also sometimes referred to as the '50% exceedence flow'. The median flow generally must be calculated from USGS historical data. Please do not provide *mean (average)* flow.

Month	Median flow (cfs)	Month	Median flow (cfs)
January		July	
February		August	
March		September	
April		October	
May		November	
June		December	

24. INTAKES, OUTFALLS, AND WATER CONTROL STRUCTURES (Continued)

Describe the stream flow gages used, USGS stream flow gage site number and site name (e.g., USGS 01671100 Little River near Doswell, VA), the type of calculations used (such as drainage area correction factors), and the period of record that was used to calculate the median flows provided in the table above. Generally, the period of record should span a minimum of 30 years.

For interbasin transfer of water resources proposed from either the Chowan River, New River, Potomac River, Roanoke River, Big Sandy River, or Tennessee River basins to another river basin, provide the following information:

Destination location (discharge point) of the transfer:
8-digit USGS Hydrologic Unit Code (HUC) (See http://cfpub.epa.gov/surf/locate/index.cfm): _____ If known, indicate the 10-digit and 12-digit USGS HUCs (see http://consapps.dcr.virginia.gov/htdocs/maps/HUExplorer.htm):

_____ _____

Latitude and Longitude: _____- _____- _____/ _____- _____- _____

Provide any available historical low-flows at the intake or dam site.

Describe how the proposed withdrawal at the intake or dam site will impact stream flows in terms of rates, volumes, frequency, etc. (e.g., percent of the flow to be withdrawn, percent of withdrawal returned to the original source, etc.).

Describe how the withdrawal of water will vary over time. For example, will the withdrawal vary by the time of year, by the time of day, or by the time of week? Examples of projects that should describe variable withdrawals include, but are not limited to: power plant cooling withdrawals that increase and decrease seasonally; golf course irrigation; municipal water supply; nurseries; ski resorts that use water for snowmaking; and resorts with weekend or seasonal variations.

24. INTAKES, OUTFALLS, AND WATER CONTROL STRUCTURES (Continued)

Provide the amount of water that will be lost due to consumptive use. For the purpose of this application, consumptive use means the withdrawal of surface waters without recycling of said waters to their source or basin of origin. Examples of consumptive uses are water that is evaporated in cooling towers or by other means in power plants; irrigation water (all types); residential water use that takes place outside of the home; and residential water use both inside and outside of homes for residences served by septic systems. Projects that propose a transfer of water from one river basin to another and/or localities that sell water to other jurisdictions, should document the portion of the withdrawal that is not returned to the originating watershed.

Proposed monthly consumptive volume (million gallons): _____

Attach a map showing the *location* of the withdrawal and of the return of flow, and provide the *amount* of the return flow (million gallons).

For withdrawals proposed on an impoundment, provide a description of flow or release control structures. Include type of structure, rate of flow, size, capacity, invert elevation of outfall pipes referenced to the normal pool elevation, and the mechanism used to control release. Provide a description of available water storage facilities. Include the volume, depth, normal pool elevation, unusable storage volume and dimensions. If applicable, stage-storage relationship at the impounding structure (the volume of water in the impoundment at varying stages of water depth) and volume or rate of withdrawals from the storage facility.

25. WATER WITHDRAWAL USE(S), NEED, AND ALTERNATIVES *(Attach additional sheets if needed.)*

Describe the proposed use(s) and need for the surface water and information on how demand for surface water was determined. *Golf courses* must provide documentation to justify the amount of water withdrawal, such as the amount of acreage under irrigation, the acreage of fairways versus greens, type of turf grass, evapotranspiration, and irrigation efficiency. *Agricultural* users must supply documentation justifying their requested withdrawal amount, such as type of crop, livestock, or other agriculture animal, number of animals, watering needs, acres irrigated, inches of water applied, and frequency of application. *Other users* of withdrawals for purposes other than those described above must provide sufficient documentation to justify the requested withdrawal amounts.

25. WATER WITHDRAWAL USE(S), NEED, AND ALTERNATIVES (Continued)

Provide the following information at the water intake or dam site. Specify the units of measurement (e.g., million gallons per day, gallons per minute, cubic feet per second, etc.).

Proposed maximum instantaneous withdrawal _____

Proposed average daily withdrawal _____

Proposed maximum daily withdrawal _____

Proposed maximum monthly withdrawal _____

Proposed maximum annual withdrawal _____

Describe how the above withdrawals were calculated, including the relevant assumptions made in that calculation and the documentation or resources used to support the calculations, such as population projections, population growth rates, per-capita use, new uses, changes to service areas, and if applicable, evapotranspiration data and irrigation data.

For surface water withdrawals, public water supply withdrawals, and projects that will alter instream flows, provide information to establish the local water supply need. Attach additional sheets if needed.

EXISTING	PROJECTED
Existing supply sources, yields, and demands: _____ Peak day withdrawal: _____ Average daily withdrawal: _____ Safe yield: _____ Lowest daily flow of record: _____ Types of water uses (residential, public water supply, commercial, industrial, agricultural): _____ Existing water conservation measures and drought response plan, including what conditions trigger implementation: _____	Projected demands over a minimum 30-year planning period: _____ Projected demands in local or regional water supply plan (9VAC25-780 et seq.) or demand for the project service area, if that is smaller in area: _____ Statistical population (growth) trends: _____ Projected demands by type of water use: _____ Projected demands without water conservation measures: _____ Projected demands with long-term water conservation measures: _____

For surface water withdrawals other than public water supply, provide information or documentation that demonstrates alternate sources of water are available for the proposed project during times of reduced instream flow.

25. WATER WITHDRAWAL USE(S), NEED, AND ALTERNATIVES (Continued)

Provide information from the State Water Resources Plan (http://www.deq.virginia.gov/Programs/Water/WaterSupplyWaterQuantity/WaterSupplyPlanning/StateWaterResourcesPlan.aspx) and the local or regional water supply plan that covers the area in which the proposed water withdrawal project is located (http://www.deq.virginia.gov/Portals/0/DEQ/Water/WaterSupplyPlanning/SWRP%20Final/App%20A%20Water%20Supply%20Plans%20and%20Participating%20Localities.pdf). Include information from the plan that pertains to projected demand, analysis of alternatives, and water conservation measures. Discuss any discrepancies between the water supply plan and the proposed project. For projects that propose a transfer of water resources from the Chowan River, New River, Potomac River, Roanoke River, Big Sandy River, or Tennessee River basins to another river basin, information should be provided from the water supply plans for both the source and receiving basins. Attach additional sheets if needed.

Provide an alternatives analysis for the proposed water withdrawal project, including the required range of alternatives to be analyzed; a narrative outlining the opportunities and status of regional efforts undertaken; and the criteria used to evaluate each alternative. The analysis must address all of the criteria contained in 9VAC25-360.

Describe any existing, flow-dependent beneficial uses along the affected stream reach. Include both instream and offstream uses. Describe the stream flow necessary to protect existing beneficial uses, how the proposed withdrawal will impact existing beneficial uses, and any measures proposed to mitigate any adverse impacts that may arise. For projects that propose a transfer of water resources from the Chowan River, New River, Potomac River, Roanoke River, Big Sandy River, or Tennessee River basins to another river basin, this analysis should include both the source and receiving basins. For the purposes of this application, beneficial instream uses include, but are not limited to, the protection of fish and wildlife habitat; maintenance of waste assimilation; recreation; navigation; and cultural and aesthetic values. Offstream beneficial uses include, but are not limited to, domestic uses (including public water supply); agricultural uses; electric power generation; commercial uses; and industrial uses.

Describe the aquatic life known to be present along the affected stream reach. Describe aquatic life that may be impacted by the proposed water withdrawal. Include the species' habitat requirements. For projects that propose a transfer of water resources from either the Chowan River, New River, Potomac River, Roanoke River, Big Sandy River, or Tennessee River basins to another river basin, this analysis should include both the source and receiving basins.

26. PUBLIC COMMENTS/ISSUES FOR MAJOR WATER WITHDRAWALS OR INTERBASIN TRANSFERS

For new or expanded surface water supply projects, use separate sheets of paper to summarize the steps taken to seek public input per 9VAC25-210-320, and identify the issues raised during the public information process.

For transfer of water resources proposed from either the Chowan River, New River, Potomac River, Roanoke River, Big Sandy River, or Tennessee River basins to another river basin, if public input was not required per 9VAC25-210-320, summarize on separate sheets of paper any coordination and/or notice provided to the public, local/state government, and interested parties in the affected river basins and identify any issues raised.

APPENDIX A

Adjacent Property Owner's Acknowledgement Form

I, _____, own land next to/ across the water from/ in the same cove
(print adjacent property owner's name)

as the land of _____.
(print applicant's name)

I have reviewed the applicant's project drawings dated _____ to be submitted for all
(date of drawings)

necessary federal, state, and local permits.

_____ I have no comment regarding the proposal

_____ I do not object to the proposal

_____ I object to the proposal

The applicant has agreed to contact me for additional comments if the proposal changes prior to construction of the project.

(Before signing this form, please be sure that you have checked the appropriate option above)

_____
Adjacent property owner's signature

_____
Date

NOTE: IF YOU OBJECT TO THE PROPOSAL, THE REASON(S) YOU OPPOSE THE PROJECT MUST BE SUBMITTED TO VMRC IN WRITING. AN OBJECTION WILL NOT NECESSARILY RESULT IN A DENIAL OF A PERMIT FOR THE PROPOSED WORK. HOWEVER, VALID COMPLAINTS WILL BE GIVEN FULL CONSIDERATION DURING THE PERMIT REVIEW PROCESS.

APPENDIX A

Adjacent Property Owner's Acknowledgement Form

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Adjacent property owner's signature

_____
Date

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NORFOLK DISTRICT

23-SPGP-PASDO SELF-VERIFICATION FORM

CATEGORY A PIER STRUCTURES

Expires: August 21, 2028

Please review the 23-SPGP-PASDO before completing this form. This can only be used for proposed PRIVATE USE structures that comply with the terms and conditions of the 23-SPGP-PASDO located on the Corps website: https://www.nao.usace.army.mil/Missions/Regulatory/RBregional/ .

1. Has the permittee reviewed the 23-SPGP-PASDO and verified that the proposed structures are in compliance with all the terms, conditions, and limitations of 23-SPGP-PASDO?
   ☐ YES ☐ NO
2. Are the proposed structures for private use only?
   ☐ YES ☐ NO
3. To avoid adverse effects to navigation, do the proposed structures extend no more than one-fourth of the distance across the waterway measured from either mean high water (MHW) to MHW (including all channelward wetlands) or ordinary high water (OHW) to OHW (including all channelward wetlands)?
   ☐ YES ☐ NO
4. If the proposed structures cross wetland vegetation, are they an open-pile design that has a maximum width of five (5) feet and a minimum height of four (4) feet between the decking and the wetland substrate?
   ☐ YES ☐ NO ☐ N/A
5. Do the proposed structures include no more than two (2) lifts and no more than two (2) boat slips?
   ☐ YES ☐ NO ☐ N/A
6. Is the open-sided roof structure designed to shelter a boat no more than 700 square feet and/or is the open-sided roof structure or gazebo structure designed to shelter a pier no more than 400 square feet?
   ☐ YES ☐ NO ☐ N/A
7. Are all piles associated with the proposed structure non-steel, no more than 12” in diameter, and will there be no more than 25 piles installed channelward of MHW?
   ☐ YES ☐ NO
8. When operationally feasible, is all work occurring behind cofferdams, turbidity curtains, or other methods used to control turbidity?
   ☐ YES ☐ NO
9. If the proposed structures are to be located within an anadromous fish use area, will the prospective permittee adhere to the anadromous fish use area time of year restriction (TOYR) prohibiting in-water work from occurring between February 15 through June 30 of any given year if 1) piles are to be installed with a cushioned impact hammer and there are fewer than 492 feet between the most channelward pile and mean low water (MLW) on the opposite shoreline; or 2) piles are to be installed with a vibratory hammer and there are fewer than 384 feet between the most channelward pile and MLW on the opposite shoreline? https://services.dwr.virginia.gov/fwis/ .
   ☐ YES ☐ NO ☐ N/A
10. Is all work occurring outside of submerged aquatic vegetation (SAV) mapped by the Virginia Institute of Marine Sciences’ (VIMS) most recent survey year and 5-year composite? https://mobjack.vims.edu/sav/savwabmap/
    ☐ YES ☐ NO
11. Has the permittee ensured the construction of the proposed structures will not affect federally listed threatened or endangered species or designated critical habitat?
    NOAA PRD: https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-consultations-greater-atlantic-region ; and
    US Fish and Wildlife Service: https://ipac.ecosphere.fws.gov/
    ☐ YES ☐ NO

12. Will the proposed structures be located outside of the following waterbodies: Broad Creek in Middlesex County, Fisherman's Cove in Norfolk, or the Salt Ponds in Hampton?
    ☐ YES ☐ NO
13. Is your project located outside of the Section 408 Review Area boundaries for civil works projects (e.g. federal navigation channels, flood risk management projects, or aquatic ecosystem restoration projects) as depicted on the "Norfolk District Section 408 Review Layer" in the Norfolk District Section 408 Map? https://www.nao.usace.army.mil/408Review/
    ☐ YES ☐ NO
14. Is your project located outside of any federal property? Federal property can be located on the "NAO Real Estate Data – CWLDM Land Parcel Area" layer on the Norfolk District Section 408 Map? https://www.nao.usace.army.mil/408Review/ .
    ☐ YES ☐ NO
15. Will the proposed structures be located outside of any Designated Trout Waters? https://services.dwr.virginia.gov/fwis/
    ☐ YES ☐ NO
16. If the proposed structures include floatation units, will the floating sections be braced so they will not rest on the bottom during periods of low water?
    ☐ YES ☐ NO ☐ N/A
17. Does the permittee recognize this form does not authorize any dredging or filling of waters of the United States (including wetlands) and does not imply that future dredging proposals or any other structures will be approved by the Corps?
    ☐ YES ☐ NO

If you have answered "NO" to any of the questions above, then the Category A Self-Verification of the 23-SPGP-PASDO does NOT apply, and you are required to obtain written authorization from the Corps prior to performing the work.

If you answered "YES" (or "N/A, where applicable) to all of the questions above, you are in compliance with the Category A Self-Verification of the 23-SPGP-PASDO. Please sign below and submit this self-verification form with your completed Joint Permit Application (JPA). This signed form serves as your letter of authorization from the Corps. You WILL NOT receive any other written authorization from the Corps; however, you MAY NOT proceed with construction until you have obtained all other necessary state and local permits.

By signing below, I certify that I have read and understand all conditions of the Army Corps of Engineers Norfolk District Regulatory Branch 23-SPGP-PASDO, dated August 22, 2023. I accept all of the terms and conditions of the permit, including the limits of federal liability contained in the 23-SPGP-PASDO enclosure. I acknowledge that structures authorized under this permit may be exposed to waves caused by passing vessels. The permittee is solely responsible for the integrity of the permitted structures and any resulting wave damage to such structures or moored vessels. I accept that the United States is not liable in any way for such damage and that the permittee will not seek to involve the United States in any actions or claims regarding such damage.

Proposed work location:

_____ _____

Signature of Property Owner(s) or Agent

_____

_____ _____

Date VMRC Number

APPENDIX C

Chesapeake Bay Preservation Act Information

Please answer the following questions to determine if your project is subject to the requirements of the Bay Act Regulations:

1. Is your project located within Tidewater Virginia? X Yes ____No (See map on page 31) - If the answer is "no", the Bay Act requirements do not apply; if "yes", then please continue to question #2.

2. Please indicate if the project proposes to impact any of the following Resource Protection Area (RPA) features:

   ____ Tidal wetlands,

   ____ Nontidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow,

   ____ Tidal shores,

   ____ Other lands considered by the local government to meet the provisions of subsection A of 9VAC25-830-80 and to be necessary to protect the quality of state waters (contact the local government for specific information),

   X ____ A buffer area not less than 100 feet in width located adjacent to and landward of the components listed above, and along both sides of any water body with perennial flow.

If the answer to question #1 was "yes" and any of the features listed under question #2 will be impacted, compliance with the Chesapeake Bay Preservation Area Designation and Management Regulations is required. **The Chesapeake Bay Preservation Area Designation and Management Regulations** are enforced through locally adopted ordinances based on the Chesapeake Bay Preservation Act (CBPA) program. Compliance with state and local CBPA requirements mandates the submission of a ***Water Quality Impact Assessment (WQIA)*** for the review and approval of the local government. Contact the appropriate local government office to determine if a WQIA is required for the proposed activity(ies).

The individual localities, not the DEQ, USACE, or the Local Wetlands Boards, are responsible for enforcing the CBPA requirements and, therefore, local permits for land disturbance are not issued through this JPA process. **Approval of this wetlands permit does not constitute compliance with the CBPA regulations nor does it guarantee that the local government will grant approval for encroachments into the RPA that may result from this project.**

Notes for all projects in RPAs

Development, redevelopment, construction, land disturbance, or placement of fill within the RPA features listed above requires the approval of the locality and may require an exception or variance from the local Bay Act ordinance. Please contact the appropriate local government to determine the types of development or land uses that are permitted within RPAs.

Pursuant to 9VAC25-830-110, *on-site delineation of the RPA is required for all projects in CBPAs*. Because USGS maps are not always indicative of actual "in-field" conditions, they may not be used to determine the site-specific boundaries of the RPA.

Notes for shoreline erosion control projects in RPAs

Re-establishment of woody vegetation in the buffer will be required by the locality to mitigate for the removal or disturbance of buffer vegetation associated with your proposed project. Please contact the local government to determine the mitigation requirements for impacts to the 100-foot RPA buffer.

Pursuant to 9VAC25-830-140 5 a (4) of the Virginia Administrative Code, shoreline erosion projects are a permitted modification to RPAs provided that the project is based on the "best technical advice" and complies with applicable permit conditions. In accordance with 9VAC25-830-140 1 of the Virginia Administrative Code, the locality will use the information provided in this Appendix, in the project drawings, in this permit application, and as required by the locality, to make a determination that:

1. Any proposed shoreline erosion control measure is necessary and consistent with the nature of the erosion occurring on the site, and the measures have employed the "best available technical advice"
2. Indigenous vegetation will be preserved to the maximum extent practicable
3. Proposed land disturbance has been minimized
4. Appropriate mitigation plantings will provide the required water quality functions of the buffer (9VAC25-830-140 3)
5. The project is consistent with the locality's comprehensive plan
6. Access to the project will be provided with the minimum disturbance necessary.

TIDEWATER VIRGINIA

APPENDIX D

Sample Drawings

On the following pages, you will find lists of information required on drawings, as well as sample drawings in plan and cross-sectional views. While the lists attempt to capture all required information for drawings, please verify your submittal with the applicable agency regulations. For DEQ drawing definitions and requirements, see Sections 10 and 80 of 9VAC25-210; and in Section 60 of the general permit regulations 9VAC25-660, 9VAC25-670, 9VAC25-680, and 9VAC25-690. Please be advised that some Local Wetlands Boards (LWB) require you to have a licensed engineer certify the drawings. You should contact your LWB to determine their specific requirements. Failure to include all necessary information on your drawings may mean that your application is not considered complete by one or more agencies.

All projects will require the submittal of plan view and cross-sectional view drawings. Drawings should be drawn to a scale no smaller than 1 inch = 200 feet. The number of sets of drawings to be submitted is detailed in the HOW TO APPLY section starting on page 2 of this package. Drawings can be computer-generated or hand-drawn. The sample drawings demonstrate the **general** format necessary, *but for ease of viewing, not all of the required information is shown in the sample drawings***.**

Plan view *drawings should contain the following general informational items:*

- Name of project
- North arrow
- Scale
- Waterway name, if designated
- Existing topographic or bathymetric contours
- Proposed topographic or bathymetric contours
- Width of waterway from the mean high water level to the mean high water level (tidal areas), or the ordinary high water mark to the ordinary high water mark (nontidal areas)
- Direction of flood and ebb (tidal areas), and/or direction of flow in nontidal areas (if applicable)
- Mean low water level and mean high water level (tidal areas), or ordinary high water mark (nontidal areas)
- Landward limit of the dune or beach at the site
- Limits of proposed impacts to surface waters, such as fill areas, riprap scour protection placement, and dredged areas; the amount of such impacts in square feet and acres; and the latitude/longitude (decimal degrees) at each impact site
- All delineated wetlands and all surface waters on the site, including the Cowardin classification (i.e., emergent, scrub-shrub, or forested) for those surface waters and waterway name, if designated

AND Plan view *drawings should also contain the following specific informational items* ***if they apply to the project****:*

Resource Impact/Protection-Specific Items:

- Limits of: existing*, non-delineated* wetlands, open water, or streams, including submerged aquatic vegetation (SAV), riffle/pool complexes, or bars; Chesapeake Bay Preservation Act Resource Protection Area(s) (RPA), including the 100-foot buffer; proposed clearing within the RPA buffer; and any areas that are under a deed restriction, conservation easement, restrictive covenant, or other land use protective instrument (i.e., protected areas)
- Location and type of existing vegetation within the 100-foot RPA buffer and location of proposed wetland planting areas (as restoration for temporary impacts or mitigation for permanent impacts)
- Historic/cultural resources
- Threatened/Endangered resources

Structure/Project-Specific Items:

- Existing and proposed structures, labeled as ‘existing’ and ‘proposed’, and their dimensions. These items may include pier(s), including L-heads, T-heads, platforms, and/or decks; roof(s) on roofed structures located over waterways, including boathouses; gasoline storage tanks and/or structures for collecting and handling hazardous material, including settling tanks for travel lift washdown water, paint chips, etc.; return walls; tie-ins to existing bulkhead(s) or riprap; utility line easement(s); utility line/road right(s)-of-way; aerial transmission line structure(s), including towers, poles, platforms, etc.; onsite or offsite dredged material disposal areas, including location of all berms, spillways, erosion and sediment control measures, outfall pipes, and aprons; temporary stockpiles of excavated material; temporary construction access facilities; risers and/or emergency spillways, labeled with their proposed invert elevations; design pool/normal pool for stormwater management ponds/impoundments/reservoirs; intakes and/or outfalls, including splash aprons, relative to mean high water, mean low water, or ordinary high water mark(s); anchoring devices and weights (mooring buoys), including the total swing radius
- Channelward encroachment of proposed structure(s) from mean high water and mean low water, or from ordinary high water mark
- For piers that cover ¼ or more of the waterway width: depth soundings, taken at the mean low water level (tidal areas) or the ordinary high water mark (nontidal areas)
- Distance(s) between structure(s) (piers, boathouses, catwalks, etc.) and mooring pile(s)
- Minimum distance between dredge cut and vegetated wetlands
- Latitude and longitude of all mooring structures, in degrees, minutes, and seconds
- End points and turning points along proposed bulkhead(s), labeled as such

- For bulkheads, measurements from each end point and each turning point along proposed bulkhead(s) to two fixed points of reference (labeled as such)
- Structure or method used to contain fill (hay bales, silt fences, etc.)
- Dimensions of impoundment, dam, or stormwater management facility and area of any vegetative management areas

Cross-sectional view drawings, and when required profile view* drawings, *should contain the following General Informational items:*

- Name of project
- North arrow
- Scale
- Waterway name
- Mean low water and mean high water lines (tidal areas), and/or ordinary high water mark (nontidal areas)
- Direction of flood and ebb (tidal areas), and/or direction of flow in nontidal areas (if applicable)
- Existing contours of the bottom (depths relative to mean low water or ordinary high water mark) and the bank itself
- Existing contours of the dune or beach
- Existing and proposed elevations
- Location of all existing and proposed structures
- Limits of proposed impacts to surface waters, such as fill areas, riprap scour protection placement, and dredged areas; the amount of such impacts in square feet and acres; and the latitude/longitude (decimal degrees) at each impact site

AND Cross-sectional view drawings, and when required profile view* drawings, *should also contain the following specific informational items* ***if they apply to the project****:*

Resource impact/protection-specific Items:

- Limits of: existing*, non-delineated* wetlands, open water, or streams, including submerged aquatic vegetation (SAV), riffle/pool complexes, or bars; Chesapeake Bay Preservation Act Resource Protection Area(s) (RPA), including the 100-foot buffer; and proposed clearing within the RPA buffer
- Riprap scour protection
- Proposed wetland planting areas, relative to mean high water and mean low water (tidal areas), or ordinary high water mark (nontidal areas)
- Depth of buried toe of riprap or marsh toe stabilization
- Base width, top width, and slope of stone/concrete stabilization structures

Structure/Project-Specific Items:

- Existing and proposed structures, labeled as ‘existing’ and ‘proposed’, and their dimensions. These items may include fill areas, labeled with square footage(s) or acreage(s) over vegetated wetlands and subaqueous bottom; berms, spillways, erosion and sediment control measures, outfall pipes, and aprons at onsite or offsite dredged material disposal area(s); bank grades; deadmen, sheeting, knee braces, etc., as used in the construction of bulkheads; filter cloth; weep holes; intakes and/or outfalls, including splash aprons, relative to mean high water, mean low water, or ordinary high water mark; risers and/or emergency spillways; low-flow channels; culverts, including their proposed invert elevations and diameters; anchoring systems for aquaculture structures; type of chain used to secure mooring buoys to subaqueous bottom
- For dredge projects, proposed contours of the bottom (depth relative to mean low water or ordinary water level)
- Bottom width of proposed dredge cut, projected side slope of cut, and estimated top width of cut
- Ponding depth of onsite or offsite dredged material disposal area
- Minimum distance between pier decking and vegetated wetland substrate (a.k.a. the “mud line”)
- Water depth below mean low water at the end of proposed boat ramps
- Depth of penetration of pilings and/or sheeting (bulkheads)
- Elevation of any proposed fill (including backfill)
- Structure or method used to contain fill (hay bales, silt fences, etc.)
- Design pool/normal pool elevation for stormwater management facilities/impoundments/reservoirs
- Vertical distance from the water surface (relative to mean high water or ordinary high water mark) for all aerial crossings (bridges or overhead utility lines) over navigable water bodies
- Depth below bottom of water body for submarine utility crossings
- Dimensions of impoundment, dam, or stormwater management facility through a cross-section of the structure(s); bottom elevation(s) of basin created; depth of pool; and depth(s) to structure(s) on the bottom.

** Profile drawing or drawings with the information noted in Appendix D may be required by DEQ on a case-by-case basis to demonstrate minimization of impacts. When required, any application that proposes piping or culverting stream flows shall provide a longitudinal profile of the pipe or culvert position and stream bed thalweg, or shall provide spot elevations of the stream thalweg at the beginning and end of the pipe or culvert, extending to a minimum of 10 feet beyond the limits of proposed impact.*

AECOM
12420 Milestone Center Drive #150
Germantown, Maryland 20876
www.aecom.com

Memorandum

To	Alex Haptemariam, City of Alexandria	Pages	6
CC	Brandon Alderman, AECOM		
Subject	Wetland Delineation Memorandum Taylor Run Infrastructure Stabilization Project Alexandria, Virginia		
From	Sean Bernheisel/Lauren Palmieri, AECOM Environmental Specialist		
Date	April 17, 2025		

Introduction

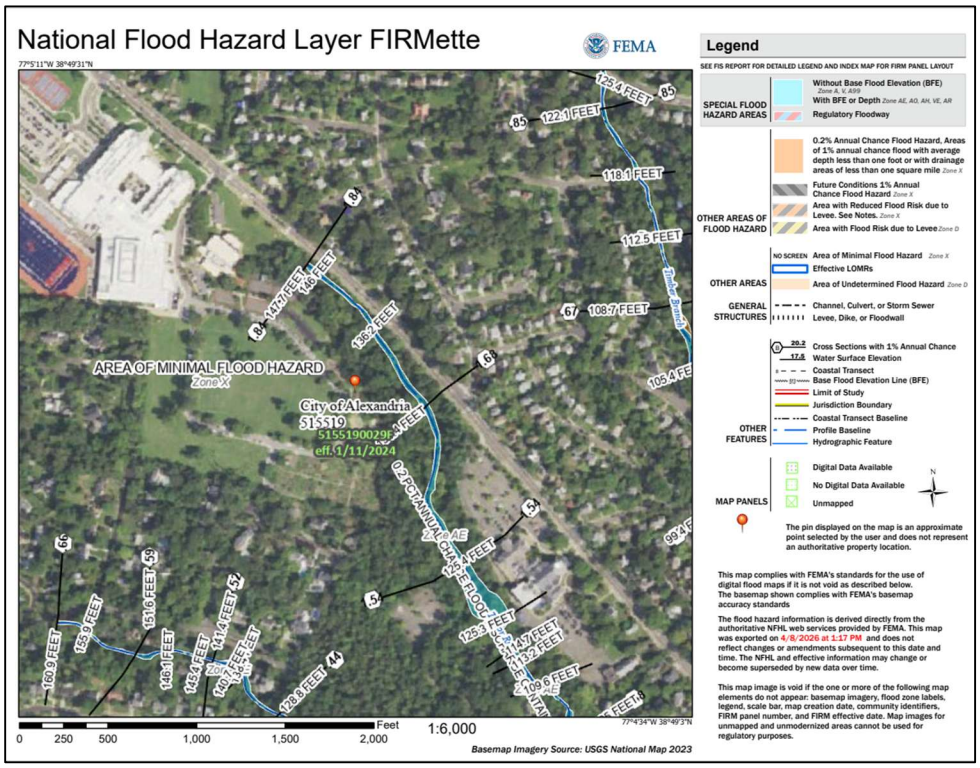
The City of Alexandria has retained the services of AECOM to provide design, engineering and construction support related to the above referenced project. The project includes stabilization and channel modifications to the Taylor Run stream to address areas of active erosion, protect existing stormwater and sanitary sewer infrastructure, and improve overall stream stability. The proposed actions have been divided into four distinct areas, each addressing specific infrastructure vulnerabilities. A wetland and Waters of the U.S. (WUS) delineation was conducted within a study area that incorporates the four distinct areas and beyond, to capture all locations of potential access which may be required to complete the project. The study area is roughly located between Chinquapin Drive and King Street and is approximately 8.08 acre (**Figure 1**).

Figure 1: Project Location Map

Published Resource Review

Taylor Run is within the Mid-Atlantic Region within the Middle Potomac-Anacostia-Occoquan (HUC8: 02070010), Cameron Run-Potomac River (HUC10:0207001003), and Cameron Run (HUC12: 020700100302) watersheds. The stream discharges into Holmes Run, which ultimately flows into the Potomac River and then the Chesapeake Bay. The City of Alexandria local data viewer also identifies The study area is located on Federal Emergency Management Administration Flood Insurance Rate Map (FEMA FIRM) panel: 5155190029F (effective date January 11, 2024) which shows the area is located within a mapped FEMA 100-year floodplain, Zone AE, associated with Taylor Run (**Figure 2**). National Wetland Inventory (NWI) data identifies Taylor Run as a riverine system (R5UBH) with an associated 0.27 acre linear freshwater forested/shrub wetland habitat (PFO1A). Dominant soils within the study area are Sassafras-Neabsco complex soils and are not classified as hydric.

Figure 2: Floodplain Map



Methodology

A wetland and WUS delineation has been completed in accordance with the U.S. Army Corps of Engineers (USACE) *Wetland Delineation Manual* (USACE, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0* (USACE, 2010), which describe the three-parameter approach to delineating typical wetlands (hydrophytic vegetation, hydric soils, and wetland hydrology) and the approach for delineating atypical wetlands.

AECOM used the *Field Indicators of Hydric Soils in the United States* Version 9.0, (USDA NRCS, 2024) and the *Atlantic Gulf and Coastal Plain Region 2022 National Wetland Plant List* (USACE, 2020) to further determine the presence of hydric soil indicators and the wetland indicator status of plants, respectively, within the study area. Wetland boundaries were located using sub-meter accuracy global positioning system (GPS) equipment. Wetland and upland determination data points were collected in the field to support the upland/wetland boundary determination. Delineated resources were classified in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States* (USFWS, 1979), commonly referred to as the Cowardin Classification System.

Results

On April 6, 2026 AECOM Environmental Scientists delineated one palustrine emergent wetland (PEM), two palustrine forested wetlands (PFO), one perennial WUS, one intermittent WUS, and multiple ephemeral drainage channels. **Attachment A** contains the wetland delineation resource maps, and **Attachment B** contains upland and wetland determination data sheets, **Attachment C**

contains a photographic log of identified resources, and **Attachment D** contains the Soil Report. The following provides a summary description of regulated resources identified within the study area.

INT 1

INT 1 (R4SB5) is an unnamed intermittent tributary to Taylor Run located within Chinquapin Park along the right downstream bank of Taylor Run. The channel originates at the southeastern edge of WET C, where sheet flow moves through the wetland and concentrates at a root grade control to form a defined channel. From there, the stream flows beneath a pedestrian footbridge and discharging into Taylor Run. Flow within the channel is supported by seepage from WET C as well as overland runoff from the adjacent trail. The substrate consists primarily of silt and cobble, particularly where the channel enters Taylor Run. Stream banks are moderately defined at the point of entry. INT 1 received a total of 22 points under the Fairfax County stream assessment protocol and 27.5 points under the NCDWQ methodology (following a delineation in 2020), indicating that the feature functions as an intermittent stream[1].

TAYLOR RUN (2,040 LF)

Taylor Run, an R5UB1 perennial stream, flows generally northwest to southeast through the study area. The stream daylights through a 72-inch RCP in the northwest and exits the study area through twin 60-inch RCPs under a parking lot for the adjacent First Baptist Church of Alexandria. A sanitary sewer line which runs through Chinquapin Park crosses Taylor Run just before the stream flows onto church property.

The stream receives flow from a variety of sources including groundwater, overland flow, one intermittent channel, several ephemeral channels, and multiple stormwater outfalls. The channel substrate varies throughout its length within the study area. Within Chinquapin Park, upstream of the sanitary sewer crossing, the substrate consists of riprap, boulders, and concrete structures with some cobble and sand. Downstream of the sanitary sewer, within the church property, the substrate consists of cobble, sand, and silt. A large debris pile, consisting of large trees, limbs, and other debris constricts flow before the stream enters the twin 60-inch RCPs.

The stream corridor is primarily forested with woody vegetation extending to the top of the banks. Despite the forested buffer there is evidence of scour, with vertical banks exceeding 10 feet high in many locations. The stream channel ranges from 10 to 20 feet wide and water depths range from 2 inches to greater than 2 feet in the scour pool below the 72-inch RCP.

WET A (1,021 ft²)

WET A is a PFO wetland located at the northwestern end of Chinquapin Park along the west side of an existing pedestrian trail. The wetland tree stratum is dominated by red maple (*Acer rubrum*); the sapling shrub stratum by slippery elm (*Ulmus rubra*) and sweet gum (*Liquidambar styraciflua*) and the woody vine stratum is dominated by poison ivy (*Toxicodendron radicans*) and Virginia creeper (*Parthenocissus quinquefolia*). Hydrology indicators include presence of reduced iron and geomorphic position. The soil profile meets the criteria of an F3 Depleted Matrix hydric soil indicator with a matrix at least 6 inches thick with 60% or more having a chroma 2 or less within the first 10 inches of the soil surface. There are prominent redox concentrations overall.

[1] Stream assessment forms were not completed during this 2026 delineation.

WET B (1,996 ft²)
WET B is a PEM wetland located at a large footbridge along the west side of the trail through Chinquapin Park. The wetland tree stratum has a few scattered tulip poplar (*Liriodendron tulipifera*) comprising no more than 5% of the total vegetation within the wetland sample plot and the woody vine stratum is dominated by poison ivy. Approximately 20% of the wetland is not vegetated. Hydrology indicators include presence of reduced iron, a sparsely vegetated concave surface, and geomorphic position. The soil profile meets the criteria of an F3 Depleted Matrix hydric soil indicator with a matrix at least 6 inches thick with 60% or more chroma 2 or less within the first 10 inches of the soil surface.

WET C (13,546 ft²)
WET C is a PFO acid seepage wetland located about 1,000 feet from the trail entrance within an area of relatively undisturbed forest along the west side of the trail. A spur trail to the Chinquapin Park Community Gardens diverges from the main trail at the southern end of this wetland. The wetland tree stratum is dominated by red maple and tulip poplar (*Liriodendron tulipifera*) comprising approximately 15% of the total vegetation within the wetland sample plot. The wetland shrub/sapling stratum is dominated by black gum (Nyssa sylvatica), red maple, and arrowwood (*Viburnum dentatum*) and and the wetland herbaceous stratum is dominated by skunk cabbage (*Symplocarpus foetidus*) and fowl mann grass (*Glyceria striata*). Hydrology indicators include surface water, a high water table, water-stained leaves, geomorphic position, FAC-Neutral test, and drainage patterns. The soil profile meets the criteria of a Histosol (A1).

Conclusion
AECOM conducted a field delineation of wetlands and WUS within the Taylor Run study area on April 6 of 2026. This delineation provided confirmation of wetland and WUS boundaries from the previous delineation. During previous review, the USACE-Norfolk District determined WETA and WETC are regulated wetlands and Taylor Run, INT1, EPH3 and EPH 6 are regulated waters. At this time the USACE considered WET B to be disturbed and did not satisfy hydric soil parameters. However, invesigations in 2026 reveal no disturbance and soils to exhibit hydric conditions. Proposed access to the site, limits of disturbance, and identified construction staging areas are able to avoid impact to identified resources. Erosion and sediment control best management practices are recommended around the limits-of-disturbance to these resources and potential drainage/discharge into Taylor Run.

Appendix A: Figures

Taylor Run Stream Restoration Project Location Map – 4/6/2026

CLEVELAND ST

KING ST

QUINCY ST

CHINQUAPIN PARK

72" RCP

15" RCP

TAYLOR RUN

Perennial - 2040 LF

10" PVC

WETA
PFO
1,021 SF/ 0.02 AC

36" RCP

Foot Bridge

CHINQUAPIN DR

CONCRETE DITCH

36" CMP

SCROGGINS RD

WETB
PEM
1,996 SF/ 0.05 AC

KING ST

EPH1
Ephemeral
105 LF

12" CMP

21" RCP

MATCHLINE TO SHEET 2

Study Area

Stream Flow Direction Indicator

Stream Line

AECOM Delineated Wetland

Resource Protection Area

Storm Drain

FEMA 100 Year Floodplain

Wetland Data Point

Upland Data Point

Trails

Bridge Structure

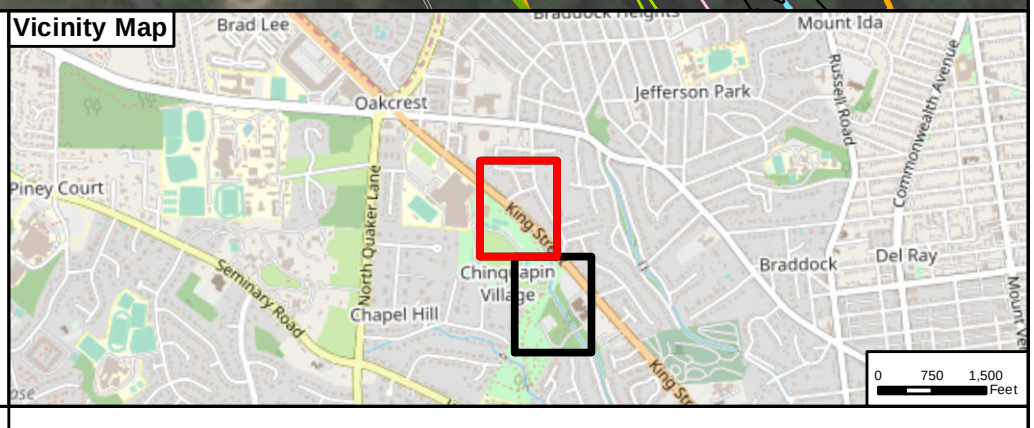
Park Boundary

Sanitary Sewer

1 inch = 100 feet

0 50 100 200 Feet

Vicinity Map



Taylor Run
City Of Alexandria, Virginia
Environmental Field Survey
Wetland and Waters of the U.S. Delineation

AECOM

Note: UTILITY FEATURE LOCATIONS
ARE APPROXIMATE
NOT INTENDED FOR DESIGN
UTILITY NETWORK MAY BE INCOMPLETE

MATCHLINE TO SHEET 1

CHINQUAPIN DR

Foot Bridge

CONCRETE DITCH

27" RCP

24" RCP

EPH2
Ephemeral
109 LF

KING ST

Foot Bridge

INT1
Intermittent
48 LF

WETC
PFO
13,546 SF/ 0.31 AC

Foot Bridge

15"PVC

EPH3
Ephemeral
72 LF

ROAN LN

EPH4
Ephemeral
43 LF

EPH5
Ephemeral
17 LF

EPH6
Ephemeral
66 LF

CONCRETE DITCH

TAYLOR RUN

15" RCP

Perennial
-2040 LF

EPH7
Intermittent
70 LF

CHINQUAPIN PARK

60" RCP (X2)

NOTE: Taylor Run and Resource Protection Area Continues South Past Project Study Area

Study Area
Stream Flow Direction Indicator
Stream Line
AECOM Delineated Wetland
Resource Protection Area
Storm Drain

FEMA 100 Year Floodplain
Wetland Data Point
Upland Data Point
Trails
Bridge Structure
Park Boundary
Sanitary Sewer

Ü
1 inch = 100 feet

0 50 100 200 Feet

Vicinity Map

Taylor Run
City Of Alexandria, Virginia
Environmental Field Survey
Wetland and Waters of the U.S. Delineation

AECOM

Note: UTILITY FEATURE LOCATIONS ARE APPROXIMATE
NOT INTENDED FOR DESIGN
UTILITY NETWORK MAY BE INCOMPLETE

Appendix B: Photograph Log

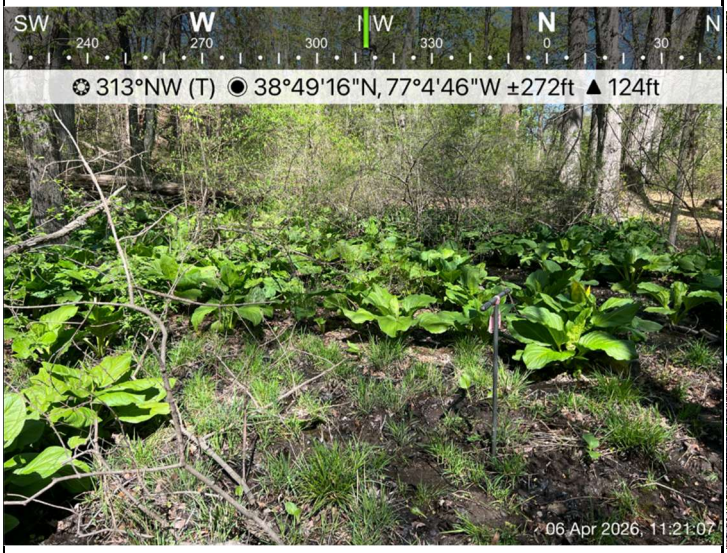
PHOTOGRAPHIC LOG

Project Site: Taylor Run Stream Stabilization, City of Alexandria, Virginia

Project No.: 60742359

Photograph No.: 01	**Date:** 4/6/2026	**Photograph No.:** 02	**Date:** 4/6/2026
Direction photograph taken: Northwest **Description:** Upland C facing upstream between King Street and WET C.		**Direction photograph taken:** Southeast **Description:** Upland C facing downstream between King Street and WET C.	

Photograph No.: 03	**Date:** 4/6/2026	**Photograph No.:** 04	**Date:** 4/6/2026
Direction photograph taken: Northwest **Description:** WET C adjacent to pedestrian trail and west of Taylor Run.		**Direction photograph taken:** South **Description:** WET C hydrology and concave surface.	

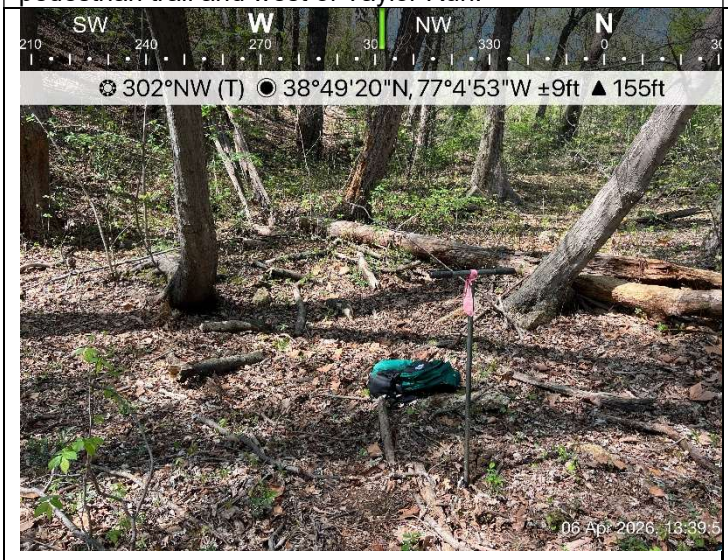


Project Site: Taylor Run Stream Stabilization, City of Alexandria, Virginia

Photograph No.: 05	**Date:** 4/6/2026
Direction photograph taken: West **Description:** UPL B facing west adjacent to pedestrian trail and west of Taylor Run.	

Photograph No.: 06	**Date:** 4/6/2026
Direction photograph taken: East **Description:** UPL B facing east.	

Photograph No.: 07	**Date:** 4/6/2026
Direction photograph taken: Northwest **Description:** WET A facing northwest adjacent to pedestrian trail and west of Taylor Run.	



Photograph No.: 08	**Date:** 4/6/2026
Direction photograph taken: Northeast **Description:** View of Taylor Run manhole repair location facing northeast.	

Project Site: Taylor Run Stream Stabilization, City of Alexandria, Virginia

Photograph No.: 09	**Date:** 4/6/2026

Direction photograph taken: Northeast
Description: Taylor Run facing downstream.

Photograph No.: 10	**Date:** 4/6/2026

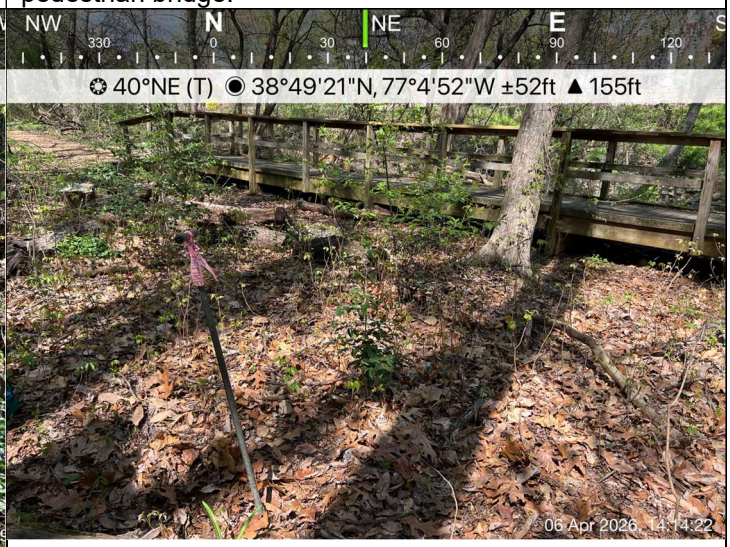
Direction photograph taken: Southwest
Description: UPL A facing southwest away from the pedestrian trail and Taylor Run.

Photograph No.: 11	**Date:** 4/6/2026

Direction photograph taken: None
Description: UPL A facing southeast adjacent to pedestrian trail.

Photograph No.: 12	**Date:** 4/6/2026

Direction photograph taken: Northeast
Description: WET B facing northeast towards pedestrian bridge.



Project Site: Taylor Run Stream Stabilization, City of Alexandria, Virginia

Photograph No.: 13 | **Date:** 4/6/2026

Direction photograph taken: South
Description: WET B facing east towards pedestrian bridge.

Appendix C: USACE Wetland Determination Data Forms

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Restoration City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: VA Sampling Point: UPL A

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8227190 Long: 77.0819180 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UPL A

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	10	=Total Cover	
50% of total cover: 5	20% of total cover: 2		
Sapling Stratum (Plot size: 30' diameter)			
1. *Prunus serotina*	3	No	FACU
2. *Juniperus virginiana*	5	No	FACU
3. *Acer rubrum*	25	Yes	FAC
4.			
5.			
6.			
	33	=Total Cover	
50% of total cover: 17	20% of total cover: 7		
Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 30' diameter)			
1. *potentilla indica*	10	No	FACU
2. *Toxicodendron radicans*	5	No	FAC
3. *Viola sororia*	70	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85	=Total Cover	
50% of total cover: 43	20% of total cover: 17		
Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	3	Yes	
3. *Rubus allegheniensis*	2	Yes	UPL
4.			
5.			
	5	=Total Cover	
50% of total cover: 3	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	110	x 3 =	330
FACU species	18	x 4 =	72
UPL species	2	x 5 =	10
Column Totals:	130 (A)		412 (B)
Prevalence Index = B/A =			3.17

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: UPL A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100					Mucky Loam/Clay	silt loam
5-18	10YR 4/3	55					Mucky Loam/Clay	silt loam
	10YR 5/6	35						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Restoration City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: VA Sampling Point: UPL B

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8217013 Long: 77.0808220 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: UPL B

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liriodendron tulipifera*	20	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	20	=Total Cover	
50% of total cover: 10	20% of total cover: 4		
Sapling Stratum (Plot size: 30' diameter)			
1. *Liriodendron tulipifera*	25	Yes	FACU
2. *Acer negundo*	10	Yes	FAC
3. *Fraxinus pennsylvanica*	2	No	FACW
4.			
5.			
6.			
	37	=Total Cover	
50% of total cover: 19	20% of total cover: 8		
Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 30' diameter)			
1. *Reynoutria japonica*	10	No	UPL
2. *Toxicodendron radicans*	2	No	FAC
3. *Viola sororia*	15	Yes	FAC
4. *Allium vineale*	25	Yes	
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	52	=Total Cover	
50% of total cover: 26	20% of total cover: 11		
Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	3	No	
3.			
4.			
5.			
	3	=Total Cover	
50% of total cover: 2	20% of total cover: 1		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)
Prevalence Index = B/A =	

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: UPL B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	100					Loamy/Clayey	organic loam
8-12	10YR 5/6	100					Mucky Loam/Clay	silt loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Restoration City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: VA Sampling Point: UPL C

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: 38.8203013 Long: -77.099058 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes X	No 3	Depth (inches): ____
Water Table Present?	Yes X	No 10	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: UPL C

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Platanus occidentalis*	15	Yes	FACW
2. *Acer rubrum*	15	Yes	FAC
3. *Liriodendron tulipifera*	10	Yes	FACU
4.			
5.			
6.			
	40	=Total Cover	
50% of total cover: 20	20% of total cover: 8		

Sapling Stratum (Plot size: 30' diameter)			
1. *Ulmus americana*	5	Yes	
2. *Linderia benzoin*	3	Yes	
3.			
4.			
5.			
6.			
	8	=Total Cover	
50% of total cover: 4	20% of total cover: 2		

Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:	20% of total cover:		

Herb Stratum (Plot size: 30' diameter)			
1. *Euonymus fortunei*	40	Yes	UPL
2. *Parthenocisus quinquefolia*	1	No	
3. *Galium aparine*	5	No	FACU
4. *Duchesnea indica*	3	No	
5.	1	No	FACU
6. *Allaria petiolata*			
7.			
8.			
9.			
10.			
11.			
	50	=Total Cover	
50% of total cover: 25	20% of total cover: 10		

Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Rubus pensilvanicus*	3	Yes	
3. *Smilax rotundifolia*	5	Yes	FAC
4.			
5.			
	8	=Total Cover	
50% of total cover: 4	20% of total cover: 2		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 37.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	20	x 3 =	60
FACU species	16	x 4 =	64
UPL species	40	x 5 =	200
Column Totals:	91 (A)		354 (B)
Prevalence Index = B/A =			3.89

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: UPL C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100					Mucky Loam/Clay	organic loam
4-14	10YR 5/4	60					Mucky Loam/Clay	
	10YR 3/2	40					Mucky Loam/Clay	
15-18	10YR 5/4	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Stabilization City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: MD Sampling Point: WET A

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8224016 Long: 77.0814420 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WET A

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	30	=Total Cover	
50% of total cover: 15		20% of total cover: 6	

Sapling Stratum (Plot size: 30' diameter)			
1. *Ulmus rubra*	3	No	FAC
2. *Liquidambar styraciflua*	1	No	FAC
3.			
4.			
5.			
6.			
	4	=Total Cover	
50% of total cover: 2		20% of total cover: 1	

Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot size: 30' diameter)			
1. *Ulmus rubra*	1	No	FAC
2. *Liriodendron tulipifera*	3	No	FACU
3. *Lindera benzoin*	1	No	FACW
4. *Toxicodendron radicans*	10	Yes	FAC
5. *Ulmus americana*	5	Yes	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	20	=Total Cover	
50% of total cover: 10		20% of total cover: 4	

Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	3	No	
3.			
4.			
5.			
	3	=Total Cover	
50% of total cover: 2		20% of total cover: 1	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	1	x 2 =	2
FAC species	50	x 3 =	150
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	54 (A)		164 (B)
Prevalence Index = B/A =			3.04

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WET A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	80	5YR 4/4	20	C		Mucky Loam/Clay	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Organic Bodies (A6) **(LRR P, T, U)**
___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
___ Muck Presence (A8) **(LRR U)**
___ 1 cm Muck (A9) **(LRR P, T)**
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Coast Prairie Redox (A16) **(MLRA 150A)**
___ Sandy Mucky Mineral (S1) **(LRR O, S)**
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR P, S, T, U)**
___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
___ Thin Dark Surface (S9) **(LRR S, T, U)**
___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
___ Loamy Mucky Mineral (F1) **(LRR O)**
___ Loamy Gleyed Matrix (F2)
X Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)
___ Marl (F10) **(LRR U)**
___ Depleted Ochric (F11) **(MLRA 151)**
___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
___ Umbric Surface (F13) **(LRR P, T, U)**
___ Delta Ochric (F17) **(MLRA 151)**
___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Coast Prairie Redox (A16) **(MLRA 149A)**
___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** ____

Remarks:

The presence of a reduced matrix within 12 inches of the soil surface indicates that this soil is hydric based on the hydric soil definition: "a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part".

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Stabilization City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: MD Sampling Point: WET B

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 2

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8221323 Long: 77.0811171 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WET B

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Liriodendron tulipifera*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	5	=Total Cover	
50% of total cover: 3	20% of total cover: 1		
Sapling Stratum (Plot size: 30' diameter)			
1.			
2. *Acer rubrum*	10	Yes	FAC
3. *Ilex opaca*	8	Yes	FAC
4. *Prunus serotina*	3	No	FACU
5.			
6.			
	21	=Total Cover	
50% of total cover: 11	20% of total cover: 5		
Shrub Stratum (Plot size: 30' diameter)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 30' diameter)			
1. *Toxicodendron radicans*	25	Yes	FAC
2. *Hemerocallis fulva*	5	No	UPL
3. *Ulmus americana*	1	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	31	=Total Cover	
50% of total cover: 16	20% of total cover: 7		
Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	15	Yes	
3.			
4.			
5.			
	15	=Total Cover	
50% of total cover: 8	20% of total cover: 3		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WET B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	75	2.5YR 4/6	25			Loamy/Clayey	refusal at 12"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** ____

Remarks:

The presence of a reduced matrix within 12 inches of the soil surface indicates that this soil is hydric based on the hydric soil definition: "a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part".

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Taylor Run Stream Stabilization City/County: City of Alexandria Sampling Date: 4/6/2026

Applicant/Owner: City of Alexandria State: MD Sampling Point: WET C

Investigator(s): Sean Bernheisel, Lauren Palmieri Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T, MLRA 153B Lat: -38.8217260 Long: 77.0808281 Datum: NAD83

Soil Map Unit Name: Sassafras-Neabsco complex, 2 to 7 percent slopes (92B) NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes X	No 3	Depth (inches): ____
Water Table Present?	Yes X	No 10	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Iron reduction present in standing water ~10 ft east from sampling point. The site is situated at the toe of slope and within floodplain and limits of manmade stormwater management facility.

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: WET C

Tree Stratum (Plot size: 30' diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	10	Yes	FAC
2. *Liriodendron tulipifera*	15	Yes	FACU
3.			
4.			
5.			
6.			
	25	=Total Cover	
50% of total cover: 13		20% of total cover: 5	

Sapling Stratum (Plot size: 30' diameter)			
1. *Acer rubrum*	5	Yes	FAC
2. *Nyssa sylvatica*	5	Yes	FAC
3.			
4.			
5.			
6.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover: 2	

Shrub Stratum (Plot size: 30' diameter)			
1. *Viburnum dentatum*	20	Yes	FAC
2. *Clethra alnifolia*	15	Yes	FACW
3.			
4.			
5.			
6.			
	35	=Total Cover	
50% of total cover: 18		20% of total cover: 7	

Herb Stratum (Plot size: 30' diameter)			
1. *Symplocarpus foetidus*	20	Yes	OBL
2. *Onoclea sensibilis*	5	No	FACW
3. *Athyrium filix-femina*	2	No	UPL
4. *Clethra alnifolia*	3	No	FACW
5. *Glyceria striata*	20	Yes	OBL
6.			
7. *Impatiens capensis*	1	No	FACW
8.			
9.			
10.			
11.			
	51	=Total Cover	
50% of total cover: 26		20% of total cover: 11	

Woody Vine Stratum (Plot size: 30' diameter)			
1.			
2. *Parthenocissus quinquefolia*	1	Yes	
3. *Rosa multiflora*	2	Yes	FACU
4. *Smilax rotundifolia*	2	Yes	FAC
5.			
	5	=Total Cover	
50% of total cover: 3		20% of total cover: 1	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 72.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	24	x 2 =	48
FAC species	42	x 3 =	126
FACU species	17	x 4 =	68
UPL species	2	x 5 =	10
Column Totals:	125 (A)		292 (B)

Prevalence Index = B/A = 2.34

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: WET C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** ____

Remarks:

Appendix D: USDA NRCS Web Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Alexandria City, Virginia

Taylor Run Stream Restoration Soil Report

April 14, 2026

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

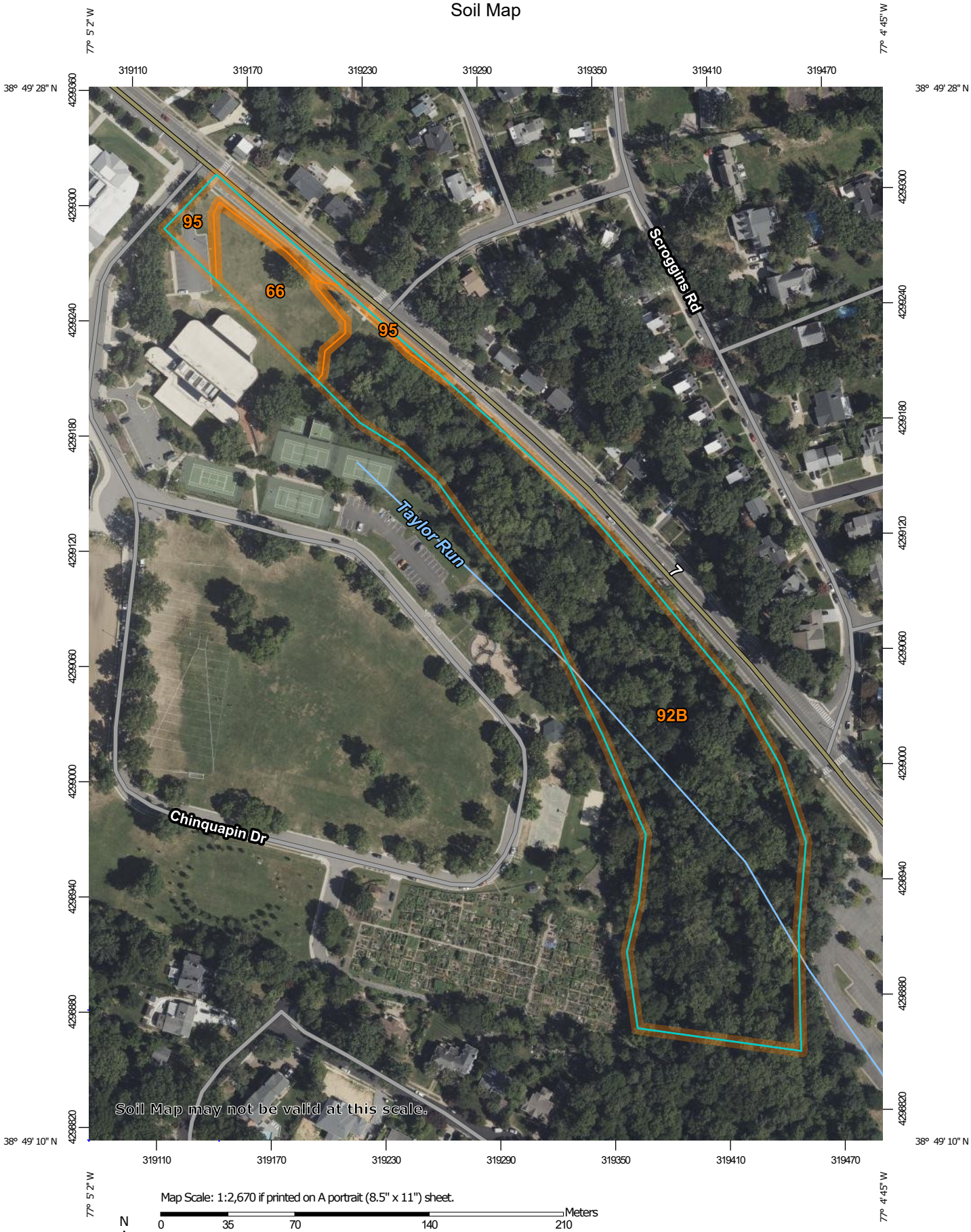
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,670 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Alexandria City, Virginia
Survey Area Data: Version 15, Sep 5, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 1, 2023—Sep 1, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
66	Kingstowne sandy clay loam, 0 to 45 percent slopes	0.7	8.9%
92B	Sassafras-Neabsco complex, 2 to 7 percent slopes	7.0	87.0%
95	Urban land	0.3	4.2%
Totals for Area of Interest		**8.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Alexandria City, Virginia

66—Kingstowne sandy clay loam, 0 to 45 percent slopes

Map Unit Setting

National map unit symbol: 226lt
Landscape: Coastal plains
Elevation: 0 to 510 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 45 to 67 degrees F
Frost-free period: 185 to 212 days
Farmland classification: Not prime farmland

Map Unit Composition

Kingstowne and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kingstowne

Setting

Landscape: Coastal plains
Landform: Marine terraces
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Earthy fill of fluviomarine deposits

Typical profile

H1 - 0 to 4 inches: sandy clay loam
H2 - 4 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 79 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

92B—Sassafras-Neabsco complex, 2 to 7 percent slopes

Map Unit Setting

National map unit symbol: 226m5
Landscape: Coastal plains
Elevation: 50 to 390 feet
Mean annual precipitation: 37 to 49 inches
Mean annual air temperature: 45 to 67 degrees F
Frost-free period: 185 to 212 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sassafras and similar soils: 50 percent
Neabsco and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sassafras

Setting

Landscape: Coastal plains
Landform: Terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fluviomarine deposits

Typical profile

H1 - 0 to 9 inches: sandy loam
H2 - 9 to 40 inches: sandy clay loam
H3 - 40 to 70 inches: gravelly sandy loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

Description of Neabsco

Setting

Landscape: Coastal plains
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Fluviomarine deposits

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 17 inches: clay loam
H3 - 17 to 36 inches: loam
H4 - 36 to 52 inches: clay loam
H5 - 52 to 72 inches: very gravelly sandy loam

Properties and qualities

Slope: 2 to 7 percent
Depth to restrictive feature: 14 to 30 inches to fragipan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 14 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

95—Urban land

Map Unit Setting

National map unit symbol: 226m7
Landscape: Coastal plains
Mean annual precipitation: 28 to 58 inches
Mean annual air temperature: 87 to 89 degrees F
Frost-free period: 175 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 95 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landscape: Coastal plains
Anthropogenic Feature: Urban land

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Taylor Run Infrastructure Stabilization

LOCATION

Alexandria County, Virginia

DESCRIPTION

None

Local office

Virginia Ecological Services Field Office

(804) 693-6694

6669 Short Lane
Gloucester, VA 23061-4410

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

NOT FOR CONSULTATION

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

NOT FOR CONSULTATION

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

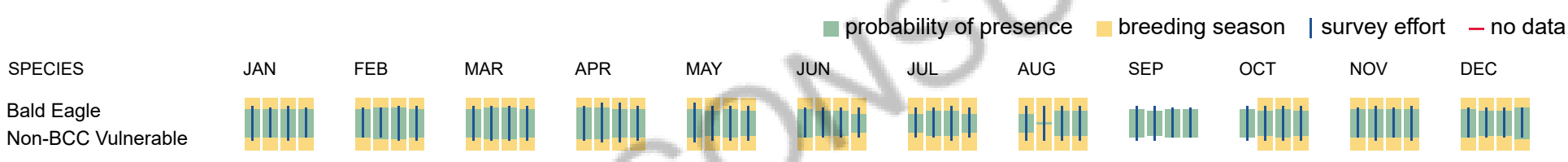
Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

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The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs
The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Oct 15 to Aug 31
Black-billed Cuckoo Coccyzus erythropthalmus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Blue-winged Warbler Vermivora cyanoptera This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30

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Bobolink Dolichonyx oryzivorus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Canada Warbler Cardellina canadensis This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Cerulean Warbler Setophaga cerulea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 29 to Jul 20
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will Antrostomus vociferus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Grasshopper Sparrow Ammodramus savannarum perpallidus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Kentucky Warbler Geothlypis formosa This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
King Rail Rallus elegans This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Lesser Yellowlegs Tringa flavipes This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper Calidris melanotos This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Prairie Warbler Setophaga discolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Scarlet Tanager Piranga olivacea This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 10 to Aug 10

NOT FOR CONSULTATION

Semipalmated Sandpiper Calidris pusilla This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Short-billed Dowitcher Limnodromus griseus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

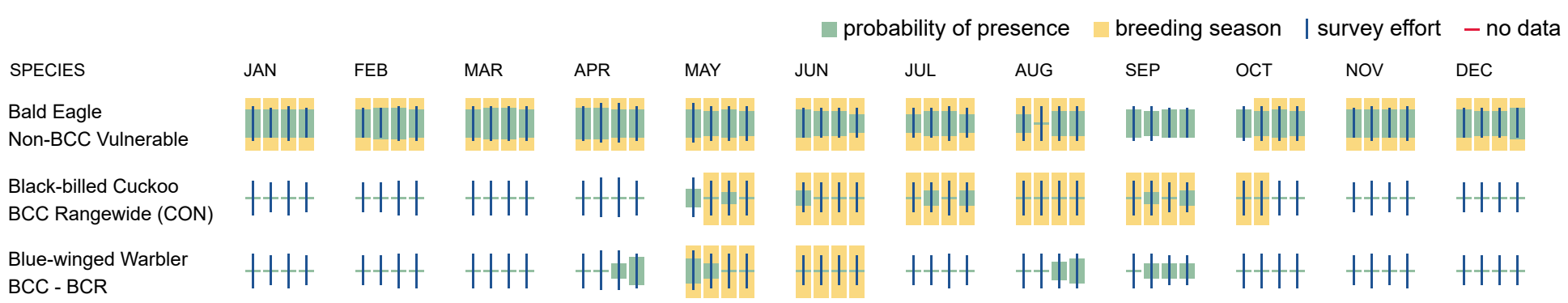
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

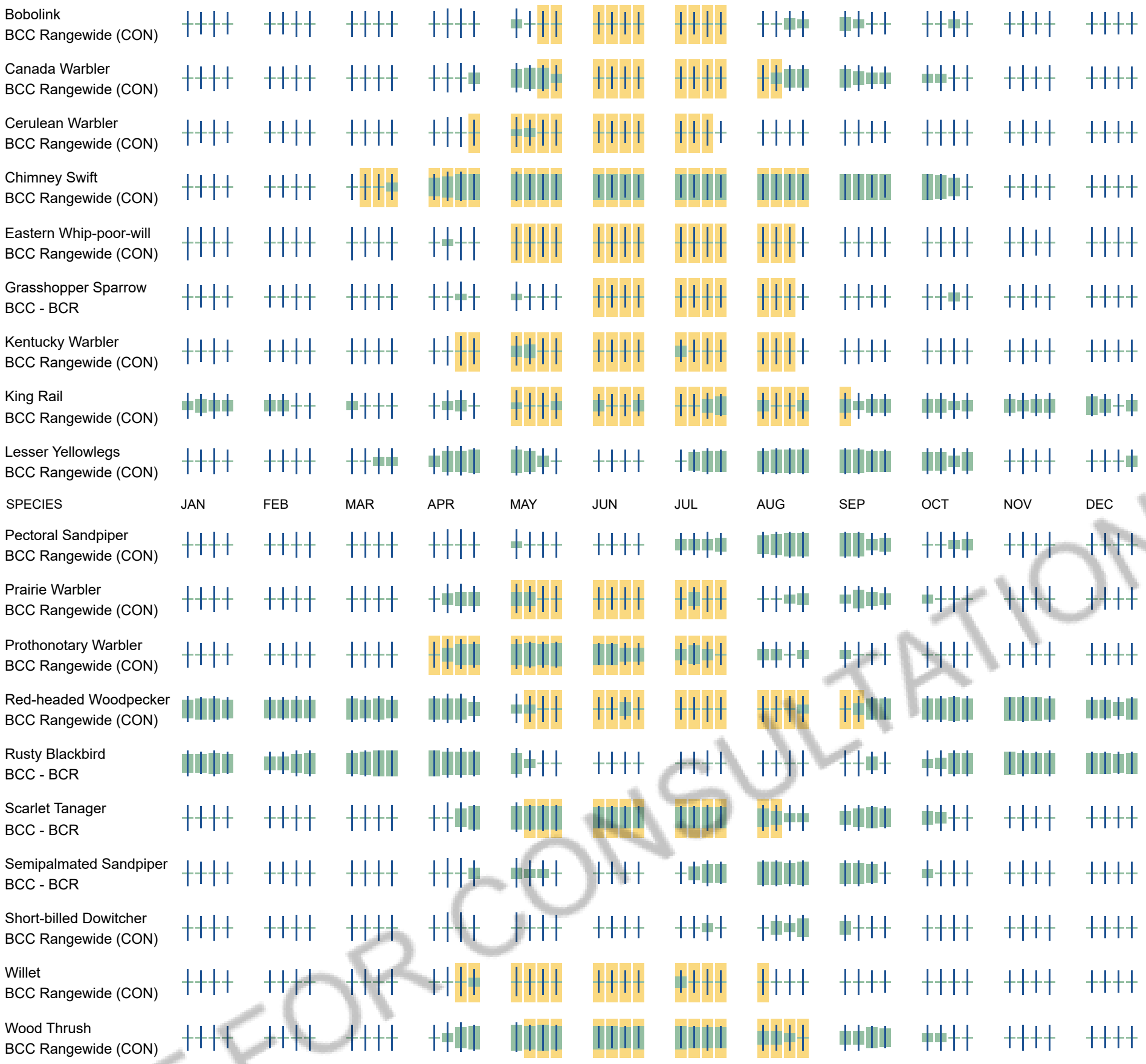
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



NOT FOR CONSULTATION



NOT FOR CONSULTATION

Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()

NOT FOR CONSULTATION

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Virginia Department of Wildlife Resources
An official website Here's how you know

Find a Commonwealth Resource

Search VA DWR Go

Virginia Department of Wildlife Resources

VaFWIS Search Report Compiled on 4/20/2026, 7:56:42 AM

Observations reported or potential habitat occurs within a **3 mile radius around point 38.8230770 -77.0823435** in **013 Arlington County, 059 Fairfax County, 510 Alexandria City, VA**

View Map of Site Location

747 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 45) (45 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name
050022	FESE	Ia	Bat, Northern Long-eared	Myotis septentrionalis
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata
050020	SE	Ia	Bat, little brown	Myotis lucifugus
060006	SE	Ib	Floater, brook	Alasmidonta varicosa
050027	FPSE	IIIa	Bat, Tricolored	Perimyotis subflavus
030062	ST	Ia	Turtle, wood	Glyptemys insculpta
040096	ST	Ia	Falcon, peregrine	Falco peregrinus
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus
100155	ST	Ia	Skipper, Appalachian grizzled	Pyrgus wyandot
040379	ST	Ib	Sparrow, Henslow's	Centronyx henslowii
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans
100248	FP	Ia	Fritillary, Regal	Speyeria idalia idalia
100079	FP	IIIa	Butterfly, Monarch	Danaus plexippus
030012	CC	IIIa	Rattlesnake, timber	Crotalus horridus
030063	CC	IIIa	Turtle, spotted	Clemmys guttata
040372		c	Crossbill, red	Loxia curvirostra
040304		c	Warbler, Swainson's	Limnothlypis swainsonii
010077		Ia	Shiner, bridle	Notropis bifrenatus
040029		Ia	Heron, little blue	Egretta caerulea caerulea
040040		Ia	Ibis, glossy	Plegadis falcinellus
040204		Ia	Owl, American Barn	Tyto furcata
040383		Ia	Sparrow, vesper	Pooecetes gramineus
040306		Ia	Warbler, golden-winged	Vermivora chrysoptera
040140		Ia	Woodcock, American	Scolopax minor
010045		Ib	Herring, blueback	Alosa aestivalis
040216		Ib	Nighthawk, common	Chordeiles minor
040105		Ib	Rail, king	Rallus elegans
040340		Ib	Warbler, Canada	Cardellina canadensis
010168		II	Bass, striped	Morone saxatilis
010131		IIa	Eel, American	Anguilla rostrata
040364		IIa	Dickcissel	Spiza americana

040052		IIa	Duck, American black	Anas rubripes
040033		IIa	Egret, snowy	Egretta thula
040098		IIa	Kestrel, American	Falco sparverius sparverius
040377		IIa	Sparrow, savannah	Passerculus sandwichensis
040181		IIa	Tern, common	Sterna hirundo
040320		IIa	Warbler, cerulean	Setophaga cerulea
060071		IIa	Lampmussel, yellow	Lampsilis cariosa
010040		IIb	Shad, American	Alosa sapidissima
040167		IIb	Gull, American Herring	Larus smithsonianus
040028		IIb	Heron, green	Butorides virescens
040180		IIb	Tern, Forster's	Sterna forsteri
070020		IIc	Amphipod, Pizzini's	Stygobromus pizzinii
100154		IIc	Butterfly, Persius duskywing	Erynnis persius persius

To view **All 747 species** View 747

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.; b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.; c - No on the grou

Anadromous Fish Use Streams (2 records)

View Map of All Anadromous Fish Use Streams

Stream ID	Stream Name	Reach Status	Anadromous Fish Species			View Map
			Different Species	Highest TE*	Highest Tier**	
C25	Fourmile run	Confirmed	2		II	Yes
P42	Cameron run	Potential	0			Yes

Impediments to Fish Passage

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Habitat Predicted for Aquatic WAP Tier I & II Species (1 Reach)

View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code	Status*	Tier**	Common & Scientific Name		
Holmes Run (20700102)		010077		Ia	Shiner, bridle	Notropis bifrenatus	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species (2 Species)

View Map of Combined Terrestrial Habitat Predicted for 2 WAP Tier I & II Species Listed Below

ordered by Status Concern for Conservation

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
040105		Ib	Rail, king	Rallus elegans	Yes
040038			Bittern, American	Botaurus lentiginosus	Yes

Virginia Breeding Bird Atlas Blocks (8 records)

View Map of All Query Results Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species	View Map

		Different Species	Highest TE*	Highest Tier**	
54194	Alexandria, CE	49		II	Yes
54193	Alexandria, CW	27		II	Yes
54192	Alexandria, NE	32		II	Yes
54191	Alexandria, NW	58		II	Yes
54196	Alexandria, SE	74		I	Yes
54195	Alexandria, SW	95		I	Yes
53194	Annandale, CE	49		II	Yes
53192	Annandale, NE	49		I	Yes

Public Holdings: (2 names)

Name	Agency	Level
George Washington Memorial National Parkway	National Park Service	Federal
Cameron Station Military Reservation	U.S. Dept. of Army	Federal

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
013	Arlington	458	FESE	I
059	Fairfax	559	FESE	I
510	Alexandria City	475	FESE	I

USGS 7.5' Quadrangles:
Annandale
Alexandria

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
PL24	Potomac River-Pimmit Run	68	FPSE	I
PL25	Potomac River-Fourmile Run	67	FPST	I
PL26	Cameron Run	69	FPST	I
PL28	Potomac River-Little Hunting Creek	71	FPST	I

Compiled on 4/20/2026, 7:56:43 AM V4946692.0 report=V searchType= R dist= 4827 poi= 38.8230770 -77.0823435

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Visitor 4946692

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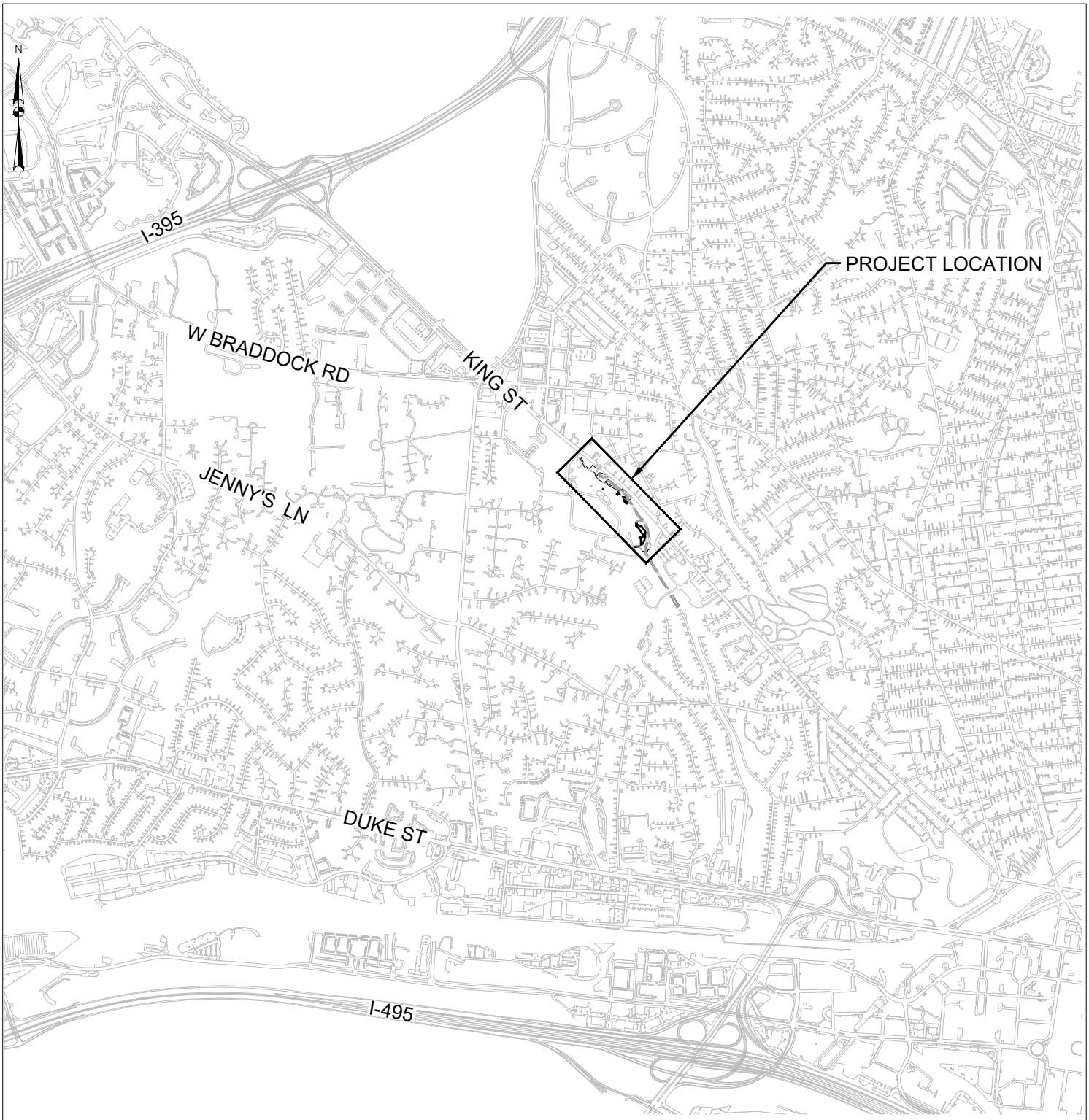

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SCALE IN FEET

AECOM

CITY OF ALEXANDRIA VIRGINIA

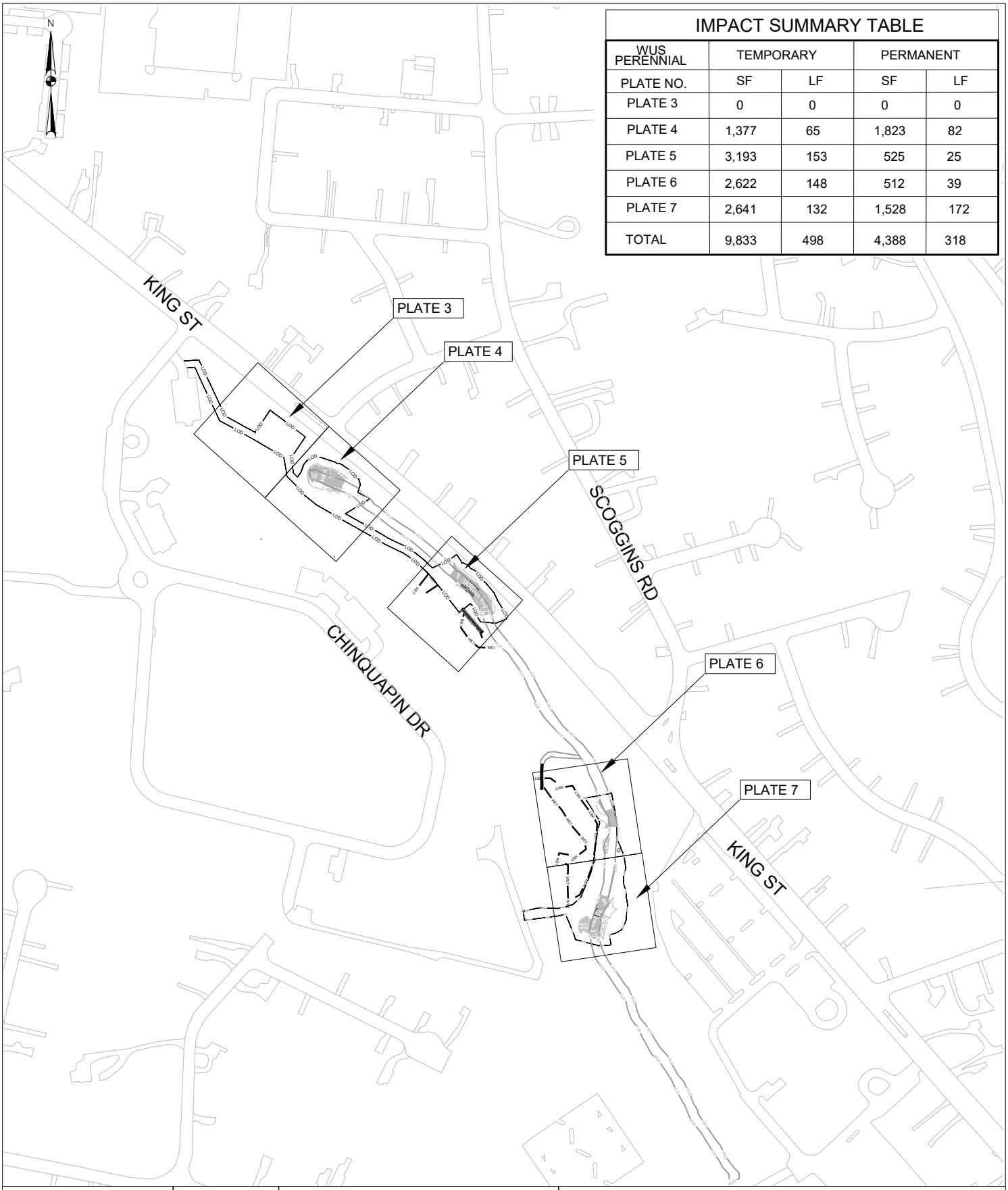
TAYLOR RUN STREAM STABILIZATION

CITY OF ALEXANDRIA, VIRGINIA

VICINITY MAP

DATE: MAY 2026

SCALE: 1"=2,000' PLATE 1 OF 7



IMPACT SUMMARY TABLE				
WUS PERENNIAL	TEMPORARY		PERMANENT	
PLATE NO.	SF	LF	SF	LF
PLATE 3	0	0	0	0
PLATE 4	1,377	65	1,823	82
PLATE 5	3,193	153	525	25
PLATE 6	2,622	148	512	39
PLATE 7	2,641	132	1,528	172
TOTAL	9,833	498	4,388	318

AECOM

CITY OF ALEXANDRIA VIRGINIA

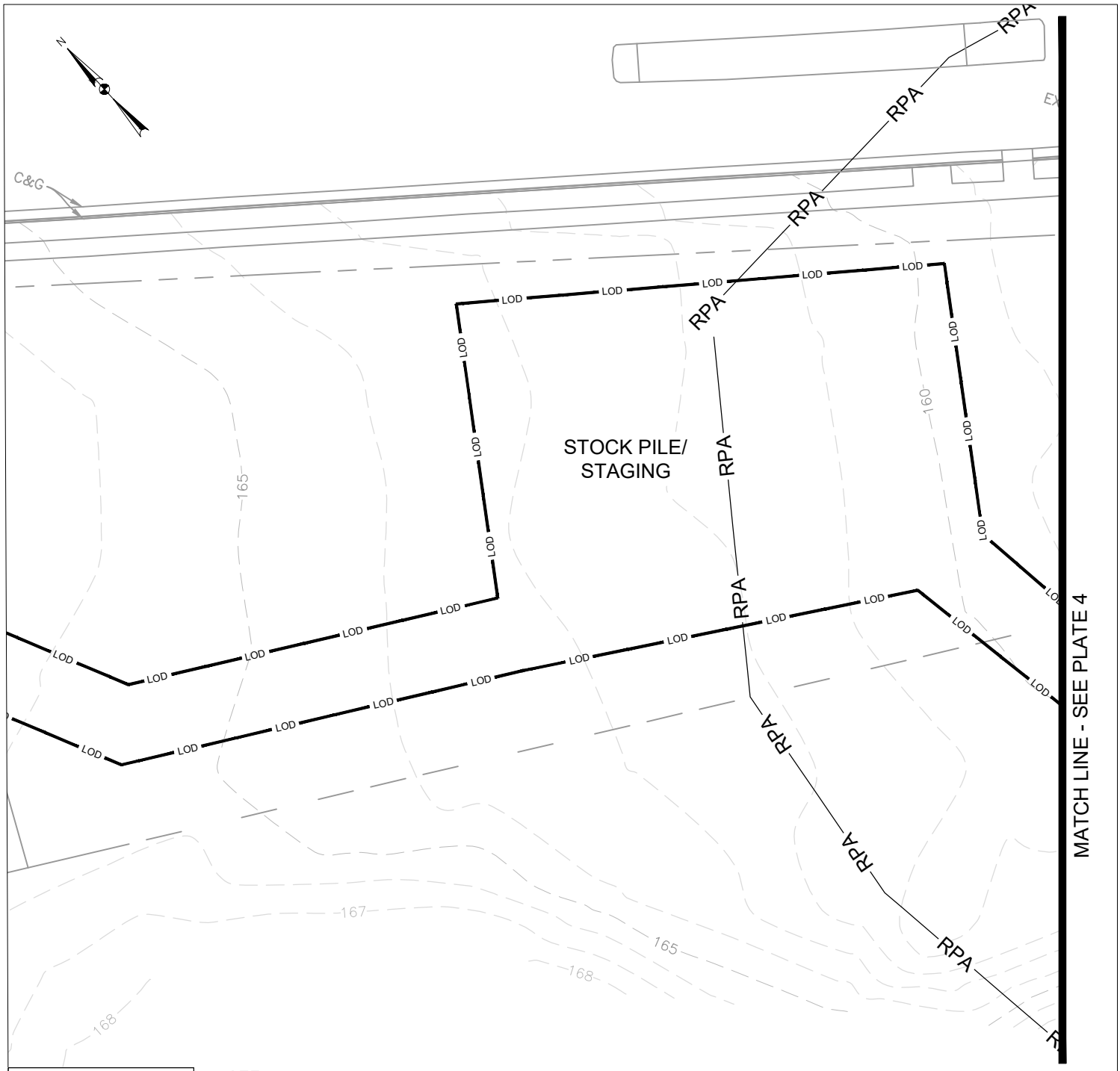
TAYLOR RUN STREAM STABILIZATION

CITY OF ALEXANDRIA, VIRGINIA

KEY MAP

DATE: MAY 2026

SCALE: 1"=300' PLATE 2 OF 7



0 15 30
SCALE IN FEET

NOTE:
NO RESOURCE IMPACTS ON THIS PLATE.

LEGEND

RESOURCE PROTECTION AREA — RPA —
LIMIT OF DISTURBANCE — LOD — 100-YR FLOODPLAIN — 100 YR —
WATER OF THE U.S. — WUS — WETLAND — WET —
WETLAND IMPACTS TEMP PERM
WUS IMPACT TEMP PERM

AECOM

CITY OF ALEXANDRIA VIRGINIA

TAYLOR RUN STREAM STABILIZATION

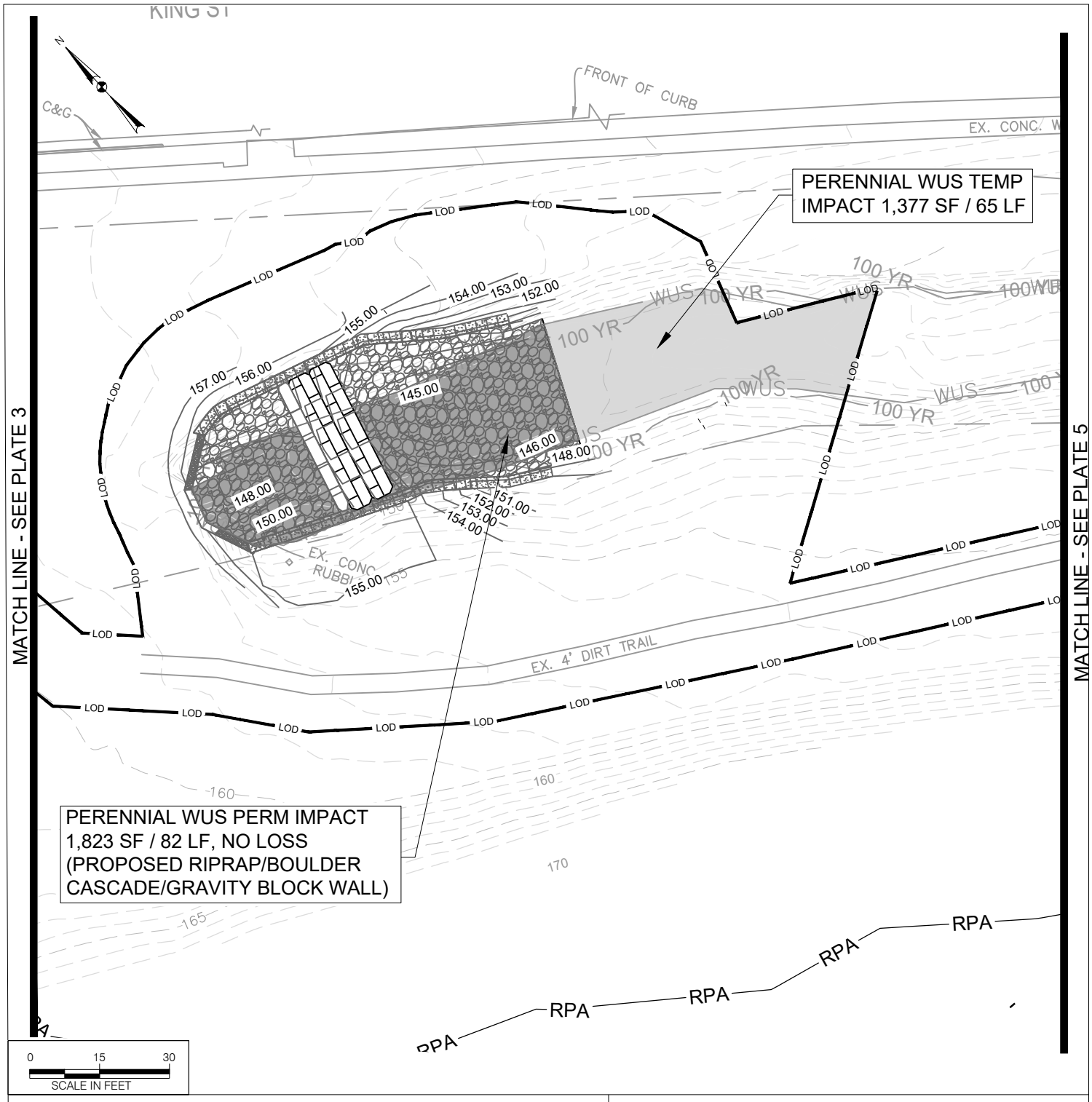
CITY OF ALEXANDRIA, VIRGINIA

IMPACT PLATE

	TEMPORARY	PERMANENT
WUS (LF/SF) PERENNIAL	0	0
NON-TIDAL WETLAND (SF)	0	0

DATE: MAY 2026

SCALE: 1"= 30' PLATE 3 OF 7



LEGEND

RESOURCE PROTECTION AREA — RPA —
LIMIT OF DISTURBANCE — LOD — 100-YR FLOODPLAIN — 100 YR —
WATER OF THE U.S. — WUS — WETLAND — WET —
WETLAND IMPACTS TEMP PERM
WUS IMPACT TEMP PERM

IMPACT PLATE

	TEMPORARY	PERMANENT
WUS (LF/SF) PERENNIAL	1,377 SF/ 65 LF	1,823 SF/ 82 LF
NON-TIDAL WETLAND (SF)	0	0

AECOM

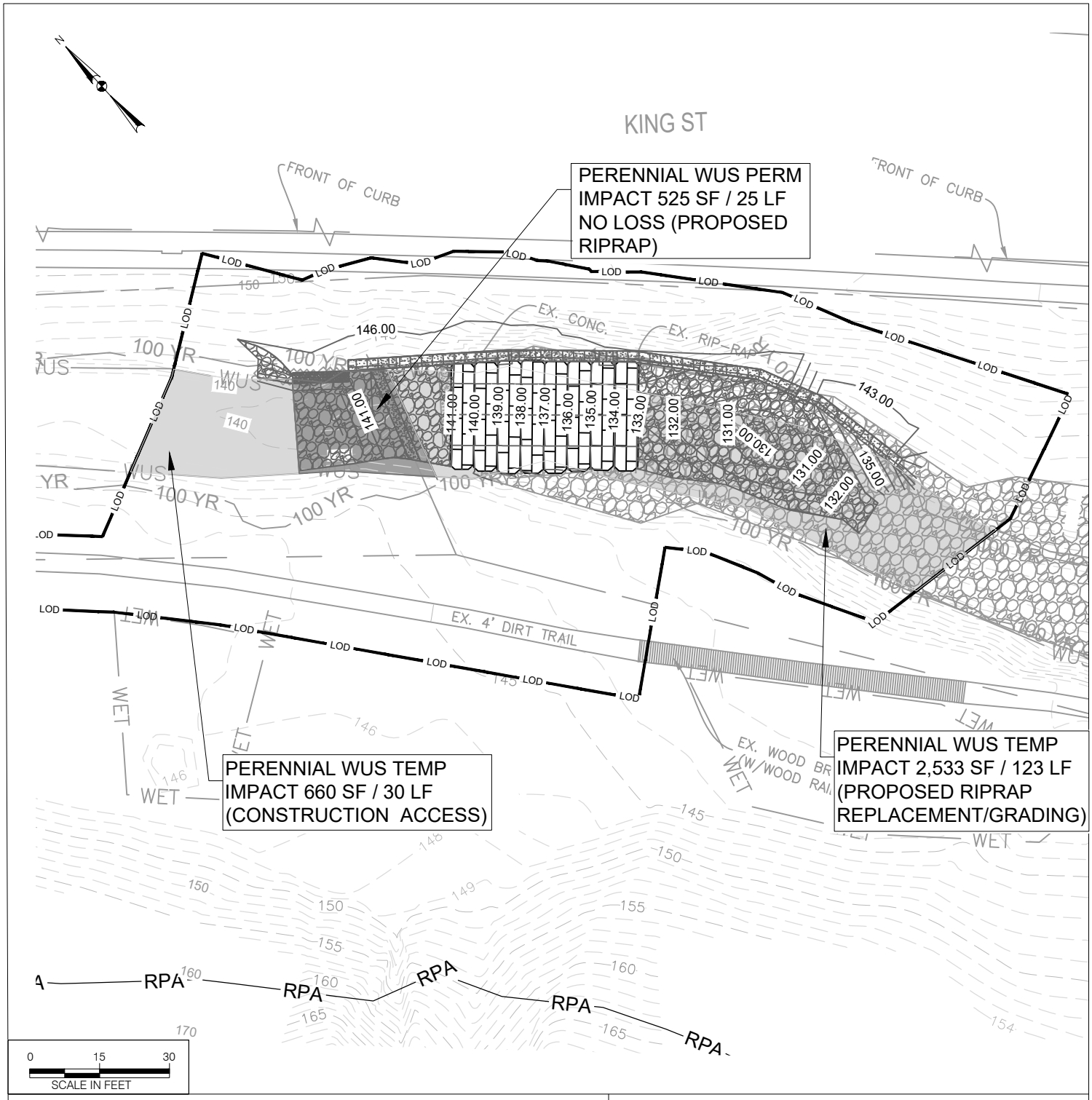
CITY OF ALEXANDRIA VIRGINIA

TAYLOR RUN STREAM STABILIZATION

CITY OF ALEXANDRIA, VIRGINIA

DATE: MAY 2026

SCALE: 1"= 30' PLATE 4 OF 7



LEGEND

RESOURCE PROTECTION AREA — RPA —
LIMIT OF DISTURBANCE — LOD — 100-YR FLOODPLAIN — 100 YR —
WATER OF THE U.S. — WUS — WETLAND — WET —
WETLAND IMPACTS TEMP PERM
WUS IMPACT TEMP PERM

IMPACT PLATE

	TEMPORARY	PERMANENT
WUS (LF/SF) PERENNIAL	3,193 SF/ 153 LF	525 SF/ 25 LF
NON-TIDAL WETLAND (SF)	0	0

AECOM

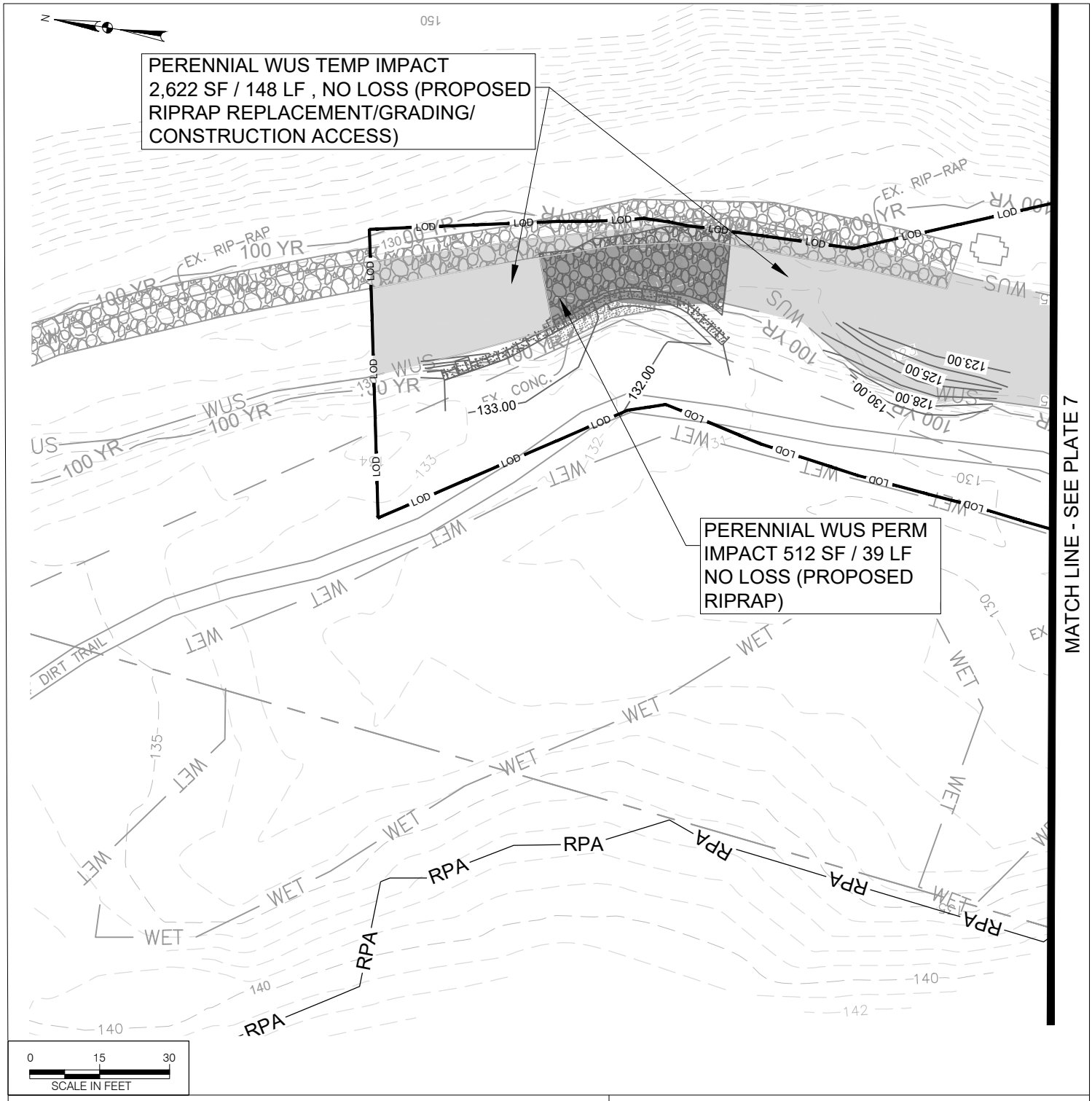
CITY OF ALEXANDRIA VIRGINIA

TAYLOR RUN STREAM STABILIZATION

CITY OF ALEXANDRIA, VIRGINIA

DATE: MAY 2026

SCALE: 1"= 30' PLATE 5 OF 7



LEGEND

RESOURCE PROTECTION AREA — RPA —
LIMIT OF DISTURBANCE — LOD — 100-YR FLOODPLAIN — 100 YR —
WATER OF THE U.S. — WUS — WETLAND — WET —
WETLAND IMPACTS TEMP PERM
WUS IMPACT TEMP PERM

IMPACT PLATE

	TEMPORARY	PERMANENT
WUS (LF/SF) PERENNIAL	2,622 SF/ 148 LF	512 SF/ 39 LF
NON-TIDAL WETLAND (SF)	0	0

AECOM

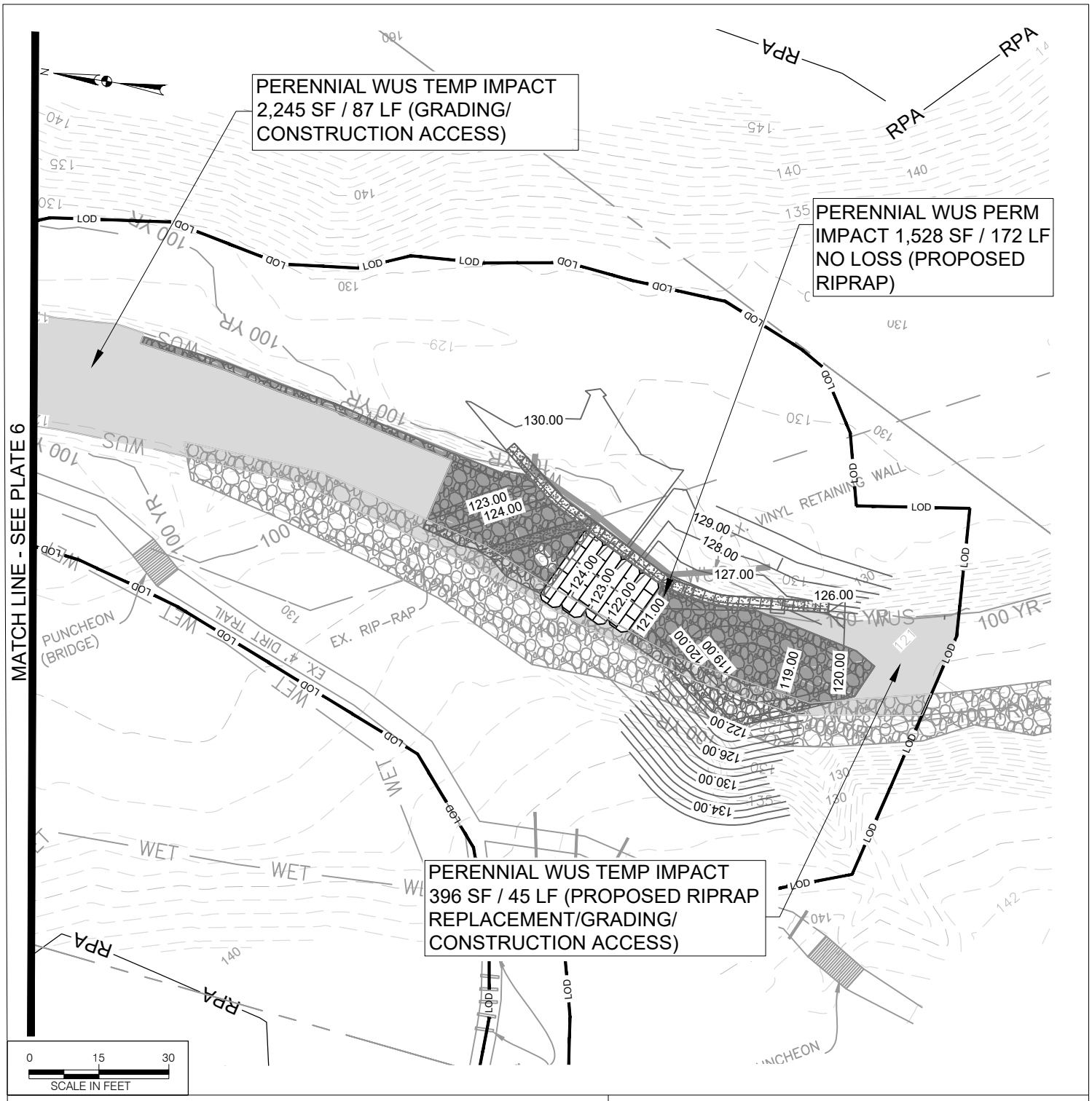
CITY OF ALEXANDRIA VIRGINIA

TAYLOR RUN STREAM STABILIZATION

CITY OF ALEXANDRIA, VIRGINIA

DATE: MAY 2026

SCALE: 1"= 30' PLATE 6 OF 7



LEGEND

RESOURCE PROTECTION AREA — RPA —
LIMIT OF DISTURBANCE — LOD — 100-YR FLOODPLAIN — 100 YR —
WATER OF THE U.S. — WUS — WETLAND — WET —
WETLAND IMPACTS TEMP PERM
WUS IMPACT TEMP PERM

IMPACT PLATE

	TEMPORARY	PERMANENT
WUS (LF/SF) PERENNIAL	2,641 SF/ 132 LF	1,528 SF/ 172 LF
NON-TIDAL WETLAND (SF)	0	0

AECOM

CITY OF ALEXANDRIA VIRGINIA

TAYLOR RUN STREAM STABILIZATION

CITY OF ALEXANDRIA, VIRGINIA

DATE: MAY 2026

SCALE: 1"= 30' PLATE 7 OF 7

OWNER

CITY OF ALEXANDRIA
301 KING STREET, ROOM 4100
ALEXANDRIA, VA 22314

APPLICANT/DEVELOPER

DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 3200
ALEXANDRIA, VA 22314

CITY OF ALEXANDRIA SERVICES CONTRACT

CONTRACT NO. 2910, RFQU 1054, TOR #07
PURCHASE ORDER NO. 251818-00
AECOM PROJECT NUMBER: 60742359

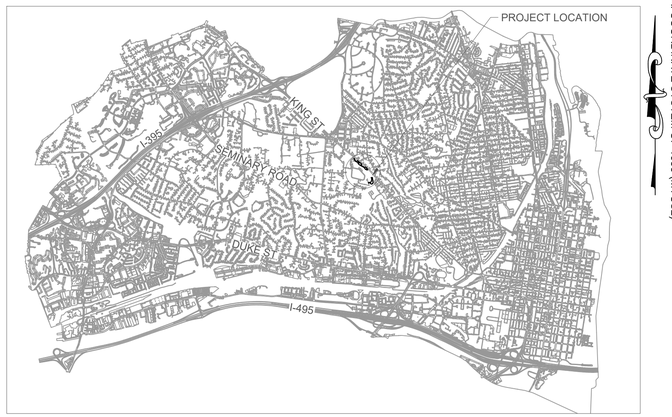
CITY OF ALEXANDRIA, VIRGINIA

TAYLOR RUN STREAM STABILIZATION

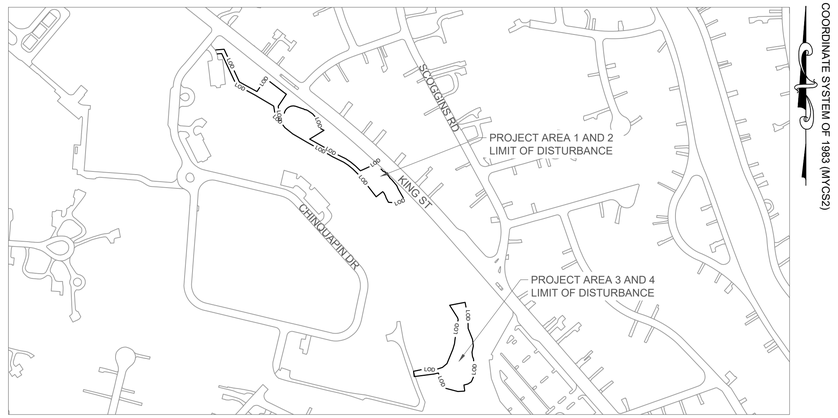
60% DESIGN

SHEET INDEX

SHEET NO.	DRAWING NO.	SHEET NAME
01	G-01	COVER SHEET
02	G-02	GENERAL NOTES
03	G-03	LEGEND
04	O-01	OVERALL SITE PLAN
05	EC-01	EXISTING CONDITION PLAN
06	EC-02	EXISTING CONDITION PLAN
07	EC-03	EXISTING CONDITION PLAN
08	EC-04	EXISTING CONDITION PLAN
09	TI-01	TREE INVENTORY
10	TI-02	TREE INVENTORY
11	TI-03	TREE INVENTORY
12	TI-04	TREE INVENTORY
13	PC-01	PROPOSED CONDITIONS
14	PC-02	PROPOSED CONDITIONS
15	PC-03	PROPOSED CONDITIONS
16	PC-04	PROPOSED CONDITIONS
17	GN-01	GRADING NOTES
18	LP-01	LONGITUDINAL PROFILE
19	LP-02	LONGITUDINAL PROFILE
20	LP-03	LONGITUDINAL PROFILE
21	LP-04	LONGITUDINAL PROFILE
22	LP-05	LONGITUDINAL PROFILE
23	GEO-01	GEOMETRY PLAN
24	GEO-02	GEOMETRY PLAN
25	GEO-03	GEOMETRY PLAN
26	GEO-04	GEOMETRY PLAN
27	CS-01	CROSS SECTIONS
28	CS-02	CROSS SECTIONS
29	CS-03	CROSS SECTIONS
30	CS-04	CROSS SECTIONS
31	CS-05	CROSS SECTIONS
32	CS-06	CROSS SECTIONS
33	CS-07	CROSS SECTIONS
34	CS-08	CROSS SECTIONS
35	ST-01	STRUCTURE STAKEOUT
36	DE-01	CONSTRUCTION DETAILS
37	DE-02	CONSTRUCTION DETAILS
38	DE-03	CONSTRUCTION DETAILS
39	SE-01	SEQUENCE OF CONSTRUCTION
40	ESC-01	EROSION AND SEDIMENT CONTROL PLAN
41	ESC-02	EROSION AND SEDIMENT CONTROL PLAN
42	ESC-03	EROSION AND SEDIMENT CONTROL PLAN
43	ESC-04	EROSION AND SEDIMENT CONTROL PLAN
44	ESC-05	EROSION AND SEDIMENT CONTROL NARRATIVE
45	ESC-06	EROSION AND SEDIMENT CONTROL DETAILS
46	ESC-07	EROSION AND SEDIMENT CONTROL DETAILS
47	ESC-08	EROSION AND SEDIMENT CONTROL DETAILS
48	PP-01	PLANTING PLAN
49	PP-02	PLANTING PLAN
50	PP-03	PLANTING PLAN
51	PP-04	PLANTING PLAN
52	PN-01	PLANTING DETAILS
53	PN-02	PLANTING DETAILS
54	PN-03	PLANTING DETAILS
55	WQIA-01	WATER QUALITY IMPACT ASSESSMENT



LOCATION MAP
SCALE 1" = 4000'



VICINITY MAP
SCALE 1" = 300'

TOTAL DISTURBED AREA: 73,949 SF (1.7 AC)
INCREASE IN IMPERVIOUS AREA: 0 SF (0 AC)
APRIL 17, 2026

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AECOM
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934
POINT OF CONTACT:
BRANDON ALDERMAN, CERP
BRANDON.ALDERMAN@AECOM.COM

PROJECT DESCRIPTION:
THE OBJECTIVE OF THIS PROJECT IS TO PROVIDE A MINIMAL STABILIZATION APPROACH ALONG TAYLOR RUN TO PROTECT THE CITY'S COMPROMISED STORMWATER AND SANITARY SEWER INFRASTRUCTURE.

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES.

APPROVED
X DATE:
DIRECTOR

RECOMMENDED FOR APPROVAL
X DATE:
DEPUTY DIRECTOR OF OPERATIONS

RECOMMENDED FOR APPROVAL
X DATE:
DEPUTY DIRECTOR OF INFRASTRUCTURE & ENVIRONMENT QUALITY

RECOMMENDED FOR APPROVAL
X DATE:
DEPUTY DIRECTOR OF RIGHT-OF-WAY & DEVELOPMENT SERVICES

RECOMMENDED FOR APPROVAL
X DATE:
DEPUTY DIRECTOR OF TRANSPORTATION

DEPARTMENT OF RECREATION, PARKS, AND CULTURAL ACTIVITIES

APPROVED
X DATE:
DIVISION CHIEF RPCA

DEPARTMENT OF PROJECT IMPLEMENTATION

APPROVED
X DATE:
DIRECTOR

RECOMMENDED FOR APPROVAL
X DATE:
DIVISION CHIEF

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS
BY DATE DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

COVER SHEET

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
G-01
SCALE:
N/A
SHEET:
01 OF 55

C:\Users\Bemheisel\S\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\610 CAD\20 - SHEETS\60742359-SHT-20-C-0001_COVR.dwg Plotted: 5/13/2026 2:31 PM by Bemheisel, Sean

PROJECT NARRATIVE

THIS PROJECT ENTAILS STREAM STABILIZATION USING A 'MINIMAL STABILZIATION' APPROACH TO LIMIT TREE IMPACTS AND DISTURBANCE TO THE COMMUNITY. THE TAYLOR RUN PROJECT AREA BEGINS AT THE 72' RCP CULVERT OUTFALL TO THE NORTHEAST OF THE CHINQUAPIN RECREATION CENTER, ADJACENT TO KING STREE IN THE CITY OF ALEXANDRIA, VIRIGNIA. APPROXIMATELY 1,500 LINEAR FEET OF TAYLOR RUN IS WIHTIN THE PROJECT AREA BUT APPROXIMATELY 590 LINEAR FEET WILL BE IMPACTED. THE PROJECT TERMINANTES DOWNSTREAM OF THE EXISTING SHEET PILE WALL.
WITHIN THE PROJECT AREA, THERE ARE TWO STORMWATER OUTFALLS IN DISREPAIR AND AN UNDERSIZED PLUNGE POOL. SEVERE EROSION HAS UNDERCUT TREES CAUSING THEM TO FALL, EXPOSED ROOTS AND UNDERMINED THE STREAM BANKS, INCLUDING THE CRITICAL ROOT ZONE OF A CHAMPION TREE. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH TWO EXPOSED CROSSINGS AND AN EXPOSED MANHOLE.
THE PROJECT LIES WITHIN A FEMA MAPPED ZONE AE SEPCIAL FLOOD HAZARD AREA (SFHA) AND IS ENTIRELY WITHIN THE CITY RESOURCE PROTECTION AREA (RPA). THE SURROUNDING AREA IS HIGHLY RESIDENTIAL, WHICH INCLUDES THE CITY OF ALEXANDRIA HIGH SCHOOL.

EXISTING CONDITIONS SURVEY NOTES

1. HORIZONTAL DATUM: NAD83
   VERTICAL DATUM: NAVD88 (FOR ALL SOURCES: GIS, AERIAL TOPOGRAPHY, SURVEY)
2. UTILITY INFORMATION INFORMATION, AS SHOWN ON THIS PLAN, IS A COMBINATION OF GIS DIGITAL DATA, AERIAL TOPOGRAPHY, AND SURVEY PROVIDED BY THE CITY OF ALEXANDRIA, QUANTUM SPATIAL, AND WETLAND STUDIES AND SOLUTIONS (WSSI), RESPECTIVELY. FOR EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES NOTIFY "VA811" AT 811 OR 1-800-552-7001, 72 HOURS BEFORE THE START OF ANY EXCAVATION OR CONSTRUCTION.
3. LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION CONTRACTOR/ENGINEER SHOULD DIG TEST PITS BY HAND AT ALL UTILITY CROSSINGS TO VERIFY EXACT LOCATION.
4. SITE TOPOGRAPHY WAS SURVEYED AND PROVIDED BY THE CITY OF ALEXANDRIA, QUANTUM SPATIAL, AND RICE ASSOCIATES FOR A TARGET HORIZONTAL MAP SCALE OF 1"=20' AT A CONTOUR INTERVAL OF 1'.
5. RICE ASSOCIATES SURVEYED THE TOPOGRAPHY, EXISTING SANITARY SEWER STRUCTURE LOCATIONS, CULVERTS, STORM DRAINS, AND ADDITIONAL FEATURES FROM 05/22/2025 THROUGH 06/11/2025.

CITY STANDARD GENERAL NOTES

1. "CITY" MEANS THE CITY OF ALEXANDRIA, A MUNICIPAL CORPORATION OF VIRGINIA AND ITS AUTHORIZED REPRESENTATIVES AND EMPLOYEES.
2. THE SUBJECT SITE IS LOCATED ON CITY OF ALEXANDRIA ASSESSMENT MAPS NO. 032.04 AND 041.02, PARCELS 041.02-02-02 AND 041.02-02-06, AND IS ZONED R20, AND POS.
3. OWNER: CITY OF ALEXANDRIA
4. LEGAL DESCRIPTION: LOTS 600 SUBDIVISION OF THE PROPERTY OF T C WILLIAMS HIGH SCHOOL AND PAR "B" CHINQUAPIN VILLAGE.
5. ADDRESS: PO BOX 178 ALEXANDRIA VA 22313-1500
6. THE NATURAL SOILS AT THE SITE CONSIST OF SASSAFRAS-NEABSCO COMPLEX. SASSAFRAS-NEABSCO SOILS ARE SANDY LOAM, WITH A MEDIUM EROSION POTENTIAL. THE SOIL DRAINAGE IS CLASSIFIED AS MARGINAL DUE TO PERCHED GROUNDWATER ABOVE RESTRICTIVE SOIL OR ROCK LAYERS AND SLOW PERMEABILITY RATES.
7. THE SITE IS LOCATED IN THE TAYLOR RUN WATERSHED.
8. THE SUBJECT PROPERTIES LIE WITHIN A RESOURCE PROTECTION AREA.
9. TOPOGRAPHIC INFORMATION FOR THE SUBJECT SITES IS FROM FIELD SURVEYS PROVIDED BY AERIAL TOPOGRAPHY AND RICE ASSOCIATES SURVEY (SEE EXISTING CONDITIONS SURVEY NOTES).
10. THE BOUNDARY INFORMATION FOR THE SUBJECT SITES IS BASED ON FIELD SURVEYS PROVIDED BY DIGITAL GIS DATA FROM THE CITY OF ALEXANDRIA, WSSI, AND RICE ASSOCIATES (SEE EXISTING CONDITIONS SURVEY NOTES).
11. CONSTRUCTION PERMITS ARE REQUIRED FOR THIS PROJECT. THE APPROVED SITE PLAN MUST BE ATTACHED TO THE PERMIT APPLICATION THAT FULLY DETAILS THE CONSTRUCTION AS WELL AS LAYOUTS AND SCHEMATICS OF THE MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS.
12. ALL PUBLIC AND PRIVATE EASEMENTS OR ALL KNOWN PUBLIC AND PRIVATE EASEMENTS, INCLUDING ALL UTILITY, EGRESS, AND CONSERVATION RESTRICTIONS ARE SHOWN. THE APPLICANT SHALL NOT CONSTRUCT ANY PERMANENT STRUCTURES OVER ANY EXISTING OR PROPOSED PUBLIC AND/OR PRIVATE EASEMENTS UNLESS OTHERWISE APPROVED BY THE PLANNING COMMISSION AND CITY OF ALEXANDRIA COUNCIL.
13. ALL NEW CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ALEXANDRIA AND/OR THE VIRGINIA DEPARTMENT OF TRANSPORATION (VDOT) STANDARDS AND SPECIFICATIONS.
14. ALL STREET CUT AND PATCH WORK LOCATED IN PUBLIC RIGHT-OF-WAYS, REQUIRED FOR ANY UTILITY INSTALLATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CITY OF ALEXANDRIA STANDARDS AND SPECIFICATIONS AND TO THE SATISFACTION OF THE DIRECTOR OF TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES).
15. CONTRACTOR MUST ENSURE THAT THERE IS NO DISTURBANCE ON ADJACENT PROPERTIES WITHOUT RECORDED EASEMENT OR NOTARIZED LETTER OF PERMISSION FROM THE ADJACENT PROPERTY OWNERS.
16. ALL REQUIRED STATE AND FEDERAL PERMITS, WHICH COULD INCLUDE PERMITS FROM THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION (VDCR), VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (VDEQ), VIRGINIA DEPARTMENT OF HISTORIC RESOURCES (VDHR), UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA), ARMY CORPS OF ENGINEERS AND VIRGINIA MARINE RESOURCES, MUST BE IN PLACE FOR ALL PROJECT CONSTRUCTION AND MITIGATION WORK PRIOR TO RELEASE OF THE FINAL SITE PLAN. THIS INCLUDES THE STATE REQUIREMENT FOR A VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) GENERAL PERMIT FOR DISCHARGES OF STORMWATER FROM CONSTRUCTION ACTIVITIES FOR LAND DISTURBING ACTIVITIES GREATER THAN 2,500. INFORMATION REGARDING THE VSMP GENERAL PERMIT CAN BE FOUND ONLINE AT: http://www.dcr.virginia.gov/soil and water/vsmp.shtml.
17. PERMITS FROM THE CITY OF ALEXANDRIA OFFICE OF ENVIRONMENTAL QUALITY (OEQ), TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES), AND BUILDING AND FIRE CODE ADMINISTRATION SHALL BE OBTAINED BY THE APPLICANT, AS REQUIRED AND DOCUMENTED HEREIN. THE CONTRACTOR CAN CONTACT ALEXANDRIA FIRE AND CODE ADMINISTRATION DEPARTMENT AT (703) 838-4644 OR (703) 746-4200 FOR ANY QUESTIONS OR ADDITIONAL INFORMATION.
18. ANY WORK IN THE PUBLIC RIGHT OF WAY SHALL REQUIRE A SEPARATE PERMIT FROM THE DIRECTOR, TRANSPORTATION AND ENVIRONMENTAL SERVICES. THE CONTRACTOR CAN CONTACT THE DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES AT (703) 746-4035 FOR ANY QUESTIONS OR ADDITIONAL INFORMATION.
19. THERE IS NO OBSERVABLE EVIDENCE OF CEMETERIES OR BURIAL GROUNDS ON THIS PROPERTY.
20. A SEPARATE PERMIT IS REQUIRED FOR SIGN CONSTRUCTION.

DEMOLITION NOTES

1. NO DEMOLITION SHALL BEGIN UNTIL ALL EROSION AND SEDIMENT AND TREE PROTECTION CONTROLS ARE IN PLACE AND ARE APPROVED BY AN EROSION AND SEDIMENT CONTROL INSPECTOR OF THE DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES.
2. ALL WORK SHALL BE PERFORMED IN STRICT COMPLIANCE WITH THE MOST CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS, INCLUDING BUT NOT LIMITED TO ENVIRONMENTAL PROTECTION AGENCY (EPA), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), VIRGINIA OCCUPATIONAL AND SAFETY HEALTH COMPLIANCE PROGRAM (VOSH ENFORCEMENT), VIRGINIA OVERHEAD HIGH VOLTAGE LINE SAFETY ACT, NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), AND NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH).
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF WORK WITH REPRESENTATIVE UTILITY COMPANIES AND FOR THE IMPLEMENTATION OF REQUIRED UTILITY-RELATED WORK.
4. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE UPON ENCOUNTERING ANY HAZARDOUS MATERIALS DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL DOCUMENT SAME TO THE OWNER'S REPRESENTATIVE AND OBTAIN DIRECTION AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
5. SHEETING AND SHORING REQUIRED FOR DEEP EXCAVATIONS AND TRENCHES SHALL BE DESIGNED AND SEALED/CERTIFIED BY THE CONTRACTOR OR THE CONTRACTOR'S ENGINEER AND APPROVED BY THE APPROPRIATE AUTHORITIES HAVING JURISDICTION PRIOR TO EXCAVATION AND TRENCHING ACTIVITIES BEING PERFORMED. COMPLY WITH OSHA AND OTHER APPLICABLE SAFETY CODES DURING EXCAVATION AND TRENCHING ACTIVITIES AND WHILE AN EXCAVATION OR TRENCH REMAINS OPEN AT THE PROJECT SITE.
6. PRIOR TO REMOVAL OF MATERIALS OVER EXISTING UTILITY SYSTEMS, THE CONTRACTOR SHALL DOCUMENT AND PHOTOGRAPH EXISTING CONDITIONS AND, IF AT VARIANCE WITH CONDITIONS AS REPRESENTED ON THE PLANS, NOTIFY THE OWNER'S REPRESENTATIVE AND OBTAIN DIRECTIONS AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
7. THE CONTRACTOR SHALL BACKFILL EXCAVATED AREAS WITH APPROVED MATERIALS/ CLEAN FILL AS PER THE REQUIREMENTS OF VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT).
8. PRIOR TO COMMENCING NEW WORK, THE CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING ADJACENT AREAS. ALL ADJACENT AREAS DAMAGED DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE CITY .
9. DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE UPON ENCOUNTERING ANY EXISTING UTILITIES AND/OR UTILITY SYSTEM STRUCTURES NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL DOCUMENT THE SAME AND FORWARD THE INFORMATION TO THE RESIDENT ENGINEER/ OWNER'S REPRESENTATIVE, AND OBTAIN DIRECTION AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
10. THE CONTRACTOR OR APPLICANT SHALL WORK WITH THE CITY STAFF TO REUSE THE EXISTING, LEFTOVER, UNUSED, AND/OR DISCARDED BUILDING MATERIALS AS PART OF THE DEMOLITION PROCESS OR THE CONSTRUCTION DEBRIS MUST BE REMOVED TO AN APPROVED LANDFILL

PRESERVATION & PROTECTION OF EXISTING VEGETATION NOTES

1. ALL PLANS ARE TO BE APPROVED BY, AND QUESTION ABOUT PLANNING DETAILS SHOULD BE DIRECTED TO JOHN MARLIN, CITY ARBORIST AT 703-746-5499; JOHN.MARLIN@ALEXANDRIA.GOV.
2. VEGETATION TO BE REMOVED SHALL BE APPROVED BY THE CITY ARBORIST
3. PROVIDE, IMPLEMENT AND FOLLOW A TREE CONSERVATION AND PROTECTION PROGRAM THAT IS DEVELOPED TO THE SATISFACTION OF THE CITY ARBORIST.
4. PROTECTION PROGRAM SHALL BE AUTHORED BY AN ARBORIST CERTIFIED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE.
5. LOCATION AND METHOD FOR PROTECTION AND PRESERVATION OF EXISTING TREES ON ALL PLAN SHEETS INCLUDING DEMOLITION, SEDIMENT AND EROSION CONTROL, SITE PLAN AND LANDSCAPE PLAN
6. PROVIDE PROTECTION OF EXISTING VEGETATION IN COMPLIANCE WITH LANDSCAPE GUIDELINES OF THE CITY.
7. LOCATION AND METHOD FOR PROTECTION AND PRESERVATION OF EXISTING TREES SHALL BE APPROVED IN-FIELD BY THE CITY ARBORIST PRIOR TO COMMENCEMENT OF GROUP DISTURBING ACTIVITIES RCPA ALSO RESERVES THE RIGHT TO CONDUCT THESE APPROVALS
8. CONTRACTOR MUST PROVIDE DOCUMENTATION OF COMMUNICATION WITH THE ADJACENT PROPERTY OWNER(S) VERIFYING NOTIFICATION OF CONSTRUCTION IMPACT, POTENTIAL FOR LOSS, AND AGREED UPON REMEDIAL MEASURES PERTAINING TO THE EXISTING TREE(S) ON ADJACENT PROPERTIES THAT WILL BE AFFECTED BY PROJECT WORK.
9. PROVIDE SPECIFIC CONSTRUCTION STAGING INFORMATION THAT INDICATES THE METHODS, AND PROCEDURES TO BE IMPLEMENTED FOR PROTECTION OF EXISTING ON-SITE AND OFF-SITE VEGETATION.
10. TREE PROTECTION SHALL BE PROVIDED AS INDICATED ON THE PLANS. PROTECTION SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE DRIP LINE OF THE TREES TO BE SAVED. THE CONTRACTOR WILL CONSULT THE SITE INSPECTOR BEFORE THE CONSTRUCTION STARTS. TREE PROTECTION FENCING MUST BE ESTABLISHED AND APPROVED BY THE CITY ARBORIST BEFORE ANY CLEARING OR CONSTRUCTION/DEMOLITION CAN BE STARTED. TO THE EXTENT POSSIBLE ALL TREE PROTECTION SHALL BE INSTALLED AT THE DROP LINE OF THE TREE(S).

RODENT ABATEMENT NOTE

PRIOR TO THE ISSUANCE OF A DEMOLITION PERMIT OR LAND DISTURBANCE PERMIT, A RODENT ABATEMENT PLAN SHALL BE SUBMITTED TO THE CITY OF ALEXANDRIA BUILDING AND FIRE CODE ADMINISTRATION THAT WILL OUTLINE STEPS THAT WILL BE TAKEN TO PREVENT THE SPREAD OF RODENTS FROM THE CONSTRUCTION SITE TO THE SURROUNDING COMMUNITY AND SEWERS. THE CONTRACTOR CAN CONTACT ALEXANDRIA BUILDING AND FIRE CODE ADMINISTRATION DEPARTMENT AT (703) 838-4644 OR (703) 746-4200 FOR ANY QUESTIONS OR ADDITIONAL INFORMATION.

UTILITY WORK NOTES

UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING MINIMUM STANDARDS DESCRIBED IN SECTION 4VAC50-30-40 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) AND ADDITIONAL APPLICABLE PRACTICES FOLLOWED BY THE CITY:

1. ALL PRIVATE UTILITIES SHALL BE LOCATED OUTSIDE OF THE PUBLIC RIGHT-OF-WAY AND PUBLIC UTILITY EASEMENTS UNLESS THE UTILITY OWNERS HAVE FRANCHISE AGREEMENT WITH THE CITY OF ALEXANDRIA; HOWEVER, NO ELECTRIC TRANSFORMERS AND SWITCH GEARS/CONTROL BOXES SHALL BE PLACED IN THE PUBLIC RIGHT OF WAY.
2. ALL THE EXISTING AND PROPOSED PUBLIC AND PRIVATE UTILITIES AND EASEMENTS SHALL BE SHOWN AND A DESCRIPTIVE NARRATION OF VARIOUS UTILITIES SHALL BE PROVIDED ON THE PLAN.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN UTILITY SERVICES AT ALL TIMES DURING CONNECTION AND/OR CONSTRUCTION. ANY DISRUPTIONS TO UTILITIES TO REMAIN WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR OR REPLACE IN KIND WITH NO ADDITIONAL EXPENSE TO THE CITY.
4. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
5. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
6. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY AS CONFIRMED BY THE CITY.
7. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ACCORDANCE WITH THE CITY STANDARDS AND SPECIFICATIONS TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
8. SHOULD UTILITY CONSTRUCTION BE PERFORMED AFTER COMPLETING EARTHWORK, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACHIEVING 98 PERCENT OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1557) COMPACTION IN ALL TRENCH BACKFILL.
9. RE-STABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE VIRGINIA REGULATIONS §4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS, VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).
10. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
11. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL CONTROL MEASURES AS NECESSARY TO PREVENT EROSION AND SEDIMENTATION, AS DETERMINED BY THE DIRECTOR OF T&ES, CITY OF ALEXANDRIA.
12. A REMEDIATION PLAN SHALL BE SUBMITTED DETAILING HOW CONTAMINATED SOILS AND/OR GROUNDWATER WILL BE DEALT WITH, INCLUDING PLANS TO REMEDIATE UTILITY CORRIDORS.
13. UTILITY CORRIDORS IN CONTAMINATED SOIL SHALL BE OVER EXCAVATED BY 2 FEET AND BACKFILLED WITH "CLEAN" SOIL.
14. GRADING CAN BE PERFORMED ON INSTALLATION OF UTILITIES.
15. ALL NEW INSTALLATIONS AND/OR REINSTALLATIONS OF UTILITIES SUCH AS ELECTRICAL LINES, GAS PIPES, COMMUNICATION CABLES INCLUDING WATER AND SEWER LATERALS BOTH ON PRIVATE PROPERTY AND IN THE PUBLIC RIGHT-OF-WAY IN THE CITY OF ALEXANDRIA SHALL BE PROVIDED WITH 3" AND 6" WIDE 5 MIL OVERALL THICKNESS DETECTABLE UNDERGROUND WARNING TAPES (DUWT). THE 3" DUWT SHALL BE INSTALLED AT DEPTHS OF 12" TO 18" AND 6" WIDE AT A DEPTH OF 24" SO AS TO MAKE UNDERGROUND INSTALLATIONS EASY TO FIND USING A NON-FERROUS LOCATOR. THE DUWT SHALL BE WITH ALUMINUM BACKING OR SOLID ALUMINUM CORE LAMINATED WITH A PROTECTIVE CLEAR FILM ON BOTH SIDES, SEALING AND PROTECTING THE GRAPHICS FROM UNDERGROUND MOISTURE, ACIDS, ALKALIS, AND OTHER SOIL SUBSTANCES. ALL DUWT TAPES SHALL BE PRINTED IN BLACK INK ON AMERICAN PUBLIC WORKS ASSOCIATION (APWA) APPROVED COLORS TO MEET OR EXCEED INDUSTRY STANDARDS. THE FOLLOWING ARE THE APWA COLOR CODES:

UTILITY CONTACTS

DOMINION ENERGY (MICHAEL SHIPE)	571-203-5242
VERIZON COMMUNICATIONS (BRIAN HARLOW)	703-819-6822
COMCAST (AMY GOAD)	301-625-3407
WASHING GAS (MICHAEL STABLEIN)	703-750-4270
PEPCO	202-833-7500
VIRINIGA AMERICAN WATER (STEVEN CHEN)	703-706-3889
SANITARY SEWER - CITY OF ALEXANDRIA	703-746-4014

COLOR	CODES
RED	CAUTION BURIED ELECTRIC POWER LINES, CABLES, CONDIUTS, AND LIGHTING CABLES
YELLOW	CAUTION GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	CAUTION COMMUNICATIONS, ALARM OR SIGNAL LINES, CABLES, OR CONDUITS
BLUE	CAUTION POTABLE WATER
PURPLE	CAUTION RECLAIMED WATER, IRRIGATION AND SLURRY LINES
GREEN	CAUTION SEWER, DRAIN LINES, AND FORCE MAIN

CONSTRUCTION NOTES

THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK AND FOR ANY DAMAGES WHICH MAY OCCUR BY HIS FAILURE TO LOCATE OR PRESERVE THESE UNDERGROUND UTILITIES. IF DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHOULD ENCOUNTER UTILITIES OTHER THAN THOSE SHOWN ON THE PLANS, HE SHALL IMMEDIATELY NOTIFY THE ENGINEER AND TAKE NECESSARY ACTION AND PROPER STEPS TO PROTECT THE FACILITY AND ASSURE THE CONTINUATION OF SERVICE.

1. THE CONTRACTOR SHALL DIG TEST PITS AS REQUIRED FOLLOWING NOTIFICATION AND MARKING OF ALL EXISTING UTILITIES TO VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES TEST HOLES TO BE PERFORMED AT LEAST 30 DAYS PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE OWNER AND ENGINEER. REDESIGN AND APPROVAL BY REVIEWING AGENCIES SHALL BE OBTAINED, IF REQUIRED.
2. CONSTRUCTION VEHICLES ACCESS TO THE SITE WILL BE BETWEEN 9 AM AND 2 PM TO AVOID SCHOOL AND RUSH HOUR TRAFFIC.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE OWNER AND THE ENGINEER OF ANY CHANGES OR CONDITIONS ATTACHED TO PERMITS OBTAINED FROM ANY AUTHORITY ISSUING PERMITS.
4. THE CONTRACTOR SHALL VISIT THE SITE AND SHALL VERIFY EXISTING CONDITIONS PRIOR TO STARTING CONSTRUCTION.
5. THE CONTRACTOR SHALL CLEAR THE SITE OF ALL TREES, BUILDINGS, FOUNDATIONS, ETC., WITHIN THE LIMITS OF CONSTRUCTION UNLESS OTHERWISE SPECIFIED, AND SHALL BE RESPONSIBLE FOR ENSURING THAT EXISTING UTILITIES ARE DISCONNECTED.
6. ALL AREAS, ON OR OFF-SITE, WHICH ARE DISTURBED BY THIS CONSTRUCTION AND WHICH ARE NOT PAVED OR BUILT UPON, SHALL BE ADEQUATELY STABILIZED TO CONTROL EROSION AND SEDIMENTATION. THE MINIMUM ACCEPTABLE STABILIZATION SHALL CONSIST OF PERMANENT GRASS, SEED MIXTURE TO BE AS RECOMMENDED BY THE CITY AGENT. ALL SLOPES 3:1 AND GREATER SHALL BE SODDED AND PEGGED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY OF ALEXANDRIA.
7. EXISTING WELLS SHALL BE PERMANENTLY ABANDONED IN ACCORDANCE WITH VIRGINIA STATE WATER CONTROL BOARD (VSWCB) REQUIREMENTS.
8. EXISTING SEPTIC FIELDS SHALL BE ABANDONED IN ACCORDANCE WITH VIRGINIA HEALTH DEPARTMENT STANDARDS AND SPECIFICATIONS.
9. ALL OVER HEAD POLE LINES SHALL BE RELOCATED AS REQUIRED BY THE OWNING UTILITY COMPANIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL ARRANGEMENTS AND COORDINATING ALL WORK REQUIRED FOR THE NECESSARY RELOCATIONS.
10. EXISTING PHYSICAL FEATURES ARE TO REMOVED BY THE CONTRACTOR AS REQUIRED.
11. THE DISTURBED LAND WHERE WORK HAS BEEN COMPLETED MUST BE ADEQUATELY STABILIZED ON A DAILY BASIS. THE OWNER AND/OR CONSTRUCTION ACTIVITY OPERATOR MUST DESIGN, INSTALL, IMPLEMENT, AND MAINTAIN POLLUTION PREVENTION MEASURES TO:
    11.1. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATERS;
    11.2. MINIMIZE THE EXPOSURE OF BUILDING MATERIALS, BUILDING PRODUCTS, CONSTRUCTION WASTES, TRASH, LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE, AND OTHER MATERIALS PRESENT ON-SITE TO PRECIPITATION AND TO STORMWATER;
    11.3. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM SPILLS AND LEAKS AND IMPLEMENT CHEMICAL SPILL AND LEAK PREVENTION AND RESPONSE PROCEDURES; AND
    11.4. PROHIBIT THE DISCHARGE OF FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE.
12. TOPS OF EXISTING STRUCTURES WHICH REMAIN IN USE ARE TO BE ADJUSTED IN ACCORDANCE WITH THE GRADING PLAN. ALL PROPOSED STRUCTURE TOP ELEVATIONS ARE TO BE VERIFIED BY THE CONTRACTOR WITH THE SITE GRADING PLANS. IN CASE OF CONFLICT, THE GRADING PLAN SHALL SUPERSEDE PROFILE ELEVATIONS. MINOR ADJUSTMENTS TO MEET FINISHED GRADE ELEVATIONS, IF REQUIRED, SHALL BE MADE IN THE FIELD WITH THE APPROVAL OF SITE INSPECTOR OF THE DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES.
13. EXISTING CONSTRUCTION SHALL BE REMOVED TO NEAREST JOINT. NEW CONSTRUCTION SHALL BE PROVIDED AS SHOWN AND ANY DAMAGED AREA SHALL BE REPAIRED TO MATCH CONDITIONS EXISTING PRIOR TO CONSTRUCTION.
14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE SURE THAT ANY EXISTING LANDSCAPING WHICH IS TO BE RELOCATED ON THE SITE WILL BE CAREFULLY STORED IN A DESIGNATED AREA BEFORE BEING REPLANTED, COORDINATION WITH THE OWNER FOR MUTUALLY AGREEABLE STORAGE LOCATIONS FOR LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PLANT MATERIAL THAT FOES NOT SURVIVE STORAGE AND REPLANTING.
15. CONSTRUCTION STAKEOUT SHALL BE UNDER THE DIRECT SUPERVISION OF A LICENSED LAND SURVEYOR IN THE COMMONWEALTH OF VIRGINIA.
16. SMOOTH GRADE SHALL BE MAINTAINED FROM THE CENTERLINE OF THE EXISTING ROAD TO THE PROPOSED ENTRANCE AND/OR CURB & GUTTER TO PRECLUDE THE FORMING OF FALSE AND/OR THE PONDING OF WATER ON THE ROADWAY.
17. ALL STRIPPING TO MEET THE REQUIREMENTS OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
18. ALL EROSION CONTROLS SHALL CONFORM TO THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCHB) AND MUST BE SUBMITTED AND APPROVED BY T&ES.
19. ALL EARTHWORK OPERATIONS ARE TO BE PERFORMED UNDER THE FULL TIME, ON-SITE TESTING IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS AND GEOTECHNICAL REPORT REQUIREMENTS.
20. THE CONTRACTOR MUST ENSURE THAT POSITIVE DRAINAGE OCCURS ON SITE TO PREVENT PONDING OR DRAINAGE PROBLEMS ON ADJACENT PROPERTIES.
21. CONTRACTOR SHALL ENSURE ALL DISCHARGES ARE IN ACCORDANCE WITH CITY OF ALEXANDRIA CODE TITLE 5, CHAPTER 6, ARTICLE B.
22. DEWATERING AND OTHER CONSTRUCTION RELATED DISCHARGE LIMITS TO THE SEWER SYSTEM ARE REGULATED BY ALEXRENEW PRETREATMENT. CONTRACTOR IS REQUIRED TO CONTACT ALEXRENEW'S PRETREATMENT COORDINATOR AT 703-721-3500 X2020.
23. CONTRACTOR MUST ENSURE THAT THERE IS NO DISTURBANCE ON ADJACENT PROPERTIES.
24. IT IS THE CONTRACTORS RESPONSIBILITY TO MAINTAIN UTILITY SERVICES AT ALL TIMES DURING CONNECTION AND/OR CONSTRUCTION.
25. THE CONTRACTOR IS RESPONSIBLE WITH ALL TRAFFIC CONTROL DURING CONSTRUCTION. NO SIDE AND/OR CROSS WALK SHALL BE CLOSED DURING CONSTRUCTION. IF ANY SIDE AN/OR CROSS WALKS NEED TO BE CLOSED TO FACILITATE THE CONSTRUCTION THEN THE CONTRACTOR SHALL PROVIDE A SIDE AN/OR CROSS WALK CLOSURE PLAN TO THE SATISFACTION OF THE DIRECTOR OF T&ES, CITY OF ALEXANDRIA.

ENVIRONMENTAL SITE ASSESSMENT NOTES

1. THE MAJORITY OF PROPOSED WORK IS WATER DEPENDENT AND IS LOCATED WITHIN THE RESOURCE PROTECTION AREA. MINOR TEMPORARY IMPACTS TO ISOLATED OVERBANK WETLANDS WILL OCCUR FROM PROPOSED MEASURES. THE CITY DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES, OFFICE OF ENVIRONMENTAL QUALITY MUST BE NOTIFIED IF UNUSUAL OR UNANTICIPATED CONTAMINATION OR UNDERGROUND STORAGE TANKS, DRUMS, AND CONTAINERS ARE ENCOUNTERED AT THE SITE. IF THERE IS ANY DOUBT ABOUT PUBLIC SAFETY OR A RELEASE TO THE ENVIRONMENT, THE ALEXANDRIA FIRE DEPARTMENT MUST BE CONTACTED IMMEDIATELY BY CALLING 911. THE TANK OR CONTAINER'S REMOVAL, ITS CONTENTS, ANY SOIL CONTAMINATION AND RELEASES TO THE ENVIRONMENT WILL BE HANDLED IN ACCORDANCE WITH FEDERAL, STATE, AND CITY REGULATIONS.
2. ALL WELLS TO BE DEMOLISHED IN THIS PROJECT, INCLUDING MONITORING WELLS MUST BE CLOSED IN ACCORDANCE WITH STATE WELL REGULATION. CONTACT JOE FIANDER AND COORDINATE WITH THE ALEXANDRIA HEALTH DEPARTMENT AT 703-838-4400 EXT 255.
3. CONSTRUCTION ACTIVITIES ARE PERMITTED TO OCCUR BETWEEN THE FOLLOWING HOURS:
   - MONDAY THROUGH FRIDAY FROM 8 AM TO 6 PM AND
   - SATURDAYS FROM 10 AM TO 5 PM.
   - NO CONSTRUCTION ACTIVITIES ARE PERMITTED ON SUNDAYS.

   PILE DRIVING IS FURTHER RESTRICTED TO THE FOLLOWING HOURS:
   - MONDAY THROUGH FRIDAY FROM 9 AM TO 6 PM AND
   - SATURDAYS FROM 10 AM TO 4 PM.

RESOURCE PROTECTION AREA NOTES

LEGEND

- PROPERTY BOUNDARY
- 160 — EX. MAJOR CONTOUR
- 161 — EX. MINOR CONTOUR
- LOS — LIMITS OF 2025 SURVEY
- EXISTING WINGWALL
- EXISTING STREAM CENTERLINE
- SD_x — EXISTING STORM SEWER
- SS_x — EXISTING SANITARY SEWER
- WET WET — EXISTING WETLAND
- WUS — EXISTING WATERS OF THE UNITED STATES
- S D — EXISTING MANHOLE
- EXISTING RIPRAP
- EXISTING PEDESTRIAN BRIDGE
- SPECIMEN TREE (30"+)
- SIGNIFICANT TREE (24"-29")
- TREES LESS THAN 24"
- CRITICAL ROOT ZONE
- TREE TO BE REMOVED
- PROPOSED RIP RAP
- 100 YR — EXISTING 100 YEAR WATER SURFACE ELEVATION
- LOD — PROPOSED LIMIT OF DISTURBANCE
- RPA — RESOURCE PROTECTION AREA (100')
- LTS — LIMIT OF TREE SURVEY
- 0+00 — PROPOSED STREAM CENTERLINE
- PROPOSED FENCE SPECIFY FENCE TYPE
- PROPOSED BOULDER CASCADE
- PROPOSED GRAVITY BLOCK WALL
- HVF — CHAIN LINK FENCE
- CONSTRUCTION ACCESS PATH
- SSF SSF — SUPER SILT FENCE
- STOCKPILE/STAGING AREA
- SCE — STABILIZED CONSTRUCTION ENTRAANCE
- FB — FILTER BAG
- PUMP AROUND PRACTICE
- PROPOSED CONCRETE ENCASEMENT
- CONSTRUCTION ACCESS ROAD
- X X — EXISTING FENCE
- MATCHLINE
- TEMPORARY SANDBAG DIVERSION
- 160 — PR. MAJOR CONTOUR
- 161 — PR. MINOR CONTOUR
- RPA — RESOURCE PROTECTION AREA (100')
- TP TP — TREE PLANKING
- TPF TPF — TREE PROTECTION FENCE

SANITARY AND STORMWATER FEATURE IDS

SANITARY SEWER

007531 SANITARY MANHOLE
RIM = 128.53'
18" DIP INV. IN = 117.43' (FROM #50035)
18" RCP INV. OUT = 117.42' (TO S.E.)

500035 SANITARY MANHOLE
RIM = 128.19'
18" DIP INV. IN = NOT VISIBLE (FROM #007756)
18" DIP INV. OUT = NOT VISIBLE (TO #007531)
PIPES OFFSET
B.O.S. = 121.29'

007756 SANITARY MANHOLE
RIM = 130.57'
15" DIP INV. IN = 122.47' (FROM #007529)
18" DIP INV. OUT = 122.42' (TO #007531)

007529 SANITARY MANHOLE
RIM = 132.42'
15" DIP INV. IN = 125.52' (FROM #007530)
15" DIP INV. OUT = 125.50' (TO #500035)

007530 SANITARY MANHOLE
RIM = 136.04'
15" DIP INV. IN = 128.59' (FROM #000041)
15" DIP INV. OUT = 128.54' (TO #007529)

000041 SANITARY MANHOLE
RIM = 145.13'
12" DIP INV. IN = 139.23' (FROM N.E.)
15" DIP INV. IN = 138.08' (FROM #000042)
15" DIP INV. OUT = 137.98' (TO #007530)

000047 SANITARY MANHOLE
RIM = 150.65'
12" DIP INV. IN = 139.85' (FROM NORTH)
12" DIP INV. IN = 139.85' (FROM N.E.)
12" DIP INV. OUT = 139.80' (TO #000041)

000042 SANITARY MANHOLE
RIM = 152.10'
15" DIP INV. IN = 144.25' (FROM #000040)
15" DIP INV. OUT = 144.23' (TO #000041)

000040 SANITARY MANHOLE
RIM = 166.94'
18" PVC (GIS) INV. IN = 150.34' (FROM N.E.)
(PIPE SIZE NOT VISIBLE)
15" RCP INV. IN = 150.12' (FROM S.W.)
15" RCP INV. OUT = 150.09' (TO #000042)
(TRANSITION TO DIP NOT VISIBLE)

STORM SEWER

RA-1 STORM MANHOLE
RIM = 151.14'
21" RCP INV. IN = 142.54' (FROM WEST)
21" RCP INV. OUT = 139.59' (TO RA-2)

RA-2 21" RCP INV. OUT = 133.67' (FROM RA-1)

RA-3 HEADWALL
15" CMP INV. = 138.14' (TO RA-4)

RA-4 ENDWALL
15" CMP INV. = 137.04' (FROM RA-3)

014476 36" CMP INV. = 138.59' (FROM #000030)
(TRANSITION FROM 27" RCP NOT VISIBLE)

000030 STORM MANHOLE
RIM = 153.54'
12" RCP INV. IN = 151.44' (FROM S.E.)
18" RCP INV. IN = 147.84' (FROM S.E.)
27" RCP INV. OUT = 144.94' (TO #014476)
(TRANSITION TO 36" CMP NOT VISIBLE)

000018 STORM MANHOLE
RIM = 150.10'
GIS INV. IN = NOT VISIBLE (FROM N.E.)
18" RCP INV. IN = NOT VISIBLE (FROM #000106)
36" RCP INV. IN = 143.95' (FROM NORTH)
36" RCP INV. OUT = 144.00' (TO #000140)
(STRUCTURE IS SURCHARGED)

000106 CURB DROP INLET
RIM = 149.45'
18" RCP INV. OUT = 144.90' (TO #000018)

000140 ENDWALL (BROKEN)
36" RCP INV. = 141.81' (FROM #000018)

000124 ENDWALL
72" RCP INV. = 148.55' (FROM #000015)

000015 STORM MANHOLE
RIM = 160.04'
15" RCP INV. IN = NOT VISIBLE (FROM S.W.)
72" RCP INV. IN = NOT VISIBLE (FROM N.W.)
72" RCP INV. OUT = NOT VISIBLE (TO #000124)
B.O.S. = 149.44'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.:	23086	
DATE OF PLAN ISSUANCE:		
CONSULTANT PROJECT ID.:	60742359	
DESIGNED BY:	SB, TN	DATE: 10/2025
DRAWN BY:	SB, TN	DATE: 10/2025
CHECKED BY:	BA	DATE: 10/2025
APPROVED BY:	BA	DATE: 10/2025

SEAL:

LEGEND

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: G-03

SCALE: N/A

SHEET: 03 OF 55

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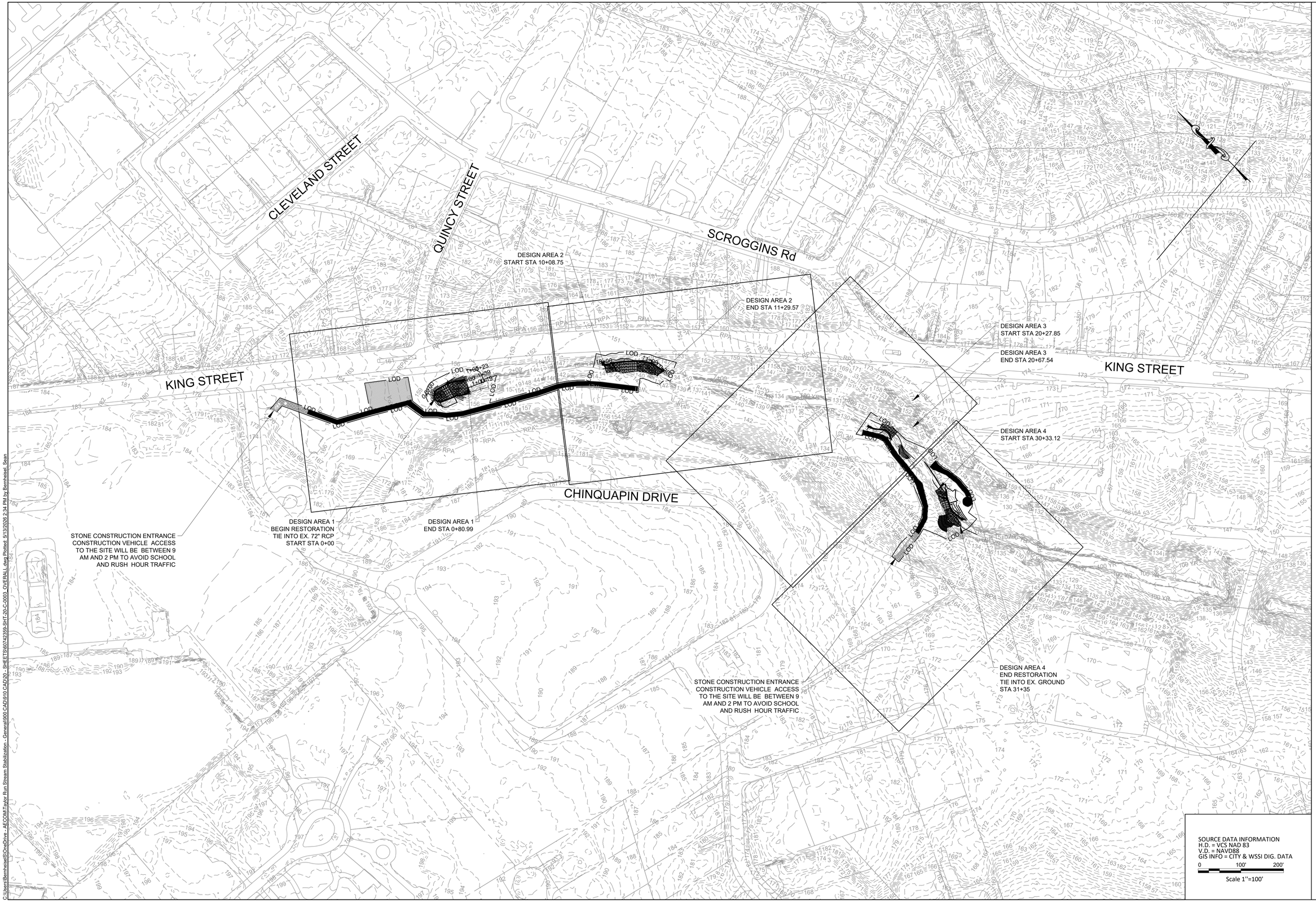

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

DATE	REVISIONS BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

OVERALL SITE PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
O-01
SCALE:
1:100
SHEET:
04 OF 55

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KEY TO SHEETS
1" = 500'

SH 05
SH 06
SH 07
SH 08

KING ST
SCHOOLHOUSE RD
KING ST

QUINCY ST
KING ST
EX. CONC. WALK
REMOVE EXISTING DEBRIS BUILDUP
RIPRAP/CONCRETE DEBRIS TO BE REMOVED AND DISPOSED OFF-SITE
DEMOLISH AND DISPOSE OF EXISTING LEFT WINGWALL
CAMERA POLE NO# 000124
AREA OF DEBRIS BUILDUP
METAL POST
000042
THALWEG
000015
72" RCP
15" DIP
15" RCP
000040
18" PVC (SAGS)
SIGN W/ METAL PLAGARD
MILE MARKER 0.0
EX. 4' DIRT TRAIL
EX. BRICK BUILDING (INDOOR POOL)
RPA
LOS
SS
100 YR
MATCH LINE - SEE SHEET EC-02

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23066
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

EXISTING CONDITIONS AND DEMOLITION PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: EC-01
SCALE: 1:20
SHEET: 05 OF 55

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KING ST

DEMOLISH AND DISPOSE OF EXISTING ENDWALL

CONCRETE DEBRIS TO BE REMOVED

APPROXIMATELY 12 LF OF 12" DIP PIPE EXPOSED IN STREAM

REMOVE AND DISPOSE OF EXISTING WOODY DEBRIS BUILDUP

AREA OF DEBRIS BUILDUP

MILE MARKER 0.1

3' WOODEN RAILING

3.5' WOODEN RAILING

EX. CONC. WALK

CONC. SIDEWALK

EX. 4' DIRT TRAIL

EX. 18' ASP. TRAIL

EX. 4' ASP. TRAIL

THALWEG

MATCH LINE - SEE SHEET EC-01

MATCH LINE - SEE SHEET EC-03

KEY TO SHEETS
1" = 500'

KING ST
SCHOOLHOUSE RD
KING ST
SH 05
SH 06
SH 07
SH 08

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

EXISTING CONDITIONS AND DEMOLITION PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
EC-02
SCALE:
1:20
SHEET:
06 OF 55

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MATCH LINE - SEE SHEET EC-02

MATCH LINE - SEE SHEET EC-04

DEMOLISH EXISTING MANHOLE CONCRETE SKIRT

EXISTING EXPOSED MANHOLE

REMOVE AND DISPOSE OF EXISTING WOODY DEBRIS BUILDUP

KEY TO SHEETS
1" = 500'

SH 05

SH 06

SH 07

SH 08

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

EXISTING CONDITIONS AND DEMOLITION PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
EC-03

SCALE:
N/A

SHEET:
07 OF 55

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MATCH LINE - SEE SHEET EC-03

REMOVE AND DISPOSE OF EXISTING WOODY DEBRIS BUILDUP

APPROXIMATELY 23 LF OF 18" SANITARY DIP PIPE EXPOSED IN STREAM

DEMOLISH 63 LF EXISTING VINYL CLAD RETAINING WALL, DISPOSE OFF-SITE

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

KEY TO SHEETS
1" = 500'

KING ST
SCROGGINS RD
SH 05
SH 06
SH 07
SH 08
KING ST

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

EXISTING CONDITIONS AND DEMOLITION PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
EC-04

SCALE:
N/A

SHEET:
08 OF 55

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Tree #	Common Name	Scientific Name	Condition	DBH
1	Black locust	*Robinia pseudoacacia*	2	24
2	Black locust	*Robinia pseudoacacia*	4	25
3	White mulberry	*Morus alba*	Dead	22
4	Black locust	*Robinia pseudoacacia*	Dead	22
5	Black locust	*Robinia pseudoacacia*	Dead	22
6	Black locust	*Robinia pseudoacacia*	4	6
7	Black locust	*Robinia pseudoacacia*	2	6
8	Unknown tree	-	Dead	14
9	American elm	*Ulmus americana*	4	7
10	White mulberry	*Morus alba*	Dead	8
11	White mulberry	*Morus alba*	4	12
12	Black locust	*Robinia pseudoacacia*	4	13
13	White mulberry	*Morus alba*	4	10
14	Tree of heaven	*Ailanthus altissima*	4	17
15	Green ash	*Fraxinus pennsylvanica*	4	8
16	Tree of heaven	*Ailanthus altissima*	Dead	13
17	Tree of heaven	*Ailanthus altissima*	4	15
18	Tree of heaven	*Ailanthus altissima*	Dead	15
19	White mulberry	*Morus alba*	4	7
20	Box elder	*Acer negundo*	4	7
21	Box elder	*Acer negundo*	4	7
22	Black cherry	*Prunus serotina*	Dead	9
23	Littleleaf linden	*Tilia cordata*	3	10
24	Black locust	*Robinia pseudoacacia*	3	14
25	Tree of heaven	*Ailanthus altissima*	4	16
26	Black locust	*Robinia pseudoacacia*	4	16
27	Red maple	*Acer rubrum*	3	12
28	Red maple	*Acer rubrum*	3	6
29	Mimosa	*Albizia julibrissin*	4	8
30	American elm	*Ulmus americana*	4	12
31	Box elder	*Acer negundo*	4	8
32	Black locust	*Robinia pseudoacacia*	4	12
33	Unknown tree	-	Dead	8
34	White mulberry	*Morus alba*	4	11
35	White mulberry	*Morus alba*	4	26
36	Black locust	*Robinia pseudoacacia*	3	15
37	Black locust	*Robinia pseudoacacia*	4	13
38	Black locust	*Robinia pseudoacacia*	4	18
39	Sweet cherry	*Prunus avium*	3	7
40	Black locust	*Robinia pseudoacacia*	Dead	12
41	Black locust	*Robinia pseudoacacia*	3	19
42	Black locust	*Robinia pseudoacacia*	3	16
43	American elm	*Ulmus americana*	4	9
44	American holly	*Ilex opaca*	3	6
45	American holly	*Ilex opaca*	3	6
46	Black locust	*Robinia pseudoacacia*	Dead	20
47	Black locust	*Robinia pseudoacacia*	Dead	23
48	Red maple	*Acer rubrum*	4	10
49	Black cherry	*Prunus serotina*	4	22
50	Silver maple	*Acer saccharinum*	3	13
51	Black locust	*Robinia pseudoacacia*	Dead	12
52	Black cherry	*Prunus serotina*	Dead	10
53	White mulberry	*Morus alba*	4	8
304	Slippery elm	*Ulmus rubra*	Dead	11
305	Slippery elm	*Ulmus rubra*	Dead	19
306	Black locust	*Robinia pseudoacacia*	4	23
307	Slippery elm	*Ulmus rubra*	3	7
308	Black locust	*Robinia pseudoacacia*	Dead	19
309	White mulberry	*Morus alba*	4	15
310	Black locust	*Robinia pseudoacacia*	Dead	22
311	White mulberry	*Morus alba*	Dead	16
312	Black locust	*Robinia pseudoacacia*	Dead	24,12
313	White mulberry	*Morus alba*	Dead	10
314	Unknown tree	-	Dead	7,6
317	White mulberry	*Morus alba*	Dead	13,12
318	Unknown tree	-	Dead	11
319	Silver maple	*Acer saccharinum*	4	24
320	Slippery elm	*Ulmus rubra*	Dead	18
321	Silver maple	*Acer saccharinum*	4	6
322	Silver maple	*Acer saccharinum*	4	12
323	Unknown tree	-	Dead	8
324	White mulberry	*Morus alba*	4	10
325	Silver maple	*Acer saccharinum*	4	42
326	Unknown tree	-	Dead	10
327	Black locust	*Robinia pseudoacacia*	Dead	25
328	White mulberry	*Morus alba*	Dead	11,7
329	Unknown tree	-	Dead	7
331	Green ash	*Fraxinus pennsylvanica*	Dead	14
332	Silver maple	*Acer saccharinum*	Dead	15
333	Black cherry	*Prunus serotina*	Dead	21
334	Unknown tree	-	Dead	8
335	White mulberry	*Morus alba*	4	15
336	Unknown tree	-	Dead	12

Tree #	Common Name	Scientific Name	Condition	DBH
337	Unknown tree	-	Dead	11
338	Silver maple	*Acer saccharinum*	4	24
339	Unknown tree	-	Dead	10
340	White mulberry	*Morus alba*	Dead	12
341	Norway maple	*Acer platanoides*	Dead	14
342	Silver maple	*Acer saccharinum*	4	38
343	Mulberry	*Morus sp.*	Dead	16
344	Black walnut	*Juglans nigra*	4	18
345	Slippery elm	*Ulmus rubra*	3	8
346	Black locust	*Robinia pseudoacacia*	Dead	14
347	Unknown snag	-	Dead	9
348	Black locust	*Robinia pseudoacacia*	Dead	14
349	Unknown snag	-	Dead	9
350	Unknown snag	-	Dead	9
351	Slippery elm	*Ulmus rubra*	4	13
352	Black locust	*Robinia pseudoacacia*	Dead	19
353	White mulberry	*Morus alba*	4	13
354	Unknown snag	-	Dead	6
355	Black cherry	*Prunus serotina*	4	20
356	Unknown snag	-	Dead	8
357	Unknown snag	-	Dead	12
358	Unknown snag	-	Dead	13
359	Unknown snag	-	Dead	9
360	Unknown snag	-	Dead	9
361	Norway maple	*Acer platanoides*	4	11
362	White mulberry	*Morus alba*	Dead	9
363	Unknown snag	-	Dead	9
364	Unknown snag	-	Dead	9
365	Black cherry	*Prunus serotina*	4	24
366	Unknown tree	-	Dead	9
367	Black locust	*Robinia pseudoacacia*	4	22
368	Green ash	*Fraxinus pennsylvanica*	Dead	26
369	Silver maple	*Acer saccharinum*	3	12
370	Black cherry	*Prunus serotina*	4	10
371	White mulberry	*Morus alba*	4	16
372	Norway maple	*Acer platanoides*	Dead	8
373	Unknown snag	-	Dead	13
374	Unknown tree	-	Dead	11
375	Slippery elm	*Ulmus rubra*	4	14
395	Unknown tree	-	Dead	11

NOTES:
1. TREES LISTED IN BOLD WITHIN THE TREE TABLE WERE DESIGNATED BY THE CONSENSUS BUILDING GROUP (CBG) AS TREES TO PRESERVE. LABELS FOR THESE TREES ARE UNDERLINED WITHIN THE PLAN VIEW.
2. TREES ARE TO BE TRIMMED ALONG THE ACCESS PATH AND STOCKPILE AREAS TO ALLOW FOR EQUIPMENT AND VEHICLE CLEARANCE WHERE NECESSARY.
3. ALL TREES TO BE REMOVED SHALL BE FLUSH CUT WITH STUMPS AND ROOTS LEFT IN PLACE FOR STABILIZATION AND HABITAT UNLESS THE AREA REQUIRES GRADING.
4. TO REDUCE SOIL COMPACTION FOLLOWING CONSTRUCTION, THE TEMPORARY ACCESS PATH AND ALL STOCKPILE AREAS SHALL BE SURFACED WITH 8-12" OF MULCH AND TIMBER DECK MATTING. AFTER CONSTRUCTION, DECK MATS WILL BE REMOVED AND STOCKPILE AREAS WILL BE ROTOTILLED AND SEEDED WITH RIPARIAN, POLLINATOR MEADOW, AND OR TURF GRASS SEED MIX (ADD PER THE APPROVED PLANTING PLAN).
5. ALL ASH TREES SHALL BE CHIPPED AND THEN DISPOSED OF OFF-SITE WITH ANY OTHER CHIPPED MATERIAL.
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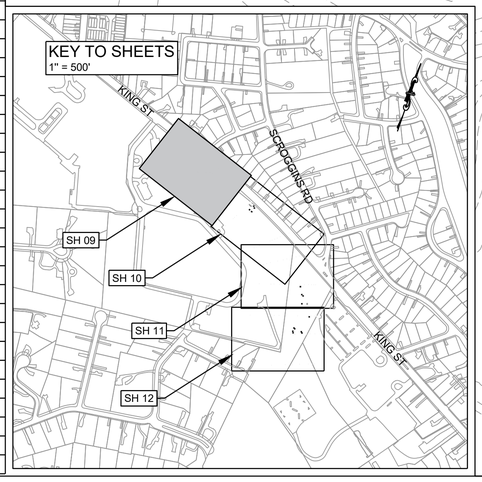


SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

DATE	REVISIONS BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

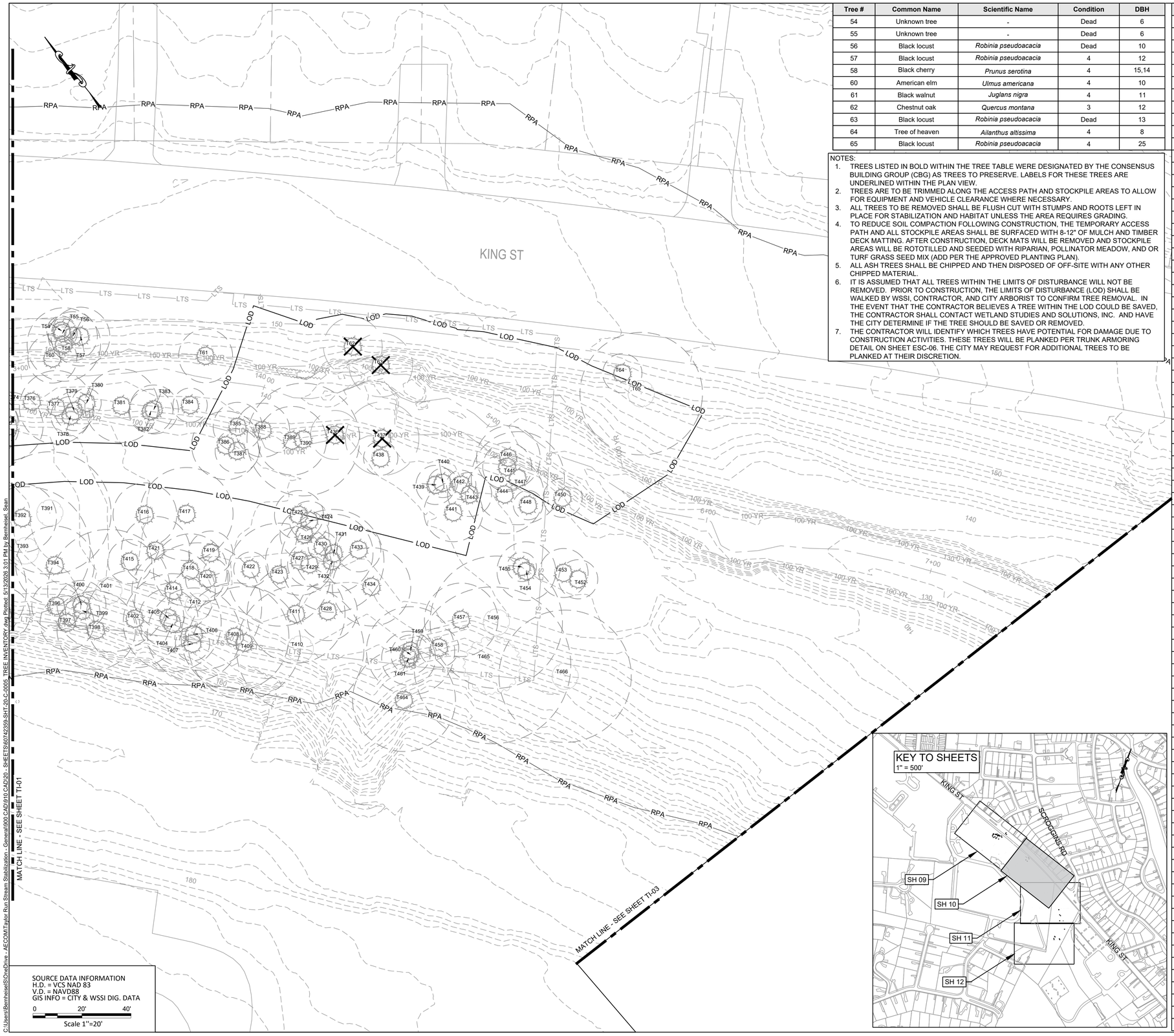
SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: TI-01
SCALE: 1:20
SHEET: 09 OF 55

C:\Users\BernhiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\800 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0005_TREE INVENTORY.dwg Plotted: 5/13/2026 2:57 PM by Bernhisel, Sean



Tree #	Common Name	Scientific Name	Condition	DBH
54	Unknown tree	-	Dead	6
55	Unknown tree	-	Dead	6
56	Black locust	*Robinia pseudoacacia*	Dead	10
57	Black locust	*Robinia pseudoacacia*	4	12
58	Black cherry	*Prunus serotina*	4	15,14
60	American elm	*Ulmus americana*	4	10
61	Black walnut	*Juglans nigra*	4	11
62	Chestnut oak	*Quercus montana*	3	12
63	Black locust	*Robinia pseudoacacia*	Dead	13
64	Tree of heaven	*Ailanthus altissima*	4	8
65	Black locust	*Robinia pseudoacacia*	4	25

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7. THE CONTRACTOR WILL IDENTIFY WHICH TREES HAVE POTENTIAL FOR DAMAGE DUE TO CONSTRUCTION ACTIVITIES. THESE TREES WILL BE PLANKED PER TRUNK ARMORING DETAIL ON SHEET ESC-06. THE CITY MAY REQUEST FOR ADDITIONAL TREES TO BE PLANKED AT THEIR DISCRETION.

Tree #	Common Name	Scientific Name	Condition	DBH
376	Black locust	*Robinia pseudoacacia*	Dead	19
377	Black locust	*Robinia pseudoacacia*	Dead	15
378	Sweet cherry	*Prunus avium*	Dead	8
379	Unknown snag	-	Dead	8
380	Green ash	*Fraxinus pennsylvanica*	4	6
381	Silver maple	*Acer saccharinum*	4	15
382	White mulberry	*Morus alba*	Dead	9
383	White mulberry	*Morus alba*	Dead	10
384	Silver maple	*Acer saccharinum*	4	7
385	Black cherry	*Prunus serotina*	4	10
386	Slippery elm	*Ulmus rubra*	4	14
387	Unknown snag	-	Dead	9
388	Norway maple	*Acer platanoides*	Dead	11
389	Black cherry	*Prunus serotina*	4	14
390	Black locust	*Robinia pseudoacacia*	4	23
391	American sycamore	*Platanus occidentalis*	3	25
392	Silver maple	*Acer saccharinum*	4	14
393	Silver maple	*Acer saccharinum*	4	26
394	Silver maple	*Acer saccharinum*	3	16
396	Sassafras	*Sassafras albidum*	4	10
397	Sassafras	*Sassafras albidum*	3	11
398	Red maple	*Acer rubrum*	3	16
399	Sassafras	*Sassafras albidum*	3	7
400	Sassafras	*Sassafras albidum*	3	10
401	Tulip poplar	*Liriodendron tulipifera*	4	25
402	Tulip poplar	*Liriodendron tulipifera*	Dead	20,20
404	Tulip poplar	*Liriodendron tulipifera*	3	20
405	Tulip poplar	*Liriodendron tulipifera*	3	12
406	Tulip poplar	*Liriodendron tulipifera*	3	19
407	Red maple	*Acer rubrum*	4	7
408	Tulip poplar	*Liriodendron tulipifera*	3	22
409	Tulip poplar	*Liriodendron tulipifera*	4	23
410	Tulip poplar	*Liriodendron tulipifera*	4	26
411	Maple	*Acer sp.*	4	20
412	Tulip poplar	*Liriodendron tulipifera*	4	26,23
414	Tulip poplar	*Liriodendron tulipifera*	Dead	17
415	Silver maple	*Acer saccharinum*	3	9
416	Slippery elm	*Ulmus rubra*	Dead	13
417	Silver maple	*Acer saccharinum*	4	19
418	Silver maple	*Acer saccharinum*	Dead	15
419	Red maple	*Acer rubrum*	4	9
420	Silver maple	*Acer saccharinum*	4	9
421	Slippery elm	*Ulmus rubra*	4	14
422	Green ash	*Fraxinus pennsylvanica*	Dead	7
423	Silver maple	*Acer saccharinum*	4	21
424	Slippery elm	*Ulmus rubra*	4	8
425	Slippery elm	*Ulmus rubra*	4	10
426	Slippery elm	*Ulmus rubra*	4	10
427	Silver maple	*Acer saccharinum*	4	14
428	Unknown snag	-	Dead	12
429	Red maple	*Acer rubrum*	4	9
430	Slippery elm	*Ulmus rubra*	4	6
431	Silver maple	*Acer saccharinum*	3	16
432	Silver maple	*Acer saccharinum*	4	21
433	Silver maple	*Acer saccharinum*	4	9
434	Unknown tree	-	Dead	16
436	Unknown tree	-	Dead	10
437	Slippery elm	*Ulmus rubra*	4	15
438	Willow oak	*Quercus alba*	3	7
439	American elm	*Ulmus americana*	4	8
440	Black cherry	*Prunus serotina*	Dead	6
441	Black locust	*Robinia pseudoacacia*	Dead	12
442	Unknown snag	-	Dead	6
443	White mulberry	*Morus alba*	4	9
444	Black cherry	*Prunus serotina*	Dead	16
445	Unknown tree	-	Dead	10
446	Red maple	*Acer rubrum*	4	13
447	Slippery elm	*Ulmus rubra*	4	19
448	Unknown tree	-	Dead	6
450	Red maple	*Acer rubrum*	4	8
452	American elm	*Ulmus americana*	Dead	8
453	Slippery elm	*Ulmus rubra*	4	10
454	Slippery elm	*Ulmus rubra*	Dead	12
455	American elm	*Ulmus americana*	Dead	6
456	Tulip poplar	*Liriodendron tulipifera*	3	27
457	Red maple	*Acer rubrum*	4	15
458	American beech	*Fagus grandifolia*	3	8
459	American beech	*Fagus grandifolia*	3	18
460	American beech	*Fagus grandifolia*	3	8
461	Unknown snag	-	Dead	11
464	Unknown snag	-	Dead	21
466	Black oak	*Quercum velutina*	3	27
465	Chestnut oak	*Quercus montana*	2	32

NOT FOR CONSTRUCTION

REVISIONS		
BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

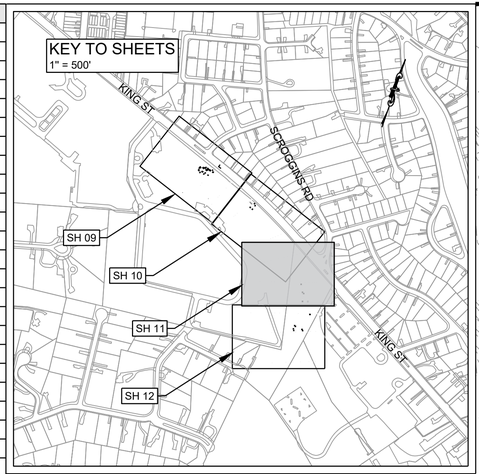
TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
TI-02
SCALE:
1:20
SHEET:
10 OF 55

C:\Users\BernheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\610 CAD\20 - SHEETS\60742359-SHT-20-C-0005_TREE INVENTORY.dwg Plotted: 5/13/2026 3:01 PM by Bernheisel, Sean

Tree #	Common Name	Scientific Name	Condition	DBH
131	Chestnut oak	*Quercus montana*	Dead	30
134	Chestnut oak	*Quercus montana*	Dead	22
135	Common hackberry	*Celtis occidentalis*	Dead	6
136	Tulip poplar	*Liriodendron tulipifera*	3	28
137	Unknown tree	-	Dead	11
138	**Tulip poplar**	***Liriodendron tulipifera***	**3**	**35**
139	**American elm**	***Ulmus americana***	**3**	**7**
141	**Tulip poplar**	***Liriodendron tulipifera***	**3**	**20,16**
142	**Green ash**	***Fraxinus pennsylvanica***	**Dead**	**11**
143	**Green ash**	***Fraxinus pennsylvanica***	**Dead**	**16**
144	Red maple	*Acer rubrum*	3	7
145	Red maple	*Acer rubrum*	3	9
146	American elm	*Ulmus americana*	4	7
147	American elm	*Ulmus americana*	4	8
148	Tulip poplar	*Liriodendron tulipifera*	2	19
149	American elm	*Ulmus americana*	3	6
150	Tulip poplar	*Liriodendron tulipifera*	3	14
151	Tulip poplar	*Liriodendron tulipifera*	3	9
583	Red maple	*Acer rubrum*	1	44
584	Red maple	*Acer rubrum*	3	6,14
585	Red maple	*Acer rubrum*	3	14
586	American holly	*Ilex opaca*	3	6
587	Black cherry	*Prunus serotina*	Dead	8
588	Scarlet oak	*Quercus coccinea*	2	24
589	Tulip poplar	*Liriodendron tulipifera*	3	34
590	Tulip poplar	*Liriodendron tulipifera*	3	14
591	Tulip poplar	*Liriodendron tulipifera*	1	44
592	White oak	*Quercus alba*	1	21
593	Hickory species	*Carex sp.*	3	11
594	Tulip poplar	*Liriodendron tulipifera*	2	24
595	Red maple	*Acer rubrum*	3	7
596	Red maple	*Acer rubrum*	3	15
597	Tulip poplar	*Liriodendron tulipifera*	3	29
598	Red maple	*Acer rubrum*	3	14
599	Red maple	*Acer rubrum*	3	19
600	Red maple	*Acer rubrum*	3	15
601	Red maple	*Acer rubrum*	Dead	13
602	Red maple	*Acer rubrum*	3	13,8,7
603	Red maple	*Acer rubrum*	3	16
604	Red maple	*Acer rubrum*	3	26
605	Red maple	*Acer rubrum*	3	12
606	Unknown tree	-	Dead	6
607	Tulip poplar	*Liriodendron tulipifera*	3	12
608	**Red maple**	***Acer rubrum***	**3**	**20**
609	**Red maple**	***Acer rubrum***	**3**	**16**
610	Red maple	*Acer rubrum*	Dead	6
611	Red maple	*Acer rubrum*	3	15
612	Black locust	*Robinia pseudoacacia*	Dead	15
613	**Tulip poplar**	***Liriodendron tulipifera***	**3**	**17**
614	Red maple	*Acer rubrum*	3	18
615	Maple	*Acer sp.*	4	7
620	Red maple	*Acer rubrum*	3	12
621	Red maple	*Acer rubrum*	3	15
622	Red maple	*Acer rubrum*	Dead	8
623	Tulip poplar	*Liriodendron tulipifera*	4	25
624	Red maple	*Acer rubrum*	3	14
625	Willow oak	*Quercus alba*	Dead	37
627	Red maple	*Acer rubrum*	3	7
628	Red maple	*Acer rubrum*	3	8
629	Tulip poplar	*Liriodendron tulipifera*	1	21,28,42
630	Unknown tree	-	Dead	7
631	Black cherry	*Prunus serotina*	3	19
632	Red maple	*Acer rubrum*	3	10
633	Red maple	*Acer rubrum*	3	9
634	Black cherry	*Prunus serotina*	Dead	16



NOTES:
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MATCH LINE - SEE SHEET TI-02

MATCH LINE - SEE SHEET TI-04

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: __BA__ DATE: 10/2025
APPROVED BY: __BA__ DATE: 10/2025

SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

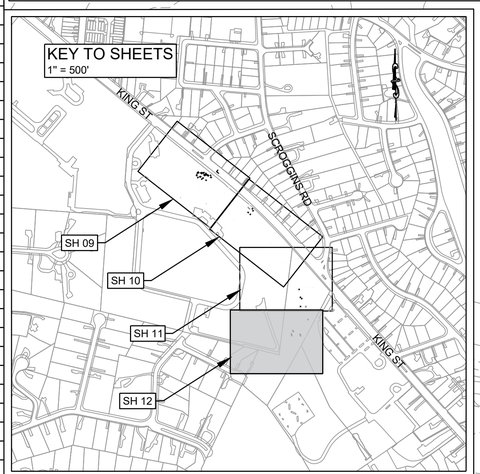
DRAWING: TI-03
SCALE: N/A
SHEET: 11 OF 55

C:\Users\BenheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0005_TREE INVENTORY.dwg Plotted: 5/13/2026 3:06 PM by Benheisel, Sean

Tree #	Common Name	Scientific Name	Condition	DBH
152	Tulip poplar	*Liriodendron tulipifera*	2	17
153	Tulip poplar	*Liriodendron tulipifera*	3	11
154	Red maple	*Acer rubrum*	3	18
155	Tulip poplar	*Liriodendron tulipifera*	2	42
156	Honeylocust	*Gleditsia triacanthos*	Dead	8
157	Tulip poplar	*Liriodendron tulipifera*	2	7
158	Eastern cottonwood	*Populus deltoides*	3	28
159	American elm	*Ulmus americana*	3	6
160	American elm	*Ulmus americana*	3	10
161	Black locust	*Robinia pseudoacacia*	4	17
162	Tulip poplar	*Liriodendron tulipifera*	3	18
163	White mulberry	*Morus alba*	4	7
164	Unknown tree	-	Dead	15
165	Tulip poplar	*Liriodendron tulipifera*	3	14
166	Tulip poplar	*Liriodendron tulipifera*	2	20
167	Unknown tree	-	Dead	6
168	Slippery elm	*Ulmus rubra*	3	6
169	Tulip poplar	*Liriodendron tulipifera*	3	20
170	Red maple	*Acer rubrum*	2	7
171	Slippery elm	*Ulmus rubra*	3	9
172	Slippery elm	*Ulmus rubra*	3	6
173	American sycamore	*Platanus occidentalis*	2	22
174	Red maple	*Acer rubrum*	2	7
175	Black cherry	*Prunus serotina*	4	6
176	Red maple	*Acer rubrum*	3	6
177	Black cherry	*Prunus serotina*	Dead	16
178	Red maple	*Acer rubrum*	3	8
179	Red maple	*Acer rubrum*	2	10
180	Red maple	*Acer rubrum*	2	12
181	Tulip poplar	*Liriodendron tulipifera*	2	6
182	Red maple	*Acer rubrum*	2	11
183	Red maple	*Acer rubrum*	3	8
184	Black cherry	*Prunus serotina*	Dead	19
185	Tulip poplar	*Liriodendron tulipifera*	2	6
186	Red maple	*Acer rubrum*	3	6
187	Tulip poplar	*Liriodendron tulipifera*	3	19
188	Red maple	*Acer rubrum*	Dead	18
189	Unknown tree	-	4	7
616	Black locust	*Robinia pseudoacacia*	Dead	11
617	Red maple	*Acer rubrum*	3	17
618	Black locust	*Robinia pseudoacacia*	Dead	8
619	**Black cherry**	***Prunus serotina***	**4**	**14**
635	Sassafras	*Sassafras albidum*	Dead	8
636	Tulip poplar	*Liriodendron tulipifera*	2	28,30
637	Common persimmon	*Diospyros virginiana*	3	17
638	Red maple	*Acer rubrum*	3	16
639	Red maple	*Acer rubrum*	3	18
640	Red maple	*Acer rubrum*	3	17
641	Red maple	*Acer rubrum*	Dead	17
642	Red maple	*Acer rubrum*	3	9,15
643	Tulip poplar	*Liriodendron tulipifera*	Dead	19
644	Tulip poplar	*Liriodendron tulipifera*	2	24,31,24
645	Red maple	*Acer rubrum*	3	24
646	**White oak**	***Quercus alba***	**3**	**14**
647	**Hickory species**	***Carya sp.***	**3**	**8,6**
648	**Post oak**	***Quercus stellata***	**3**	**14**
649	Southern red oak	*Quercus falcata*	2	27
650	Slippery elm	*Ulmus rubra*	3	7
651	Red maple	*Acer rubrum*	3	7
652	Tulip poplar	*Liriodendron tulipifera*	Dead	32,13
653	Slippery elm	*Ulmus rubra*	3	8
654	Unknown tree	-	Dead	6
655	White oak	*Quercus alba*	Dead	6
656	Black gum	*Nyssa sylvatica*	3	12
657	Red maple	*Acer rubrum*	3	14
658	Tulip poplar	*Liriodendron tulipifera*	Dead	46
659	Red maple	*Acer rubrum*	Dead	9
660	Red maple	*Acer rubrum*	3	11
661	Southern red oak	*Quercus falcata*	3	12
662	Tulip poplar	*Liriodendron tulipifera*	3	6
663	Virginia pine	*Pinus virginiana*	Dead	23
664	Black cherry	*Prunus serotina*	3	10
665	Red maple	*Acer rubrum*	3	7
666	Tulip poplar	*Liriodendron tulipifera*	2	24
667	Red maple	*Acer rubrum*	3	13
668	Sweet gum	*Liquidambar styraciflua*	4	8
669	Sassafras	*Sassafras albidum*	Dead	12
670	Virginia pine	*Pinus virginiana*	Dead	18
671	White oak	*Quercus alba*	3	12
672	Tulip poplar	*Liriodendron tulipifera*	1	26
673	Slippery elm	*Ulmus rubra*	3	7
674	Tulip poplar	*Liriodendron tulipifera*	3	7
675	Red maple	*Acer rubrum*	3	7

MATCH LINE - SEE SHEET TI-03

NOTES:
1. TREES LISTED IN BOLD WITHIN THE TREE TABLE WERE DESIGNATED BY THE CONSENSUS BUILDING GROUP (CBG) AS TREES TO PRESERVE. LABELS FOR THESE TREES ARE UNDERLINED WITHIN THE PLAN VIEW.
2. TREES ARE TO BE TRIMMED ALONG THE ACCESS PATH AND STOCKPILE AREAS TO ALLOW FOR EQUIPMENT AND VEHICLE CLEARANCE WHERE NECESSARY.
3. ALL TREES TO BE REMOVED SHALL BE FLUSH CUT WITH STUMPS AND ROOTS LEFT IN PLACE FOR STABILIZATION AND HABITAT UNLESS THE AREA REQUIRES GRADING.
4. TO REDUCE SOIL COMPACTION FOLLOWING CONSTRUCTION, THE TEMPORARY ACCESS PATH AND ALL STOCKPILE AREAS SHALL BE SURFACED WITH 8-12" OF MULCH AND TIMBER DECK MATTING. AFTER CONSTRUCTION, DECK MATS WILL BE REMOVED AND STOCKPILE AREAS WILL BE ROTOTILLED AND SEEDED WITH RIPARIAN, POLLINATOR MEADOW, AND OR TURF GRASS SEED MIX (ADD PER THE APPROVED PLANTING PLAN).
5. ALL ASH TREES SHALL BE CHIPPED AND THEN DISPOSED OF OFF-SITE WITH ANY OTHER CHIPPED MATERIAL.
6. IT IS ASSUMED THAT ALL TREES WITHIN THE LIMITS OF DISTURBANCE WILL NOT BE REMOVED. PRIOR TO CONSTRUCTION, THE LIMITS OF DISTURBANCE (LOD) SHALL BE WALKED BY WSSI, CONTRACTOR, AND CITY ARBORIST TO CONFIRM TREE REMOVAL. IN THE EVENT THAT THE CONTRACTOR BELIEVES A TREE WITHIN THE LOD COULD BE SAVED, THE CONTRACTOR SHALL CONTACT WETLAND STUDIES AND SOLUTIONS, INC. AND HAVE THE CITY DETERMINE IF THE TREE SHOULD BE SAVED OR REMOVED.
7. THE CONTRACTOR WILL IDENTIFY WHICH TREES HAVE POTENTIAL FOR DAMAGE DUE TO CONSTRUCTION ACTIVITIES. THESE TREES WILL BE PLANKED PER TRUNK ARMORING DETAIL ON SHEET ESC-06. THE CITY MAY REQUEST FOR ADDITIONAL TREES TO BE PLANKED AT THEIR DISCRETION.



Tree #	Common Name	Scientific Name	Condition	DBH
676	Tulip poplar	*Liriodendron tulipifera*	3	6
677	Red maple	*Acer rubrum*	3	8
679	Black gum	*Nyssa sylvatica*	3	8,9
680	Red maple	*Acer rubrum*	3	9
1001	Red maple	*Acer rubrum*	2	21
1002	Willow oak	*Quercus alba*	2	11
1004	American elm	*Ulmus americana*	3	8
1006	American elm	*Ulmus americana*	3	23
1087	Red maple	*Acer rubrum*	2	24
1109	Black gum	*Nyssa sylvatica*	3	12
1110	Black cherry	*Prunus serotina*	3	6
1111	Sassafras	*Sassafras albidum*	3	46
1115	American elm	*Ulmus americana*	2	8
1116	American elm	*Ulmus americana*	2	8
1117	Tulip poplar	*Liriodendron tulipifera*	3	47
1118	Black cherry	*Prunus serotina*	4	10
1119	Sweet gum	*Liquidambar styraciflua*	3	8
1120	American elm	*Ulmus americana*	2	7
1121	Red maple	*Acer rubrum*	1	13
1122	River Berch	*Betula nigra*	3	21
1123	American elm	*Ulmus americana*	1	10
1150	Black cherry	*Prunus serotina*	4	17
1157	Maple	*Acer sp.*	4	12

Tree #	Common Name	Scientific Name	Condition	DBH
1162	Red maple	*Acer rubrum*	1	18
1163	Black cedar	*Juniperus nigra*	4	16
1173	American elm	*Ulmus americana*	4	9
1174	Sweet gum	*Liquidambar styraciflua*	2	11
1176	Red maple	*Acer rubrum*	1	9
1177	Tulip poplar	*Liriodendron tulipifera*	2	8
1178	American elm	*Ulmus americana*	2	16
1179	American elm	*Ulmus americana*	2	15
1180	Swamp white oak	*Quercus bicolor*	1	14
1181	Black locust	*Robinia pseudoacacia*	4	17
1182	American elm	*Ulmus americana*	4	10
1183	American elm	*Ulmus americana*	3	11
1184	American elm	*Ulmus americana*	1	28
1185	American elm	*Ulmus americana*	3	7
1186	Willow oak	*Quercus alba*	1	51
1187	Red maple	*Acer rubrum*	1	9

Tree #	Common Name	Scientific Name	Condition	DBH
1188	Black gum	*Nyssa sylvatica*	4	10
1189	Black gum	*Nyssa sylvatica*	4	10
1190	American elm	*Ulmus americana*	1	28
1191	Honey or Black locust spa.	-	3	18
1192	American elm	*Ulmus americana*	3	7
1193	Red maple	*Acer rubrum*	3	15
1194	Tulip poplar	*Liriodendron tulipifera*	1	32
1195	Red maple	*Acer rubrum*	1	8 | 13
1196	Tulip poplar	*Liriodendron tulipifera*	1	8
1197	White oak	*Quercus alba*	1	13
1198	Swamp white oak	*Quercus bicolor*	2	35
1199	American elm	*Ulmus americana*	3	12

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
TI-04

SCALE:
N/A

SHEET:
12 OF 55

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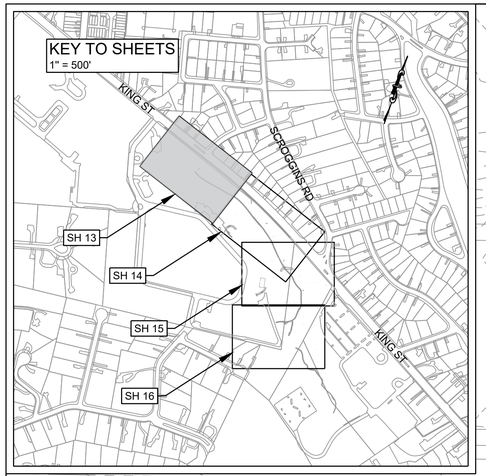

QUINCY ST

KING ST

PROPOSED GRAVITY BLOCK WALL
RET WALL LB 1

PROPOSED 72 LF METAL
RAILING

PROPOSED BOULDER CASCADE

EX. CONC. WALK

PROPOSED VDOT
CLASS III RIPRAP
PLUNGE POOL 657 SF

LEVEL

PROPOSED CAST-IN-PLACE WINGWALL TO MATCH
EXISTING RIGHT WINGWALL SKEW AND TO MEET
GRAVITY BLOCK WALL ELEVATION

PROPOSED CAST-IN-PLACE WINGWALL MODIFICATION
TO MEET GRAVITY BLOCK WALL ELEVATION

PROPOSED
67 LF METAL
RAILING

PROPOSED GRAVITY BLOCK WALL
RET WALL RB 1

1,357 SF VDOT CLASS III
RIPRAP PLACEMENT

EX. 3' DIRT TRAIL

MATCH LINE - SEE SHEET PC-02

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

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CITY OF ALEXANDRIA, VIRGINIA
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301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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SEAL:

PROPOSED CONDITIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
PC-01
SCALE:
1:20
SHEET:
13 OF 55

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KING ST

PROPOSED 335 SF VDOT CLASS I RIPRAP PLACEMENT

PROPOSED PRECAST VIRGINIA ENDWALL SEE SHEET DE-02 FOR DIMENSIONS

PROPOSED GRAVITY BLOCK WALL RET WALL LB 2

PROPOSED BOULDER CASCADE

PROPOSED 126 LF METAL RAILING

PROPOSED ARMOURED UTILITY PROTECTION WITH PIPE ENCASEMENT SEE SHEET DE-01

PROPOSED 1,099 SF VDOT CLASS III RIPRAP

MATCH LINE - SEE SHEET PC-01

MATCH LINE - SEE SHEET PC-03

EX. 4' DIRT TRAIL

EX. 18' ASP. TRAIL

EX. 4' ASP. TRAIL

KEY TO SHEETS
1" = 500'

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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SEAL:

PROPOSED CONDITIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
PC-02
SCALE:
1:20
SHEET:
14 OF 55

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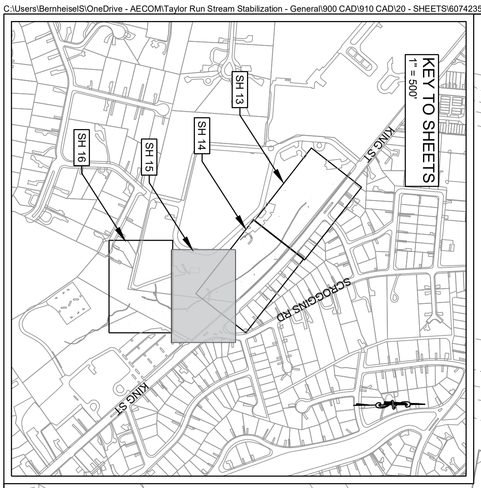

MATCH LINE - SEE SHEET 16
MATCH LINE - SEE SHEET 14

PROPOSED REALIGNMENT OF THALWEG
GRADE AT 2V:1H AND SEED
535 SF PROPOSED VDOT CLASS II RIP RAP
PROPOSED 88 LF METAL RAILING
SANITARY SEWER MANHOLE 132.42 RIM
PROPOSED GRAVITY BLOCK WALL RET WALL RB 2

SOURCE DATA INFORMATION
HORIZ = NAD83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

Scale 1"=20'
0 20' 40'

NOT FOR CONSTRUCTION

DRAWING: PC-03
SCALE: N/A
SHEET: 15 OF 55

PROPOSED CONDITIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

SEAL:

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
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DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

REVISIONS
DATE BY DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

MATCH LINE - SEE SHEET 15

PROPOSED ARMOURED UTILITY PROTECTION WITH PIPE ENCASEMENT SEE SHEET DE-01

258 SF PROPOSED CLASS I RIPRAP PLACEMENT

ROCK PACK

PROPOSED GRAVITY BLOCK WALL RET WALL LB 3

PROPOSED 80 LF METAL RAILING

GRADE AROUND TREE TO KEEP CURRENT BASE ELEVATION

SANITARY SEWER MANHOLE 128.19' RIM

PROPOSED BOULDER CASCADE

887 SF PROPOSED VDOT CLASS III RIPRAP PLACEMENT

KEY TO SHEETS
1" = 500'

KING ST
SCROGGINS RD
SH 13
SH 14
SH 15
SH 16
KING ST

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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PROPOSED CONDITIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
PC-04

SCALE:
N/A

SHEET:
16 OF 55

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GRADING NOTES

1. PROPOSED CONTOURS ARE INTENDED TO DEPICT OVERALL GRADING CONCEPT. EXISTING AND PROPOSED CONDITIONS CONTOURS ARE SHOWN AT 1-FT C.I. DUE TO IRREGULARITY OF ROCK SHAPES, CONTOURS DEPICTING POOL GRADING WITHIN STRUCTURES ARE APPROXIMATE.

2. TREE PROTECTION FENCE SHALL BE PLACED AROUND ALL AREAS OF TREES TO BE PRESERVED ADJACENT TO THE LIMITS OF CLEARING AND GRADING.

3. IT IS ASSUMED THAT ALL TREES WITHIN THE LIMITS OF CLEARING WILL NOT BE REMOVED. PRIOR TO CONSTRUCTION THE LIMITS OF DISTURBANCE (LOD) SHALL BE WALKED BY THE DESIGN TEAM AND CITY STAFF ALONG WITH THE CONTRACTOR TO CONFIRM TREE REMOVAL. IN THE EVENT THAT THE CONTRACTOR BELIEVES A TREE WITHIN THE LOD COULD BE SAVED, THE CONTRACTOR SHALL CONTACT THE DESIGN TEAM AND HAVE THE PROJECT ENGINEER AND CITY ARBORIST DETERMINE IF THE TREE SHOULD BE SAVED OR REMOVED.

4. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE LIMITS OF DISTURBANCE SHALL BE MARKED ON SITE FOR REVIEW WITH THE CITY ARBORIST AND THE CONTRACTOR. ADJUSTMENTS MAY BE MADE WHERE POSSIBLE TO PRESERVE ADDITIONAL CRITICAL ROOT ZONE TO IMPROVE THE SURVIVABILITY OF TREES SHOWN TO BE SAVED. THE LOD SHOULD BE CLEARLY MARKED ON THE SITE WITH A CONTINUOUS LINE OF FLAGGING.

5. REFER TO THE GEOMETRY PLAN FOR TRAVERSE LOCATIONS AND ELEVATIONS.

6. ALL FILL MATERIAL SHALL BE APPROVED BY SITE GEOTECHNICAL ENGINEER. IN THE EVENT THAT SUITABLE FILL MATERIAL IS NOT AVAILABLE ON-SITE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPORT SUITABLE FILL MATERIAL.

7. ALL PLACED FILL MATERIAL SHALL BE COMPACTED WITH THE TRACK HOE BUCKET TO A REASONABLE COMPACTION AS DETERMINED BY THE SITE ENGINEER/CITY INSPECTOR (TYPICALLY 80-85%).

8. FOLLOWING CONSTRUCTION, ALL GRADES (OUTSIDE OF SPECIFIED STABILIZATION AREAS) SHALL BE RETURNED TO EXISTING CONDITIONS AND ANY OTHER DAMAGE TO EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR. BRIDGES ARE TO BE REPLACED IN KIND

9. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT)

10. CALL ALEXANDRIA ARCHAEOLOGY IMMEDIATELY (703-746-4399) IF ANY BURIED STRUCTURAL REMAINS (WALL FOUNDATIONS, WELLS, PRIVIES, CISTERNS, ETC.) OR CONCENTRATIONS OF ARTIFACTS ARE DISCOVERED DURING DEVELOPMENT. WORK MUST CEASE IN THE AREA OF THE DISCOVERY UNTIL A CITY ARCHAEOLOGIST COMES TO THE SITE AND RECORDS THE FINDS. THE LANGUAGE NOTED ABOVE SHALL BE INCLUDED ON ALL FINAL SITE PLAN SHEETS INVOLVING ANY GROUND DISTURBING ACTIVITIES.

11. THE APPLICANT SHALL NOT ALLOW ANY METAL DETECTION AND/OR ARTIFACT COLLECTION TO BE CONDUCTED ON THE PROPERTY, UNLESS AUTHORIZED BY ALEXANDRIA ARCHAEOLOGY. FAILURE TO COMPLY SHALL RESULT IN PROJECT DELAYS. THE LANGUAGE NOTED ABOVE SHALL BE INCLUDED ON ALL FINAL SITE PLAN SHEETS INVOLVING ANY GROUND DISTURBING ACTIVITIES.

12. ENSURE ALL DISCHARGES ARE IN ACCORDANCE WITH CITY OF ALEXANDRIA CODE TITLE 5, CHAPTER 6, ARTICLE B.

13. DEWATERING AND OTHER CONSTRUCTION RELATED DISCHARGE LIMITS TO THE SEWER SYSTEM ARE REGULATED BY ALEXRENEW PRETREATMENT. ENGINEER/OWNER IS REQUIRED TO CONTACT ALEXRENEW'S PRETREATMENT COORDINATOR AT 703-721-3500X2020

14. CONTRACTOR SHALL FOLLOW VIRGINIA WORK ZONE PROTECTION MANUAL GUIDELINES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUBMIT MAINTENANCE OF TRAFFIC PLANS ALONG WITH THE PERMIT APPLICATION.

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

GRADING NOTES

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GN-01

SCALE:
N/A

SHEET:
17 OF 55

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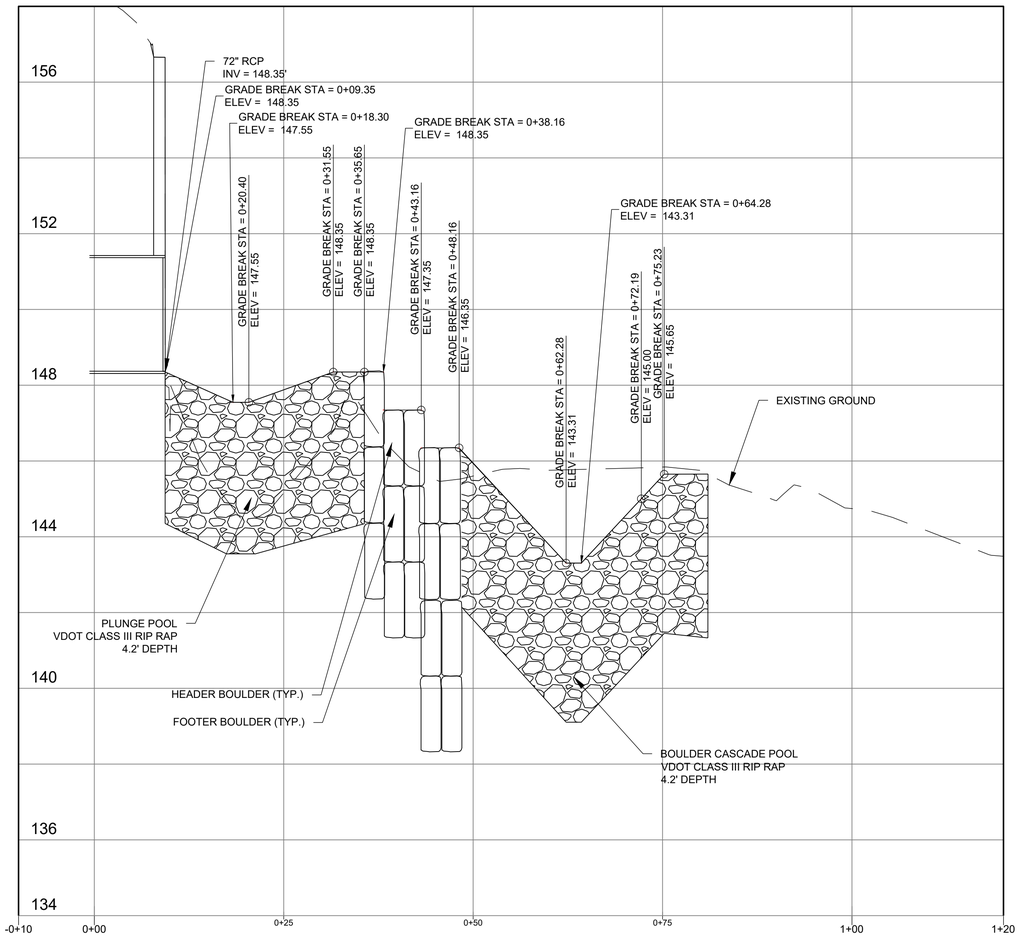

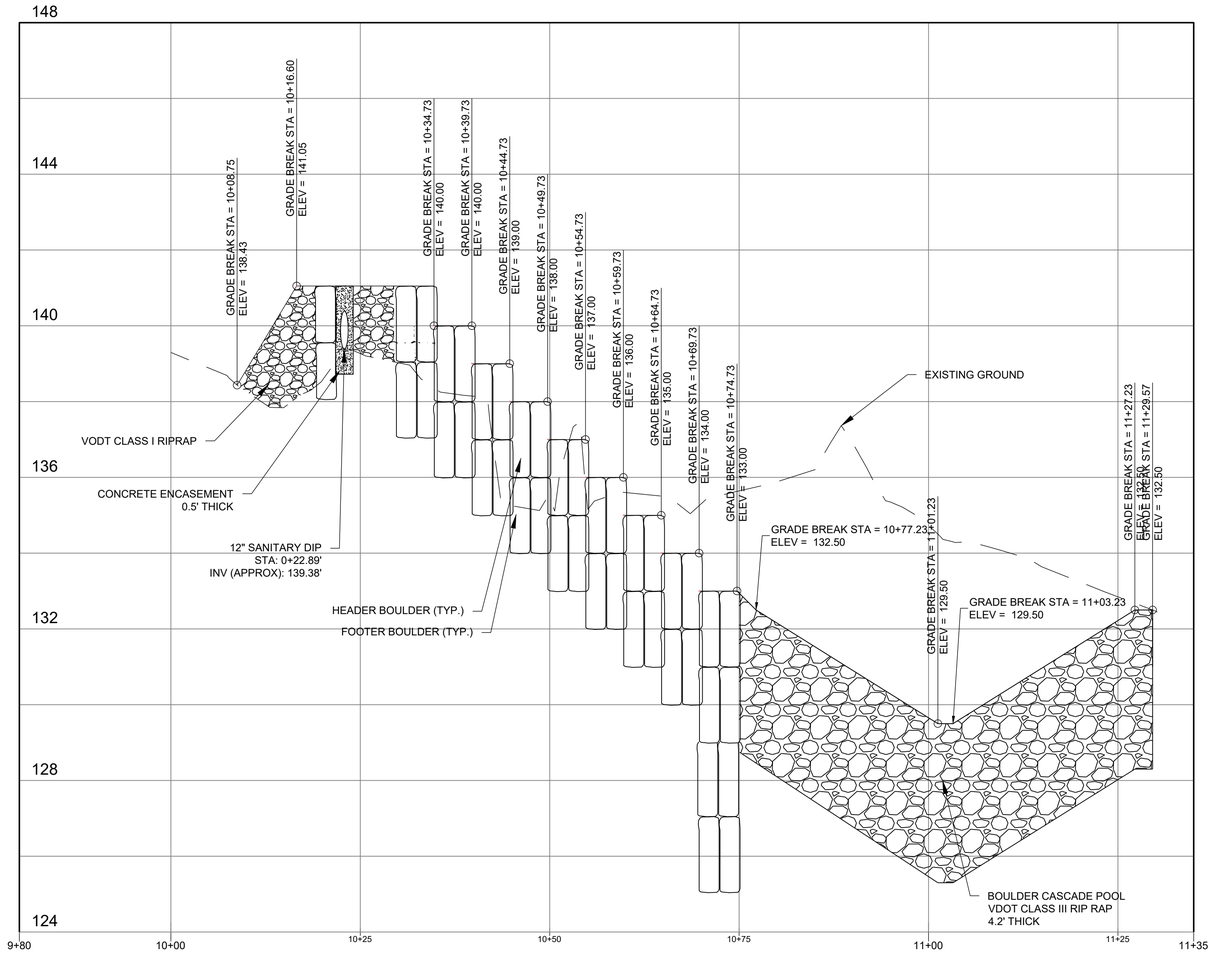

1 DESIGN AREA 1 PROFILE STA -0+10-1+20

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 2 0 2 4
SCALE IN FEET 1" = 2'

2 DESIGN AREA 2 PROFILE STA 9+80-11+35

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 2 0 2 4

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS		
DESCRIPTION	BY	DATE

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CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

LONGITUDINAL PROFILE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: LP-01
SCALE: N/A
SHEET: 18 OF 55

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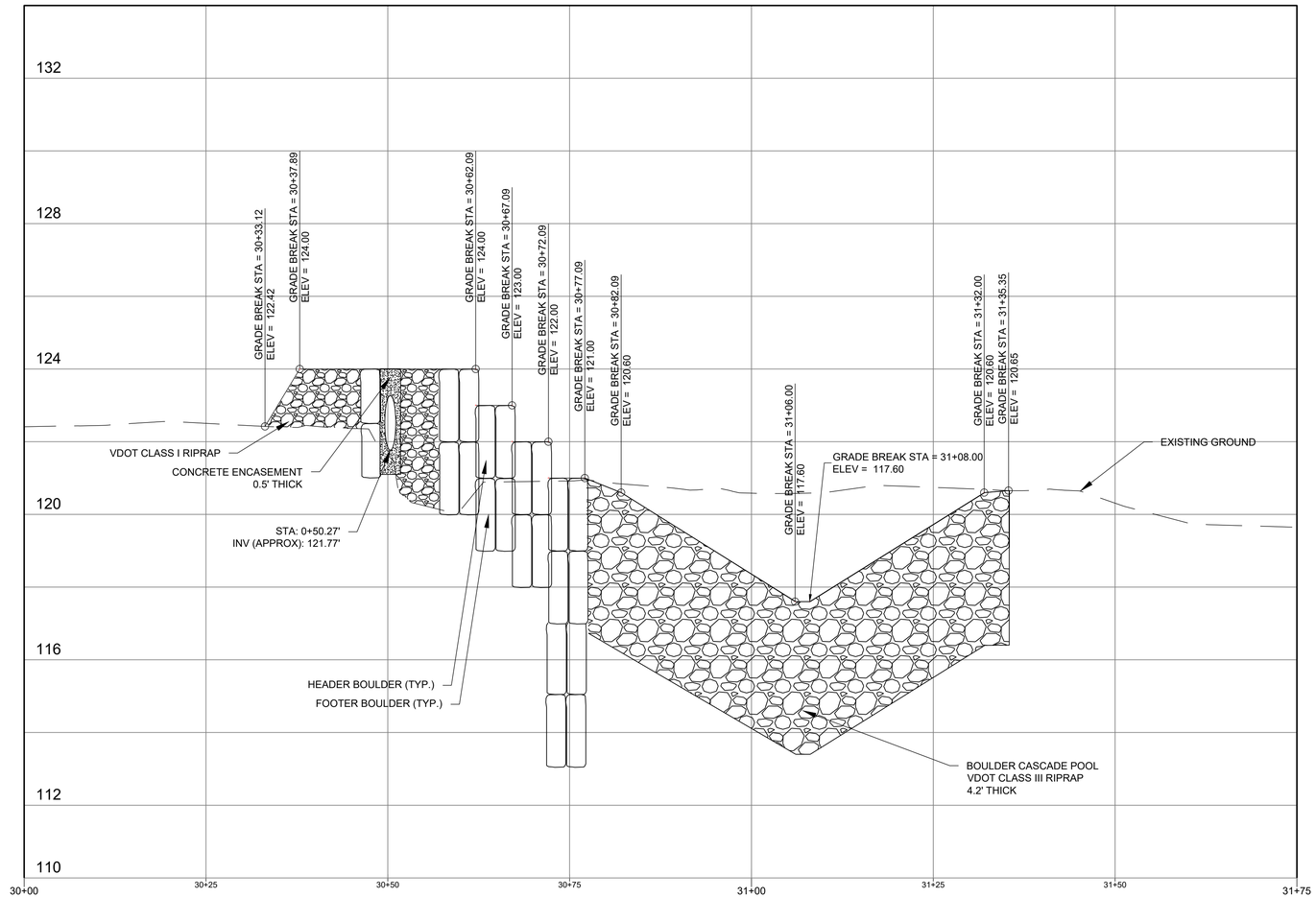

3 DESIGN AREA 4 PROFILE STA 20+00-21+75

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL — 10 0 10 20 — SCALE IN FEET 1" = 10'

VERTICAL — 2 0 2 4 — SCALE IN FEET 1" = 2'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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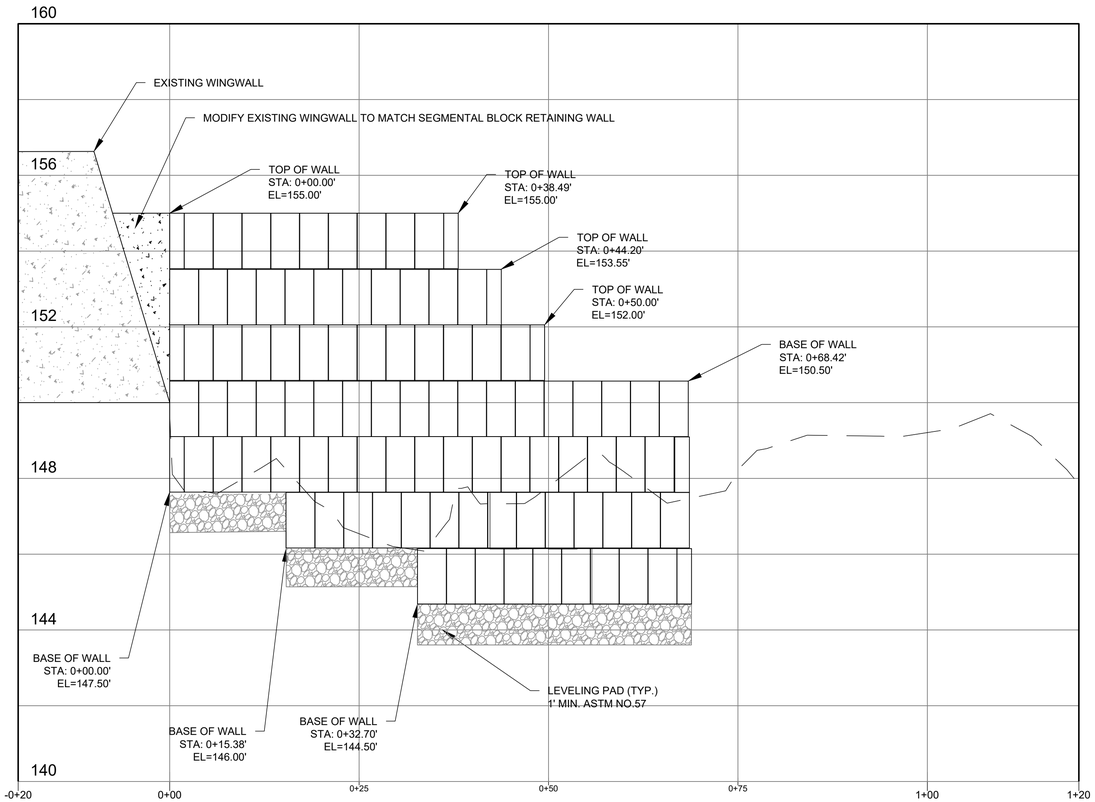
SEAL:

LONGITUDINAL PROFILE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: LP-02
SCALE: N/A
SHEET: 19 OF 55

C:\Users\Bentheisel\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0008_PROFILES.dwg Plotted: 5/13/2026 3:39 PM by Bentheisel, Sean

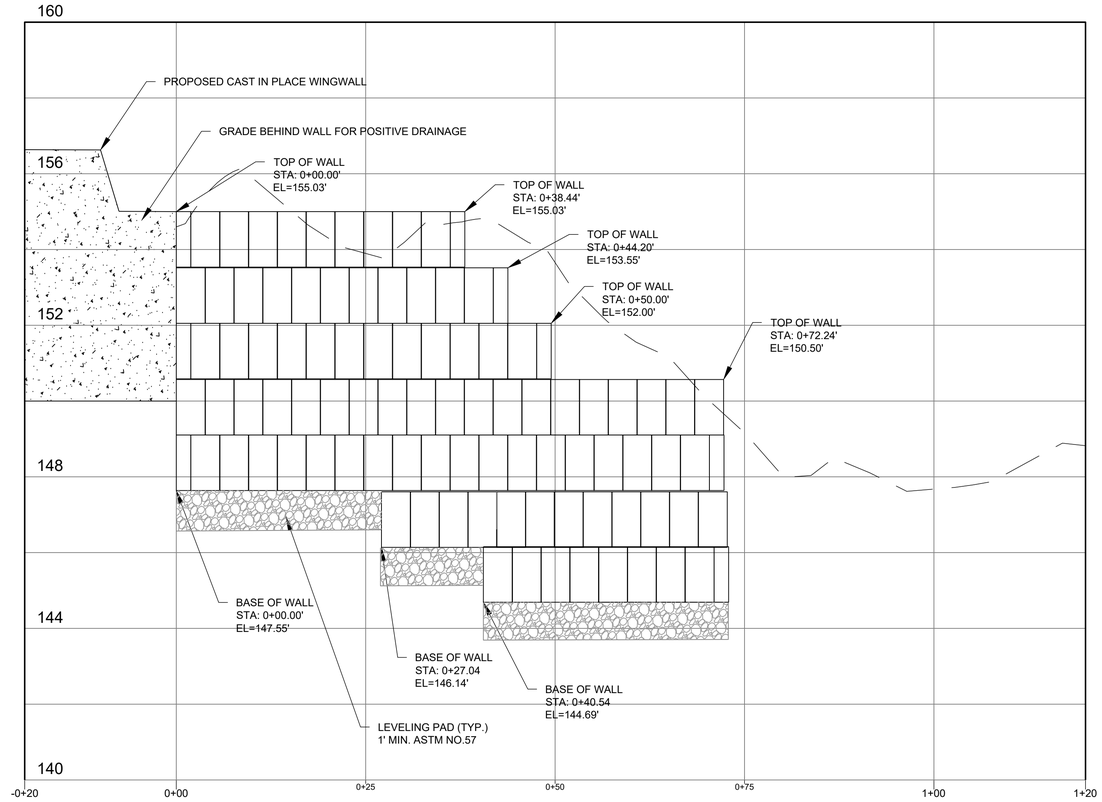


4 GRAVITY BLOCK WALL LB 1 PROFILE STA: -0+10-1+00

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 2 0 2 4
SCALE IN FEET 1" = 2'



5 GRAVITY BLOCK WALL RB 1 PROFILE STA: -0+10-1+00

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 10'

HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 2 0 2 4
SCALE IN FEET 1" = 2'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA_ DATE: 10/2025
APPROVED BY: BA_ DATE: 10/2025

SEAL:

LONGITUDINAL PROFILE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: LP-03
SCALE: N/A
SHEET: 20 OF 55

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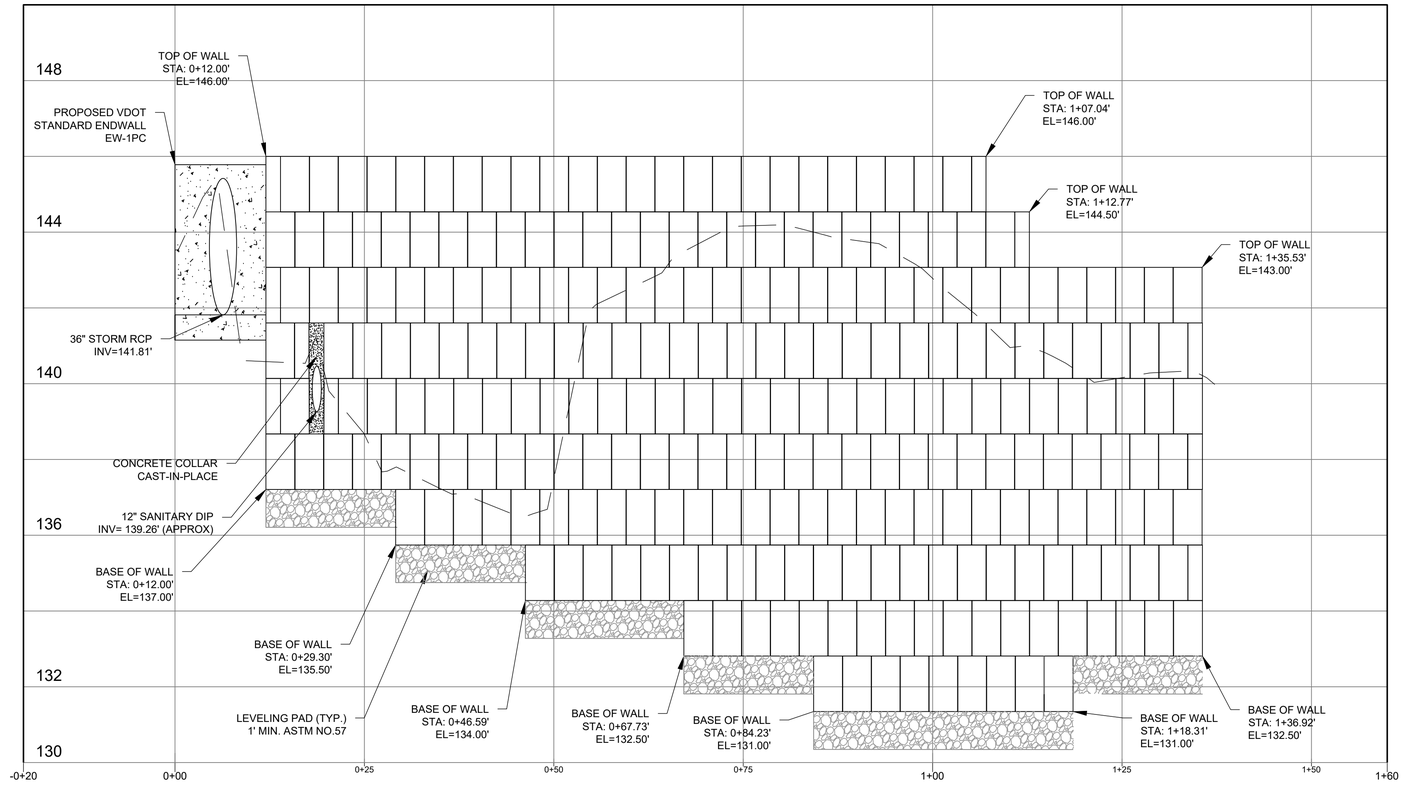


6 GRAVITY BLOCK WALL LB 2 PROFILE STA: -0+20-1+60

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL

10 0 10 20

SCALE IN FEET 1" = 10'

VERTICAL

2 0 2 4

SCALE IN FEET 1" = 2'

NOT FOR CONSTRUCTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

DESCRIPTION	BY	DATE
REVISIONS		

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

SEAL:

LONGITUDINAL PROFILE

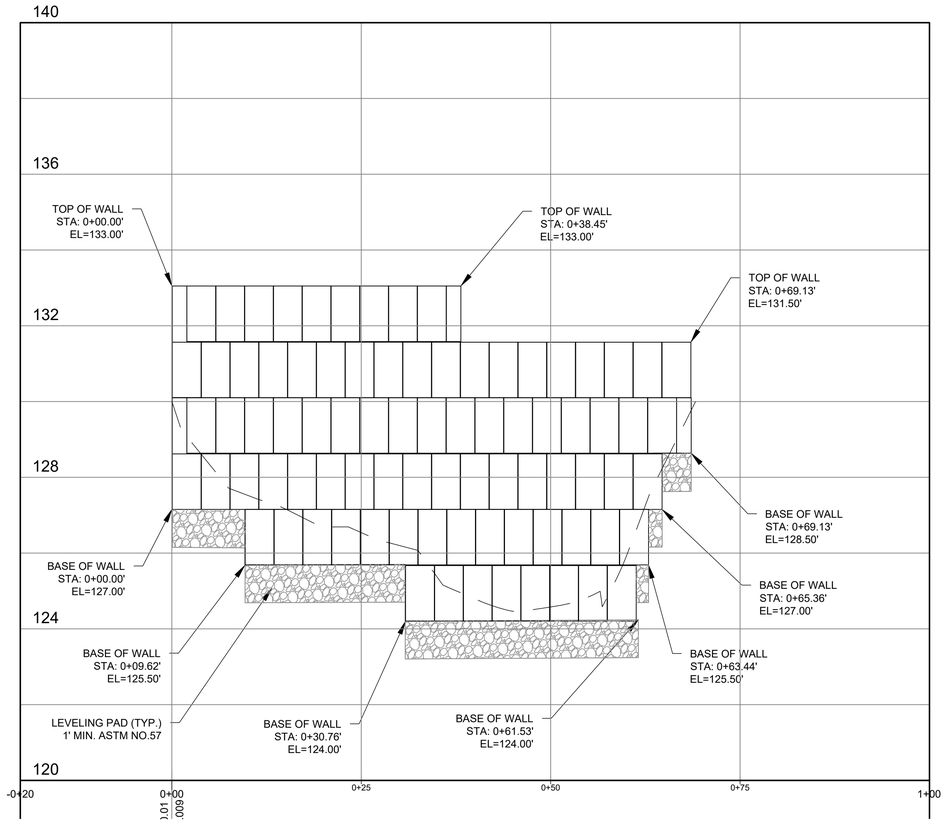
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
LP-04

SCALE:
N/A

SHEET:
21 OF 55

C:\Users\Bemhetsel\S\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0008_PROFILES.dwg Plotted: 5/13/2026 3:39 PM by Bemhetsel, Sean

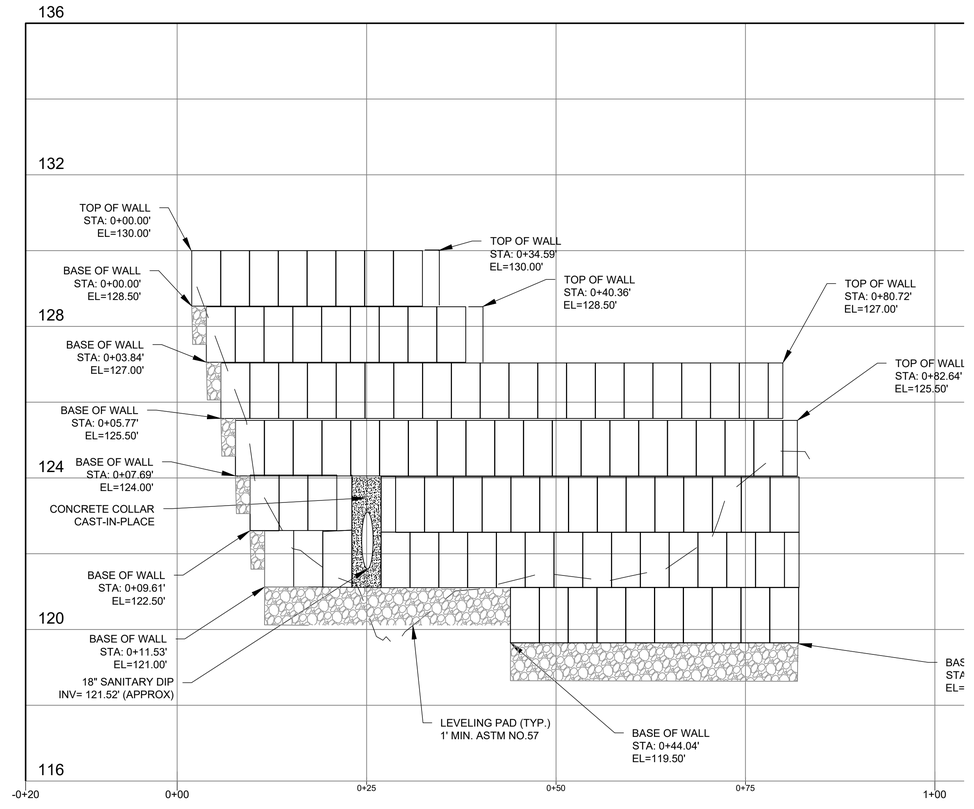


7 GRAVITY BLOCK WALL RB 2 PROFILE STA: -0+20-1+00

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL — 10 0 10 20 — SCALE IN FEET 1" = 10'

VERTICAL — 2 0 2 4 — SCALE IN FEET 1" = 2'



8 GRAVITY BLOCK WALL LB 3 PROFILE STA: -0+20-1+00

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL — 10 0 10 20 — SCALE IN FEET 1" = 10'

VERTICAL — 2 0 2 4 — SCALE IN FEET 1" = 2'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

LONGITUDINAL PROFILE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: LP-05
SCALE: N/A
SHEET: 22 OF 55

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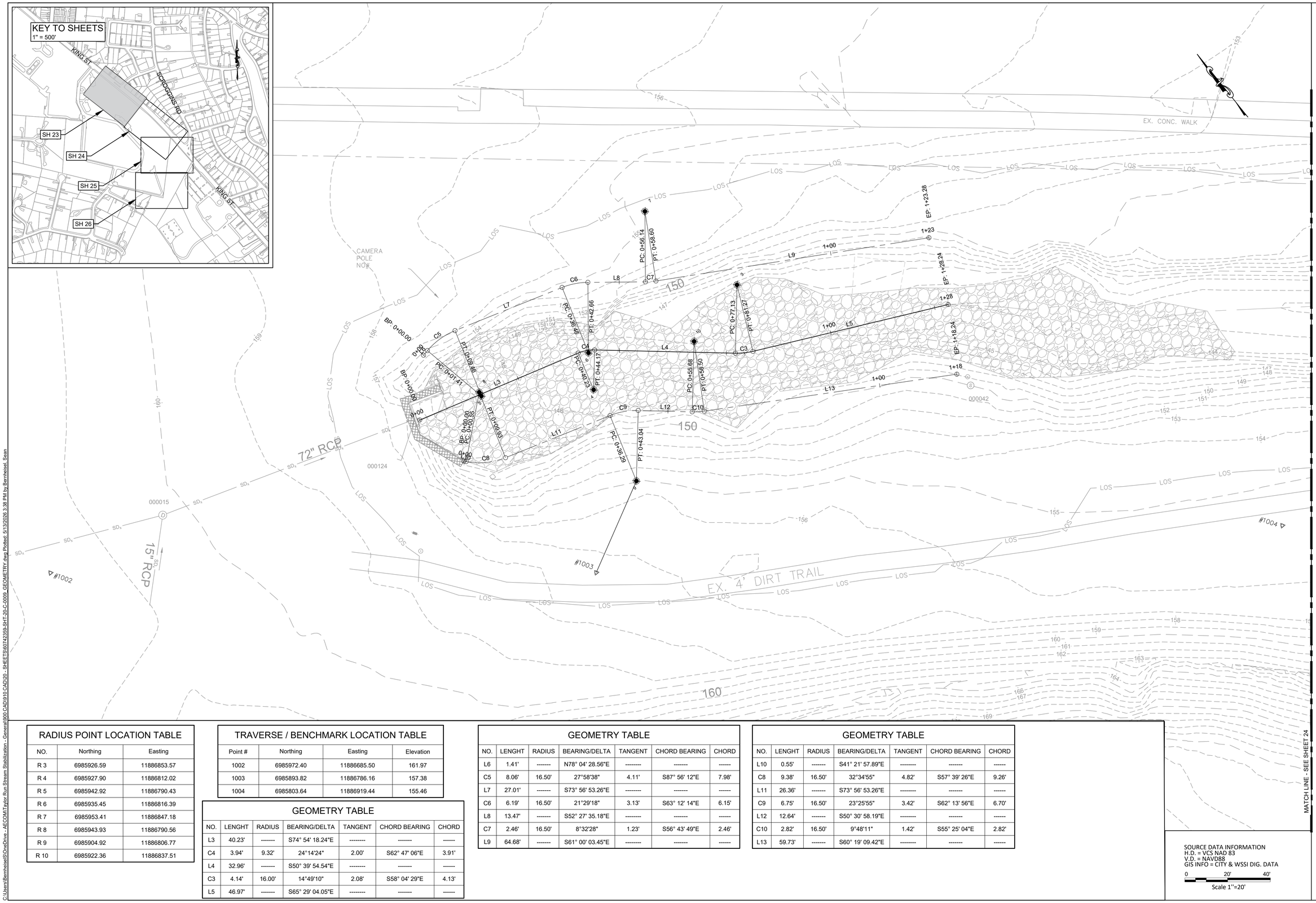


RADIUS POINT LOCATION TABLE

NO.	Northing	Easting
R 3	6985926.59	11886853.57
R 4	6985927.90	11886812.02
R 5	6985942.92	11886790.43
R 6	6985935.45	11886816.39
R 7	6985953.41	11886847.18
R 8	6985943.93	11886790.56
R 9	6985904.92	11886806.77
R 10	6985922.36	11886837.51

TRAVERSE / BENCHMARK LOCATION TABLE

Point #	Northing	Easting	Elevation
1002	6985972.40	11886685.50	161.97
1003	6985893.82	11886786.16	157.38
1004	6985803.64	11886919.44	155.46

GEOMETRY TABLE

NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L3	40.23'	-------	S74° 54' 18.24"E	--------	-------	------
C4	3.94'	9.32'	24°14'24"	2.00'	S62° 47' 06"E	3.91'
L4	32.96'	-------	S50° 39' 54.54"E	--------	-------	------
C3	4.14'	16.00'	14°49'10"	2.08'	S58° 04' 29"E	4.13'
L5	46.97'	-------	S65° 29' 04.05"E	--------	-------	------

GEOMETRY TABLE

NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L6	1.41'	-------	N78° 04' 28.56"E	--------	-------	------
C5	8.06'	16.50'	27°58'38"	4.11'	S87° 56' 12"E	7.98'
L7	27.01'	-------	S73° 56' 53.26"E	--------	-------	------
C6	6.19'	16.50'	21°29'18"	3.13'	S63° 12' 14"E	6.15'
L8	13.47'	-------	S52° 27' 35.18"E	--------	-------	------
C7	2.46'	16.50'	8°32'28"	1.23'	S56° 43' 49"E	2.46'
L9	64.68'	-------	S61° 00' 03.45"E	--------	-------	------

GEOMETRY TABLE

NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L10	0.55'	-------	S41° 21' 57.89"E	--------	-------	------
C8	9.38'	16.50'	32°34'55"	4.82'	S57° 39' 26"E	9.26'
L11	26.36'	-------	S73° 56' 53.26"E	--------	-------	------
C9	6.75'	16.50'	23°25'55"	3.42'	S62° 13' 56"E	6.70'
L12	12.64'	-------	S50° 30' 58.19"E	--------	-------	------
C10	2.82'	16.50'	9°48'11"	1.42'	S55° 25' 04"E	2.82'
L13	59.73'	-------	S60° 19' 09.42"E	--------	-------	------

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1''=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

DATE	REVISIONS BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

GEOMETRY PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GEO-01
SCALE:
1:10
SHEET:
23 OF 55

C:\Users\Bernheisel\SSOneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0009_GEOMETRY.dwg Plotted: 5/13/2026 3:38 PM by Bernheisel, Sean

RADIUS POINT LOCATION TABLE		
NO.	Northing	Easting
R		
R 11	6985635.08	11887145.74
R 13	6985715.18	11887149.56
R 14	6985683.12	11887138.54
R 15	6985695.67	11887172.04
R 16	6985665.90	11887157.21
R 17	6985657.24	11887164.57
R 18	6985648.32	11887172.02
R 19	6985639.31	11887176.01

TRAVERSE / BENCHMARK LOCATION TABLE			
Point #	Northing	Easting	Elevation
1005	6985736.92	11887048.02	146.74
1006	6985633.55	11887114.64	144.27
1007	6985544.22	11887195.72	141.76

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L14	34.73'	-------	S50° 50' 34.28"E	---------	-------	------
L15	28.62'	-------	S47° 39' 27.62"E	---------	-------	------
L16	22.07'	-------	S47° 39' 42.39"E	---------	-------	------
C11	23.91'	35.00'	39°08'11"	12.44'	S28° 05' 37"E	23.44'
L17	20.87'	-------	S8° 31' 31.71"E	---------	-------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L45	34.59'	-------	S51° 04' 38.09"E	---------	-------	------
C13	0.18'	16.00'	0°38'36"	0.09'	S51° 23' 56"E	0.18'
L20	11.17'	-------	S51° 43' 14.25"E	---------	-------	------
C14	1.29'	16.00'	4°36'12"	0.64'	S49° 25' 08"E	1.29'
L21	16.01'	-------	S47° 07' 02.22"E	---------	-------	------
C15	0.16'	16.00'	0°33'29"	0.08'	S47° 23' 47"E	0.16'
L25	9.08'	-------	S47° 40' 31.08"E	---------	-------	------
C16	2.04'	16.00'	7°18'17"	1.02'	S44° 01' 22"E	2.04'
L26	11.36'	-------	S40° 22' 13.71"E	---------	-------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
C17	0.14'	16.00'	0°29'42"	0.07'	S40° 07' 23"E	0.14'
L24	11.62'	-------	S39° 52' 31.72"E	---------	-------	------
C18	4.47'	16.00'	16°00'23"	2.25'	S31° 52' 20"E	4.46'
L23	9.85'	-------	S23° 52' 09.02"E	---------	-------	------
C19	3.84'	16.00'	13°45'28"	1.93'	S16° 59' 25"E	3.83'
L22	21.44'	-------	S10° 06' 41.36"E	---------	-------	------

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1''=20'

NOT FOR CONSTRUCTION

REVISIONS BY	DATE	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

GEOMETRY PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GEO-02
SCALE:
1:10
SHEET:
24 OF 55

C:\Users\BernhetselSOneDrive - AECOM\Taylor Run Stream Stabilization - General\000 CAD\010 CAD\20 - SHEETS\60742359-SHT-20-C-0009_GEOMETRY.dwg Plotted: 5/13/2026 3:43 PM by Bernhetsel, Sean

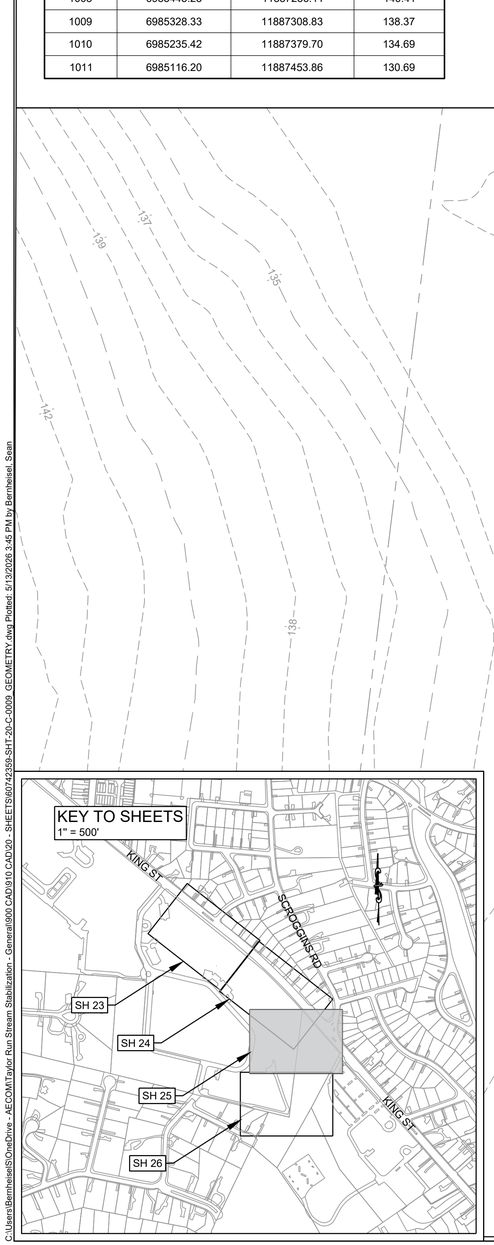
MATCH LINE - SEE SHEET 24

RADIUS POINT LOCATION TABLE		
NO.	Northing	Easting
R 20	6985181.43	11887465.51
R 21	6985144.83	11887453.44
R 22	6985140.70	11887453.48
R 23	6985160.17	11887434.52
R 24	6985194.53	11887495.84
R 25	6985084.40	11887501.67
R 26	6985123.64	11887442.94

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L27	12.47'	-------	S27° 44' 36.79"E	--------	-------	------
C20	2.83'	16.00'	10°08'00"	1.42'	S32° 48' 37"E	2.83'
L28	21.48'	-------	S37° 52' 37.02"E	--------	-------	------
C21	10.44'	16.00'	37°22'50"	5.41'	S19° 11' 12"E	10.25'
L29	4.13'	-------	S0° 29' 47.08"E	--------	-------	------
C22	9.69'	16.00'	34°40'56"	5.00'	S16° 50' 41"W	9.54'
L30	8.10'	-------	S34° 11' 09.19"W	--------	-------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L31	9.12'	-------	S17° 28' 46.68"E	--------	-------	------
C24	4.01'	35.00'	6°33'46"	2.01'	S20° 45' 40"E	4.01'
L32	6.40'	-------	S24° 02' 32.42"E	--------	-------	------
C23	6.75'	35.00'	11°03'17"	3.39'	S18° 30' 54"E	6.74'
L33	37.49'	-------	S12° 59' 15.10"E	--------	-------	------
C26	23.88'	35.00'	39°05'51"	12.43'	S6° 33' 40"W	23.42'
L34	9.39'	-------	S26° 06' 35.74"W	--------	-------	------
C25	17.37'	35.00'	28°26'17"	8.87'	S11° 53' 27"W	17.19'
L35	28.04'	-------	S2° 19' 41.61"E	--------	-------	------

TRAVERSE / BENCHMARK LOCATION TABLE			
Point #	Northing	Easting	Elevation
1008	6985445.23	11887256.11	140.41
1009	6985328.33	11887308.83	138.37
1010	6985235.42	11887379.70	134.69
1011	6985116.20	11887453.86	130.69



MATCH LINE - SEE SHEET 26

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

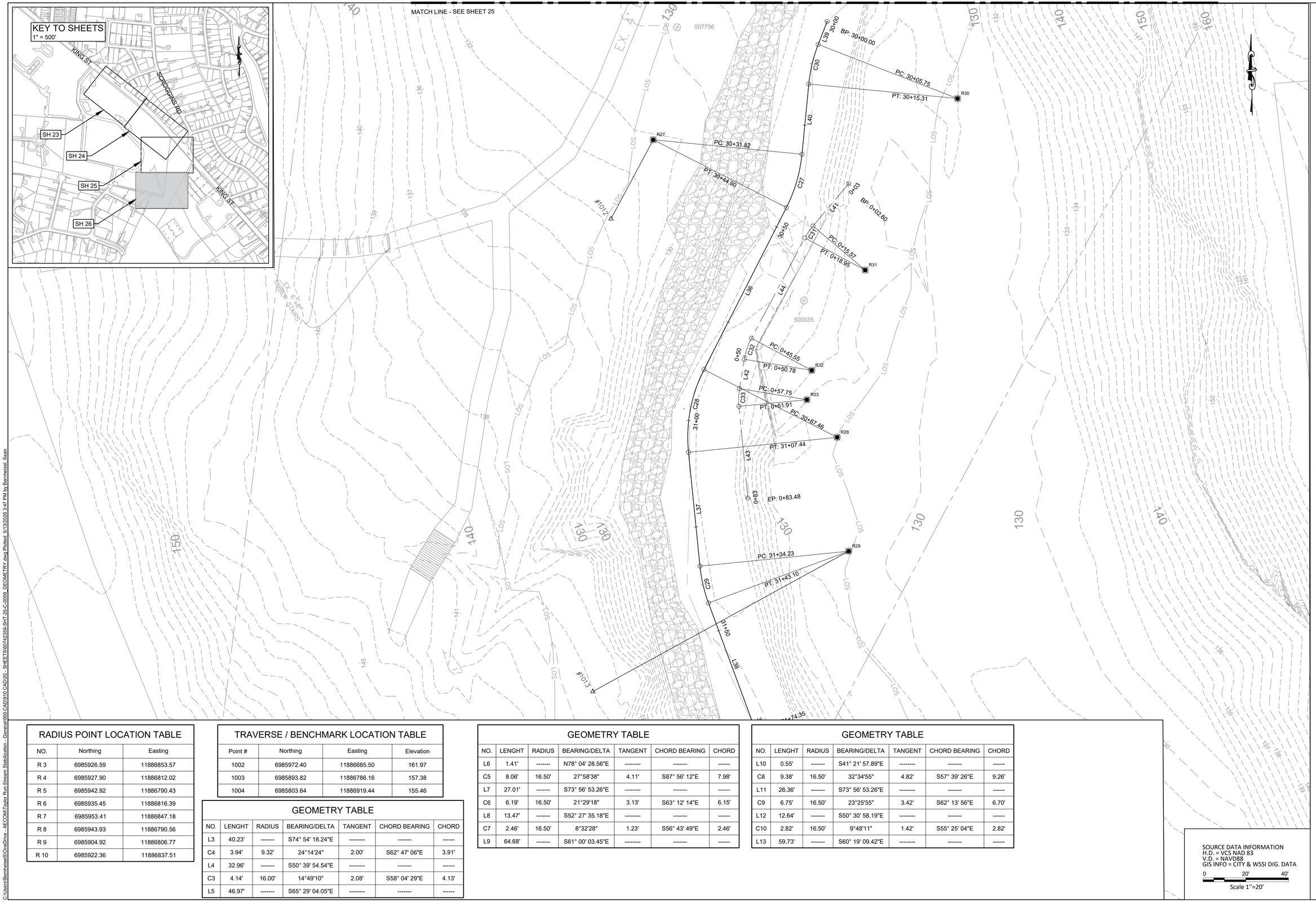
GEOMETRY PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GEO-03
SCALE:
N/A
SHEET:
25 OF 55

C:\Users\BernhetselSOneDrive - AECOM\Taylor Run Stream Stabilization - General\000 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0009_GEOMETRY.dwg Plotted: 5/13/2026 3:45 PM by Bernhetsel, Sean

MATCH LINE - SEE SHEET 25



RADIUS POINT LOCATION TABLE		
NO.	Northing	Easting
R 3	6985926.59	11886853.57
R 4	6985927.90	11886812.02
R 5	6985942.92	11886790.43
R 6	6985935.45	11886816.39
R 7	6985953.41	11886847.18
R 8	6985943.93	11886790.56
R 9	6985904.92	11886806.77
R 10	6985922.36	11886837.51

TRAVERSE / BENCHMARK LOCATION TABLE			
Point #	Northing	Easting	Elevation
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GEOMETRY TABLE						
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L3	40.23'	--------	S74° 54' 18.24"E	--------	--------	------
C4	3.94'	9.32'	24°14'24"	2.00'	S62° 47' 06"E	3.91'
L4	32.96'	--------	S50° 39' 54.54"E	--------	--------	------
C3	4.14'	16.00'	14°49'10"	2.08'	S58° 04' 29"E	4.13'
L5	46.97'	--------	S65° 29' 04.05"E	--------	--------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L6	1.41'	--------	N78° 04' 28.56"E	--------	--------	------
C5	8.06'	16.50'	27°58'38"	4.11'	S87° 56' 12"E	7.98'
L7	27.01'	--------	S73° 56' 53.26"E	--------	--------	------
C6	6.19'	16.50'	21°29'18"	3.13'	S63° 12' 14"E	6.15'
L8	13.47'	--------	S52° 27' 35.18"E	--------	--------	------
C7	2.46'	16.50'	8°32'28"	1.23'	S56° 43' 49"E	2.46'
L9	64.68'	--------	S61° 00' 03.45"E	--------	--------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L10	0.55'	--------	S41° 21' 57.89"E	--------	--------	------
C8	9.38'	16.50'	32°34'55"	4.82'	S57° 39' 26"E	9.26'
L11	26.36'	--------	S73° 56' 53.26"E	--------	--------	------
C9	6.75'	16.50'	23°25'55"	3.42'	S62° 13' 56"E	6.70'
L12	12.64'	--------	S50° 30' 58.19"E	--------	--------	------
C10	2.82'	16.50'	9°48'11"	1.42'	S55° 25' 04"E	2.82'
L13	59.73'	--------	S60° 19' 09.42"E	--------	--------	------

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
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CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

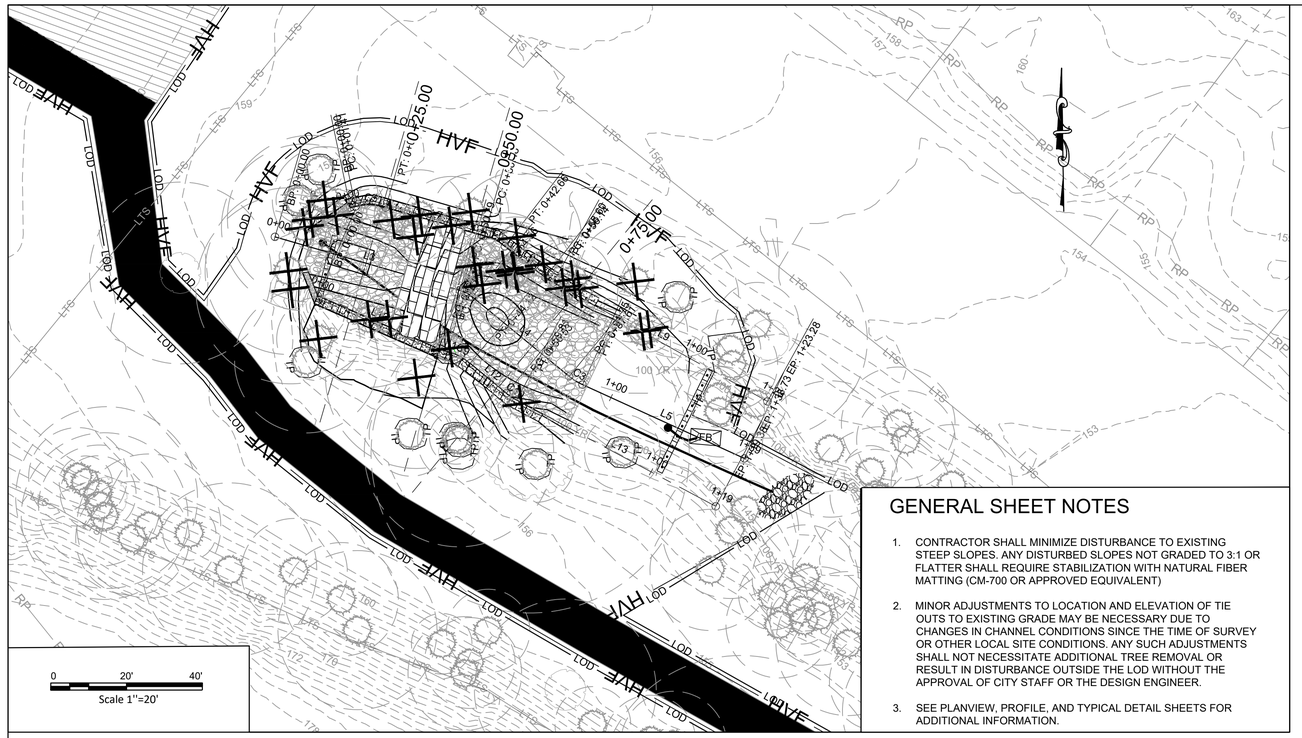
SEAL:

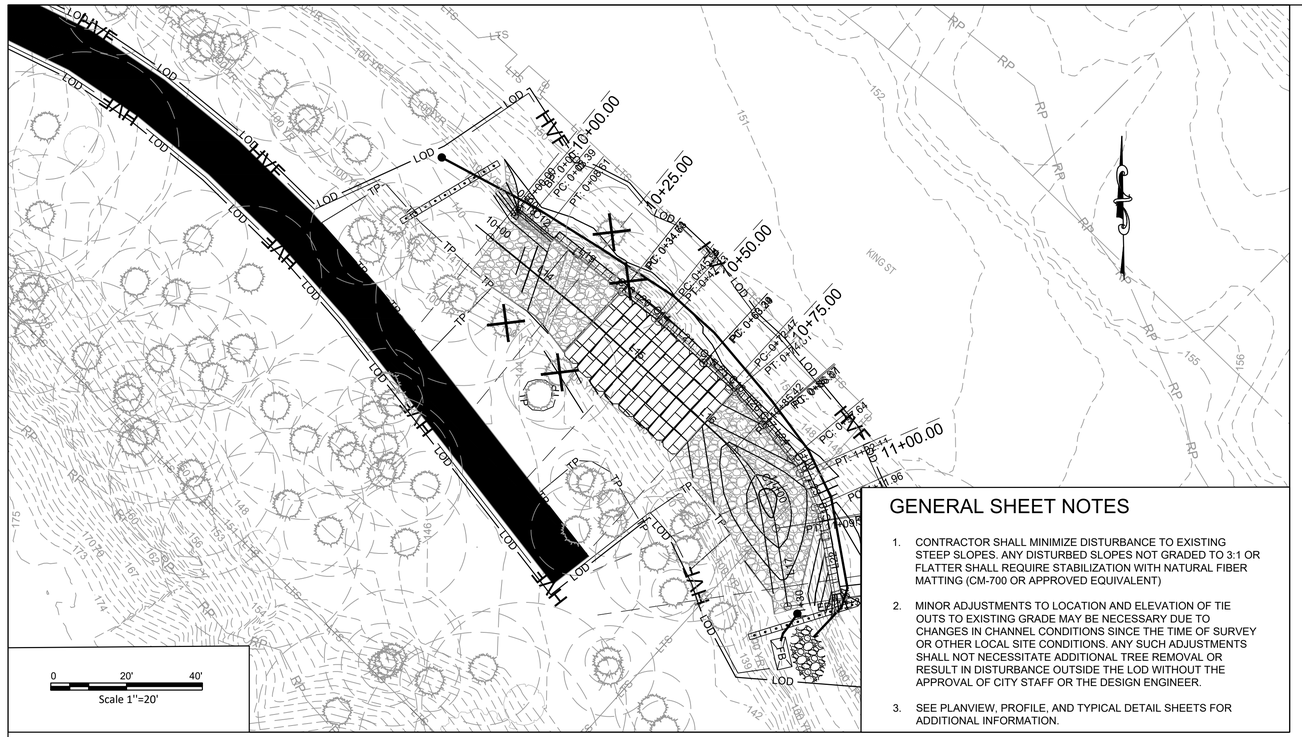
GEOMETRY PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GEO-04
SCALE:
N/A
SHEET:
26 OF 55

C:\Users\Bernheisel.Sean\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0009_GEOMETRY.dwg Plotted: 5/13/2026 3:47 PM by Bernheisel, Sean


HVE
LOD
LTS
RP
0+25.00
0+50.00
0+75.00
PT: 0+42.68
PC: 0+50.00
PT: 0+58.38
PC: 0+75.00
PT: 0+92.68
PC: 1+00.00
PT: 1+08.38
PC: 1+25.00
PT: 1+42.68
PC: 1+50.00
PT: 1+58.38
PC: 1+75.00
PT: 1+92.68
PC: 2+00.00
PT: 2+08.38
PC: 2+25.00
PT: 2+42.68
PC: 2+50.00
PT: 2+58.38
PC: 2+75.00
PT: 2+92.68
PC: 3+00.00
PT: 3+08.38
PC: 3+25.00
PT:



GENERAL SHEET NOTES

1. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT)
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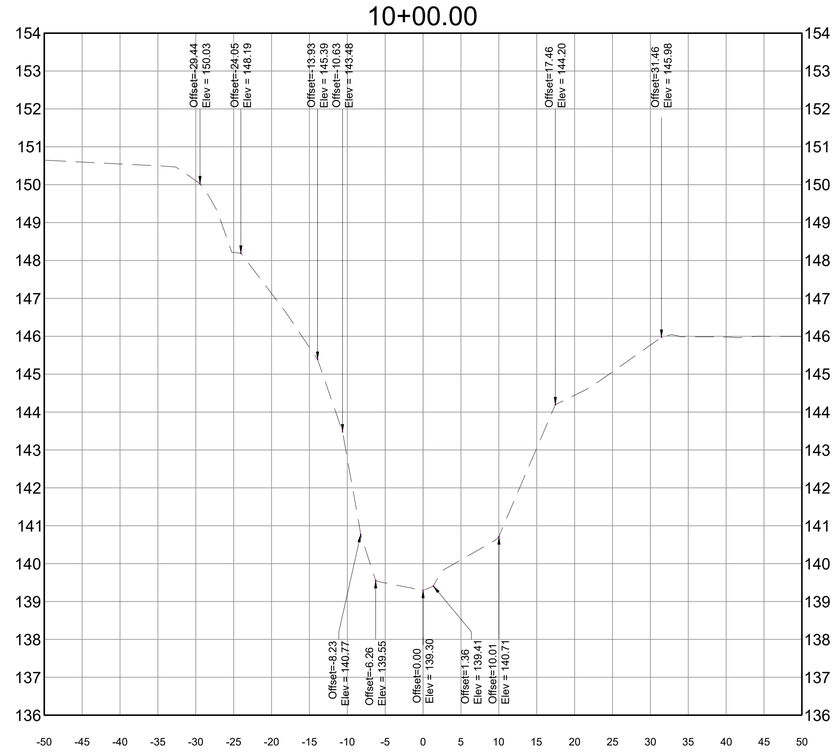
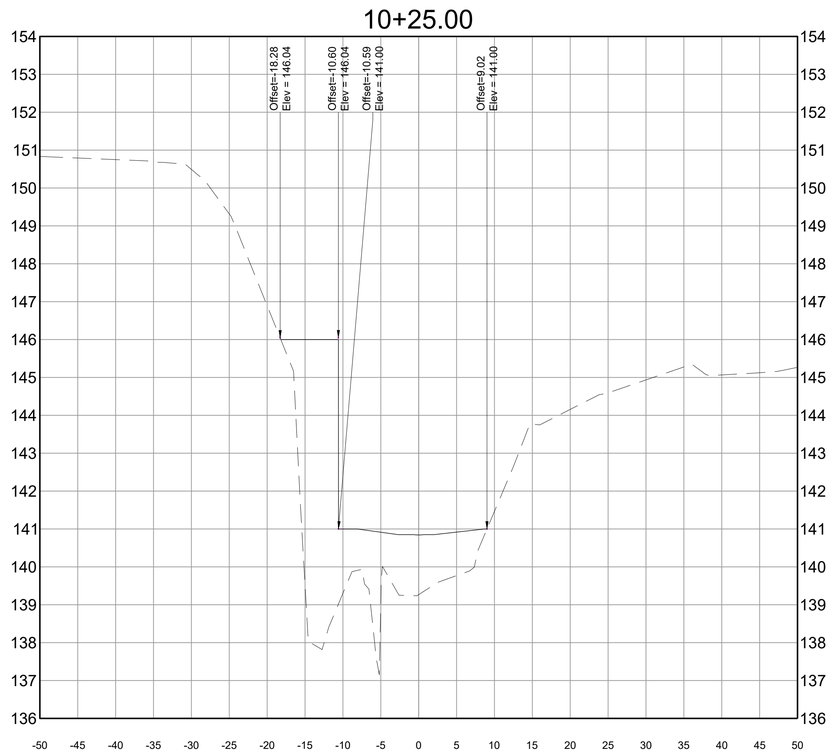
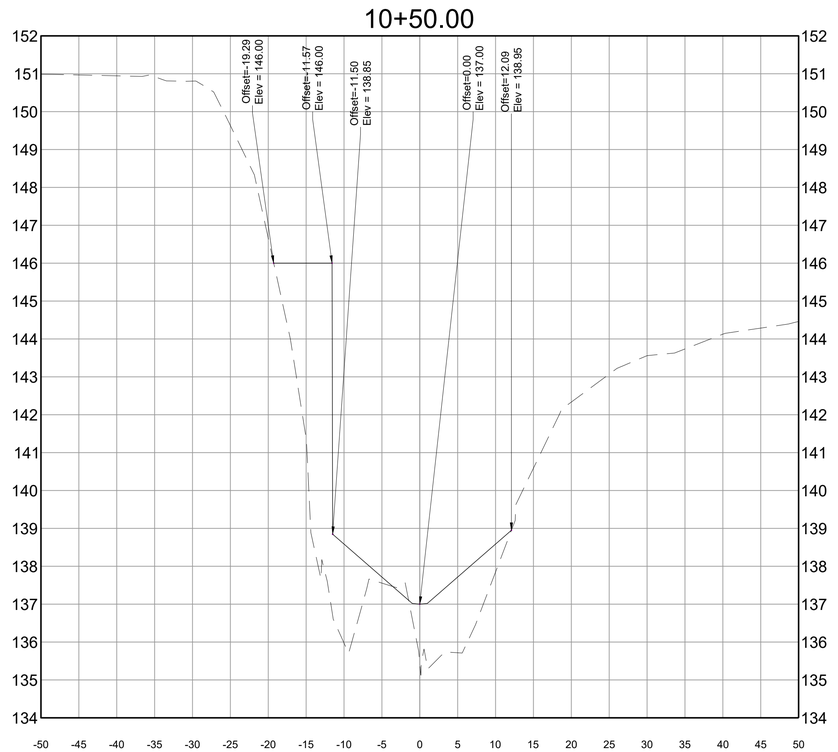
HORIZONTAL
10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL
1 0 1 2
SCALE IN FEET 1" = 2'







NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359

DESIGNED BY:	SB, TN	DATE: 10/2025
DRAWN BY:	SB, TN	DATE: 10/2025
CHECKED BY:	BA	DATE: 10/2025
APPROVED BY:	BA	DATE: 10/2025

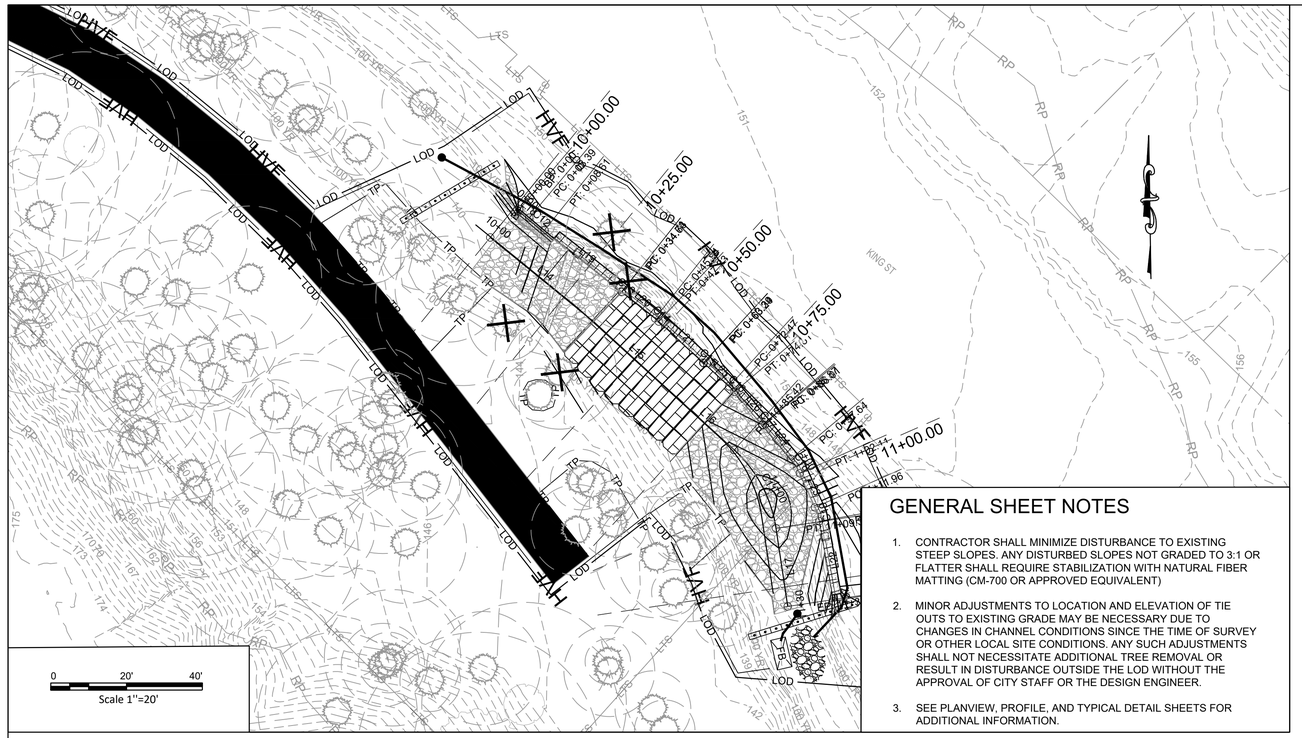
SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: CS-02
SCALE: 1:10
SHEET: 28 OF 55

C:\Users\BernheiselSO\OneDrive - AECOM\Taylor Run Stream Stabilization - General\000 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0010_SECTIONS.dwg Plotted: 5/13/2026 3:45 PM by Bernheisel, Sean



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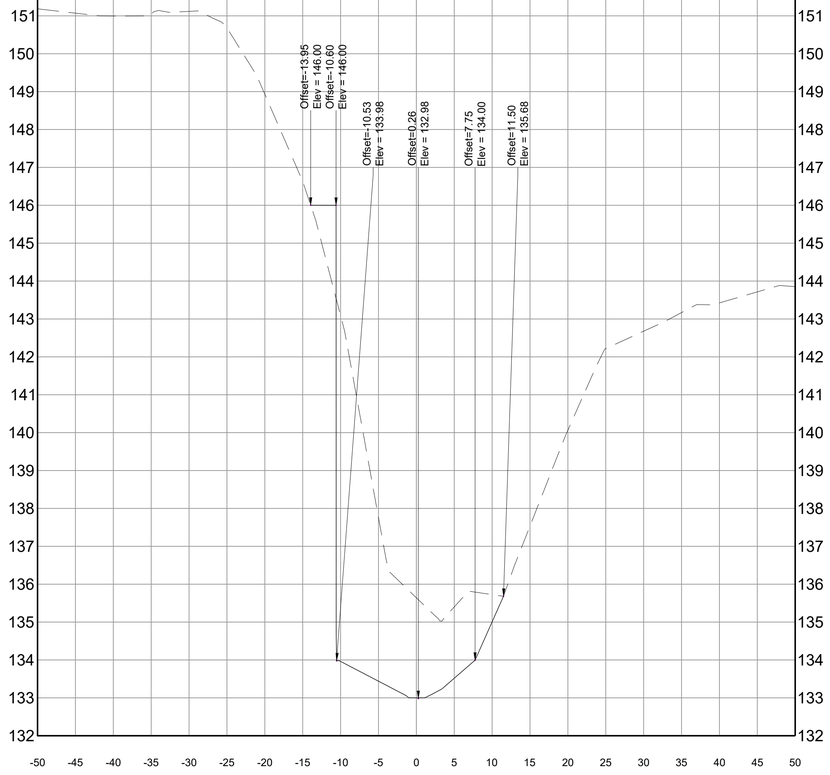
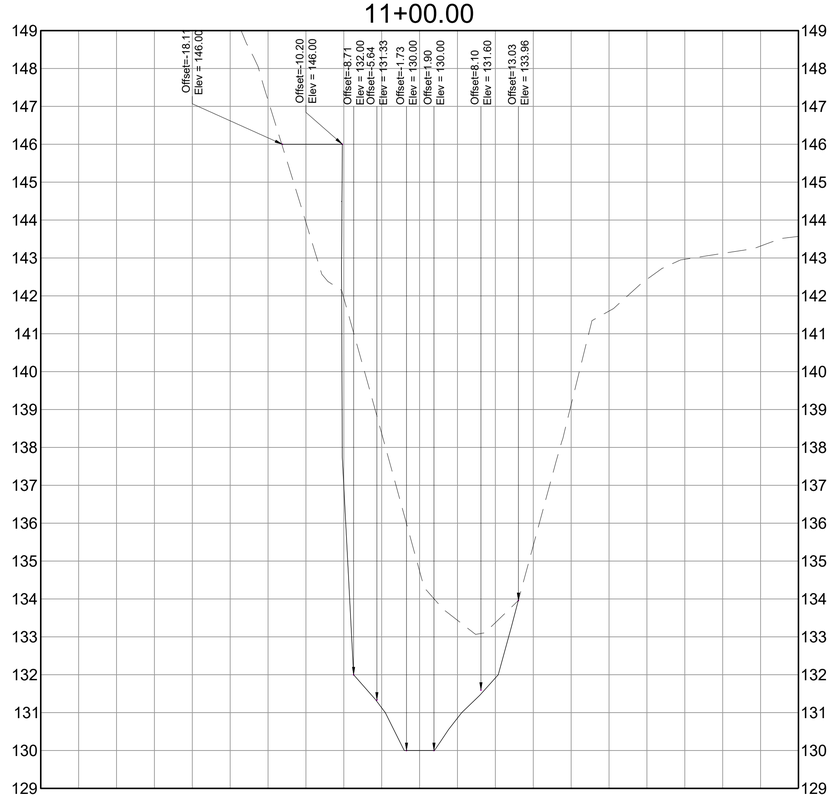
HORIZONTAL — SCALE IN FEET 1" = 10'

VERTICAL — SCALE IN FEET 1" = 2'





NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

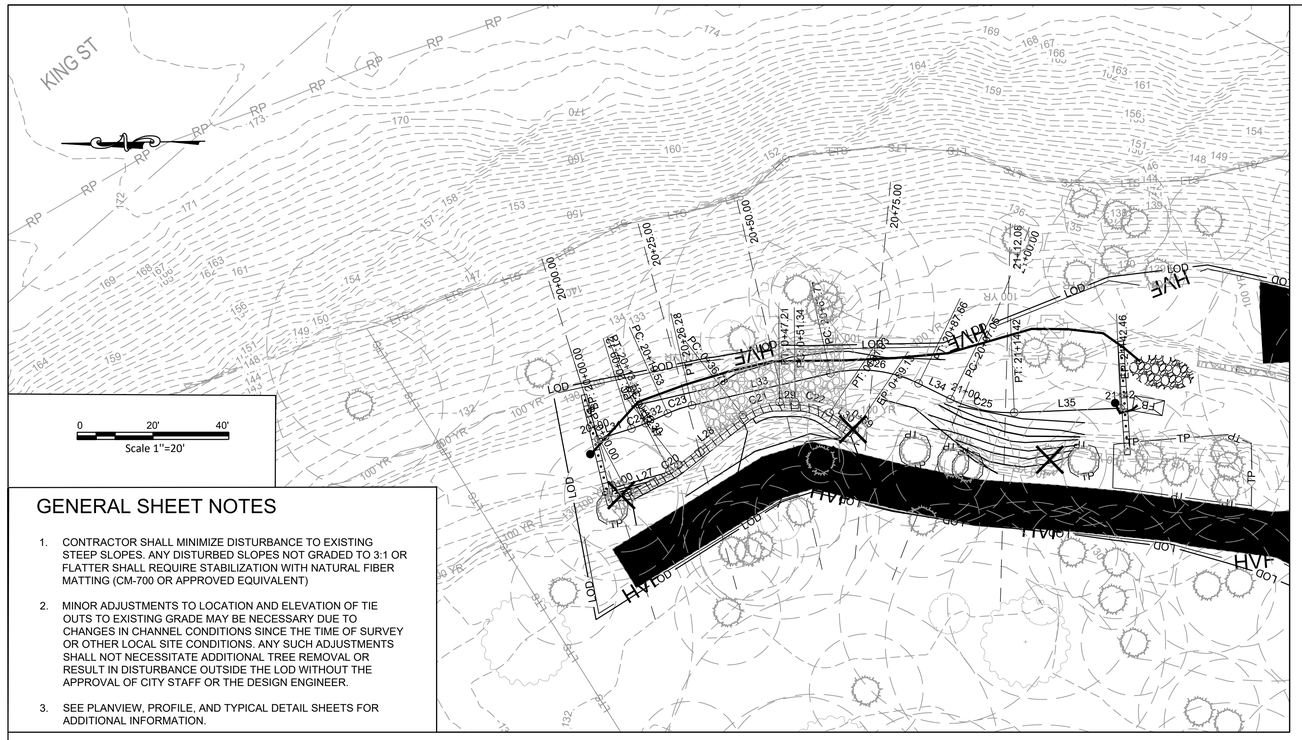
SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: CS-03
SCALE: 1:10
SHEET: 29 OF 55

C:\Users\BenheiselSt\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0010_SECTIONS.dwg Plotted: 5/13/2026 3:49 PM by Benheisel, Sean


KING ST
0
20'
40'
Scale 1"=20'
LOD
HVE
HVAH
HVF
TP
L27
L28
L29
L30
L31
L32
L33
L34
L35
C20
C21
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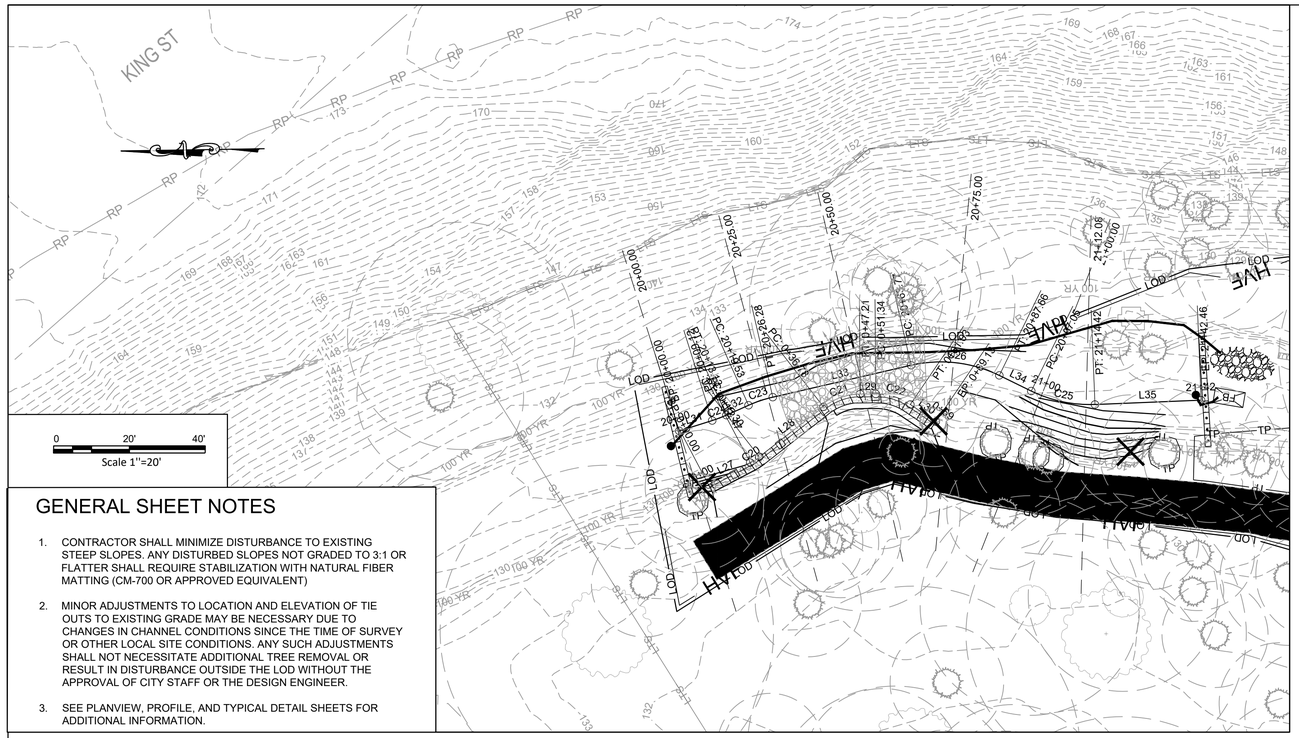

GENERAL SHEET NOTES

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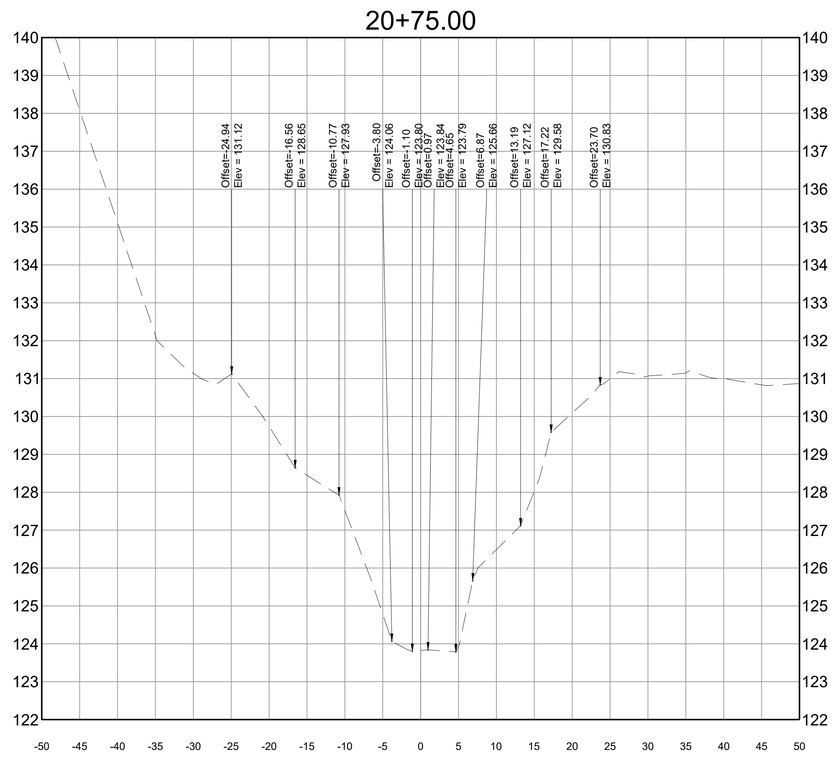
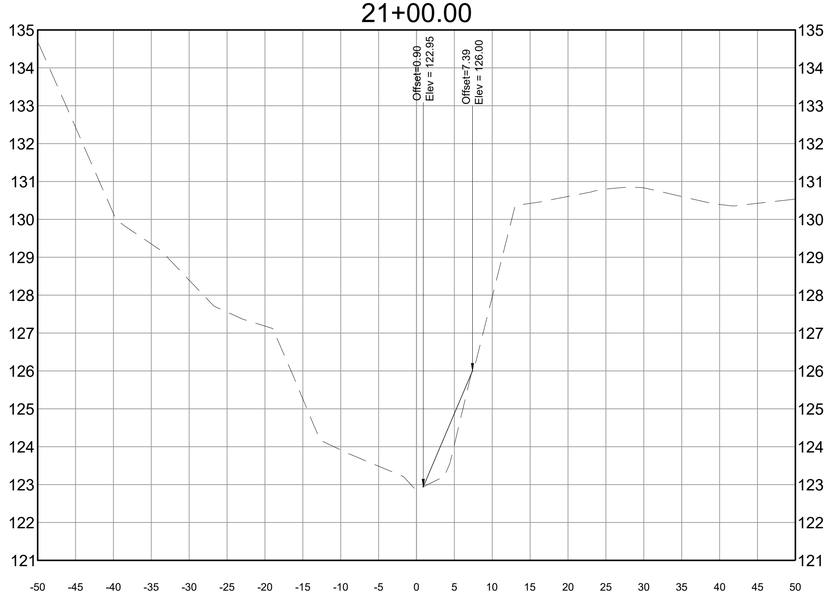
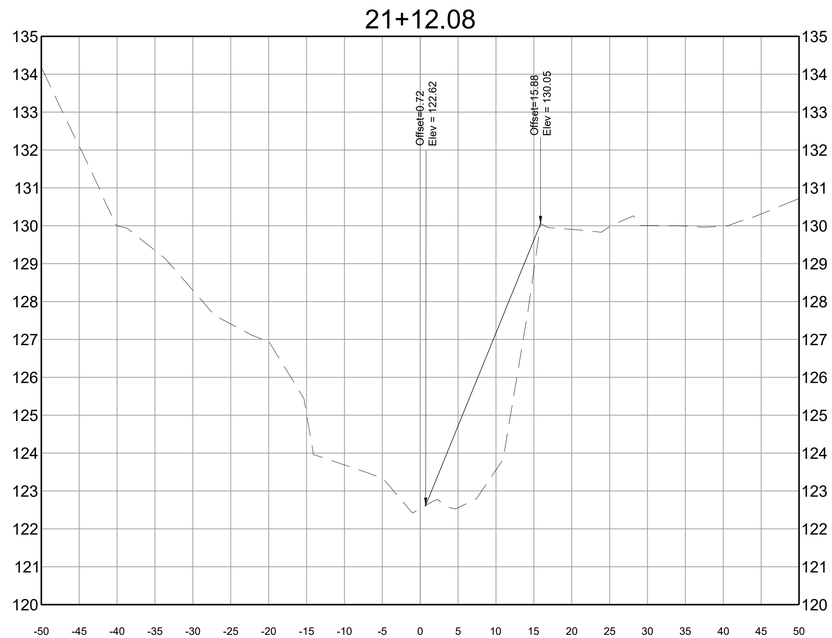
HORIZONTAL
10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL
1 0 1 2
SCALE IN FEET 1" = 2'







NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

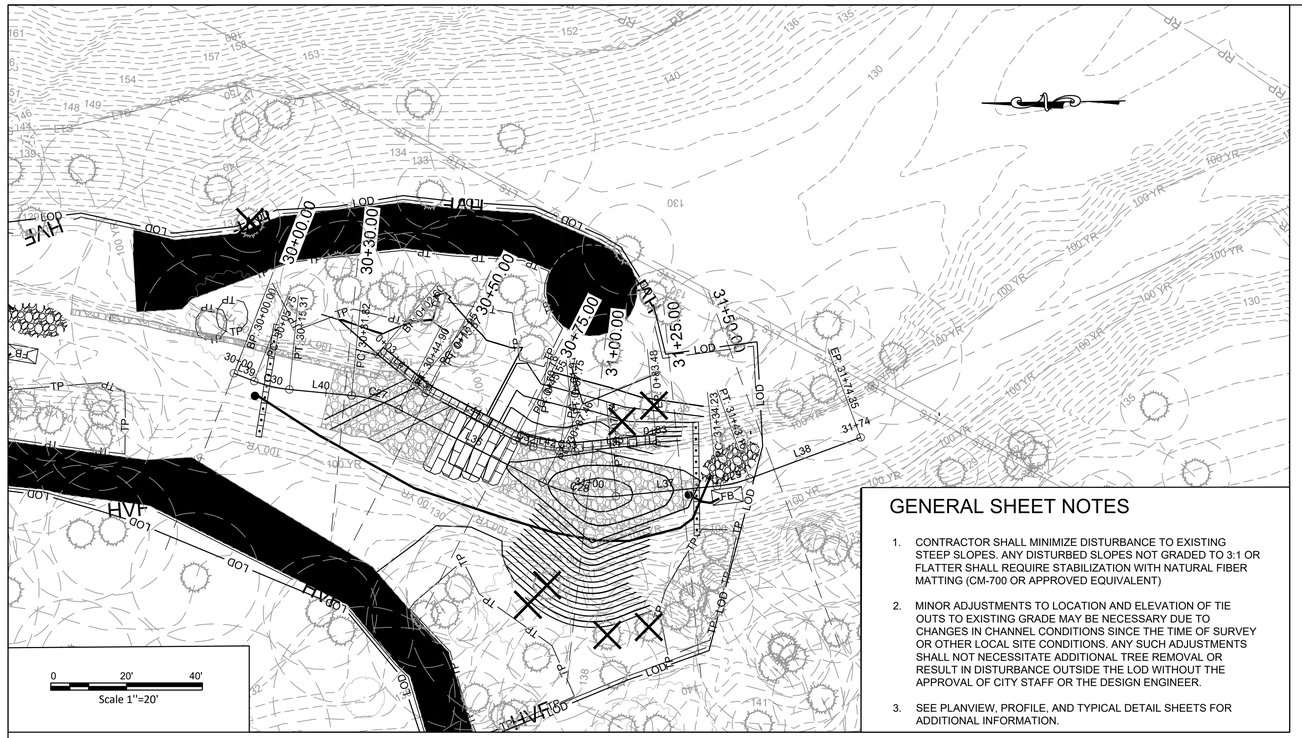
SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: CS-05
SCALE: 1:10
SHEET: 31 OF 55

C:\Users\BernhesetSO\OneDrive - AECOM\Taylor Run Stream Stabilization - General\000 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0010_SECTIONS.dwg Plotted: 5/13/2026 3:50 PM by Bernhesel, Sean



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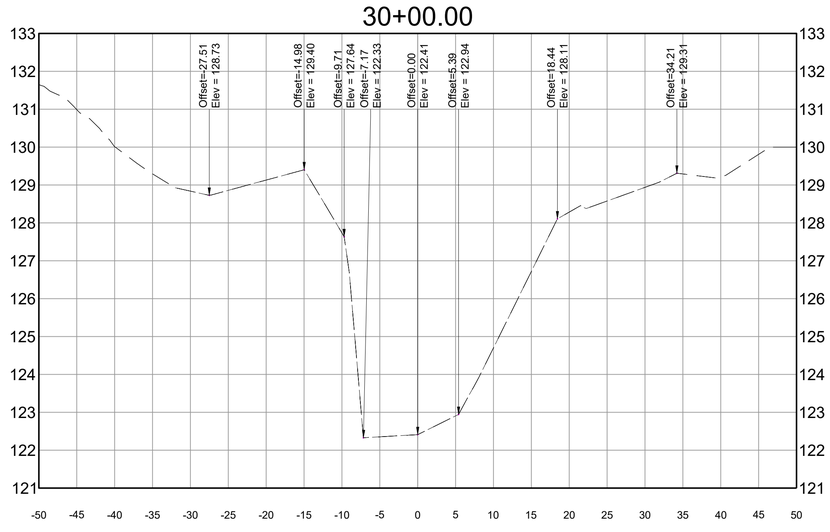
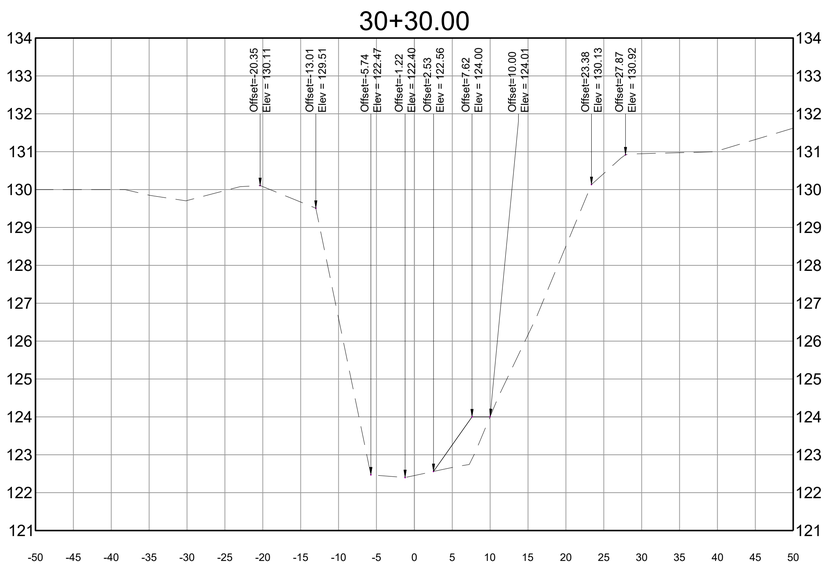
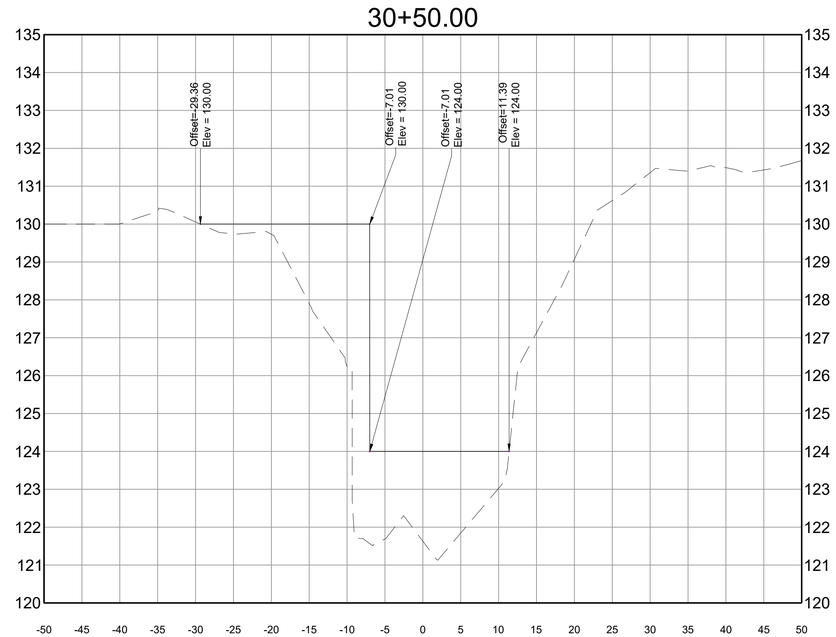
HORIZONTAL
10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL
1 0 1 2
SCALE IN FEET 1" = 2'







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CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
CS-06
SCALE:
1:10
SHEET:
32 OF 55

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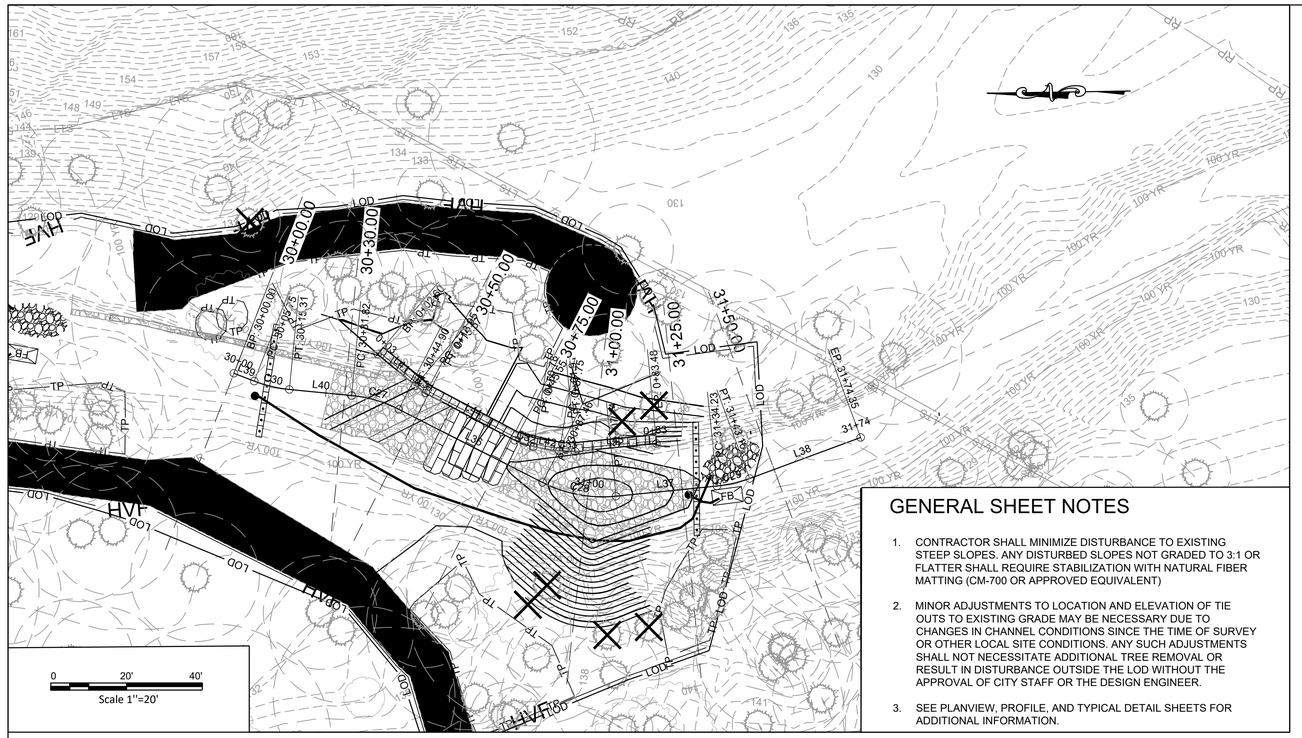

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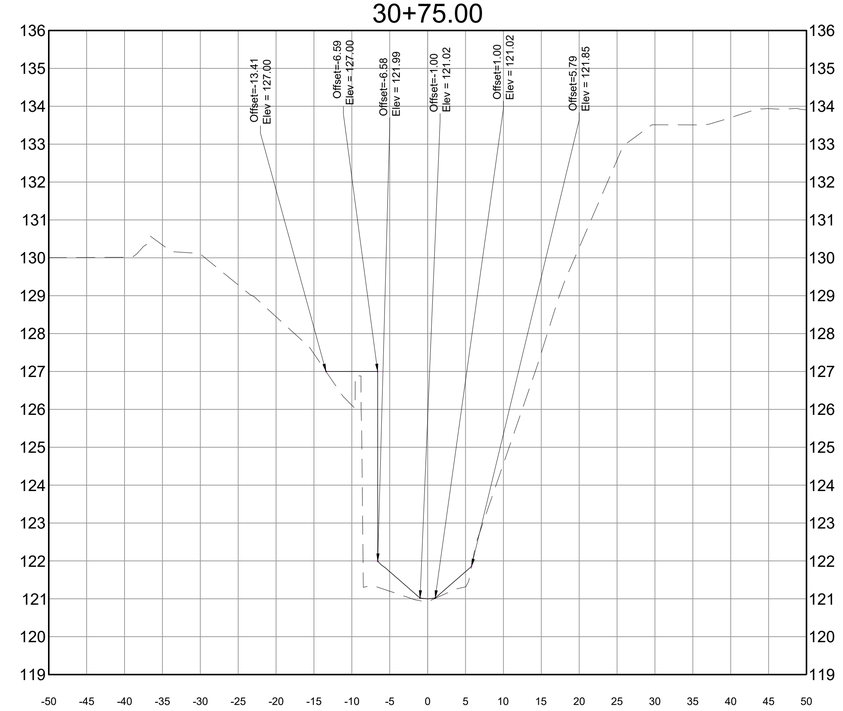
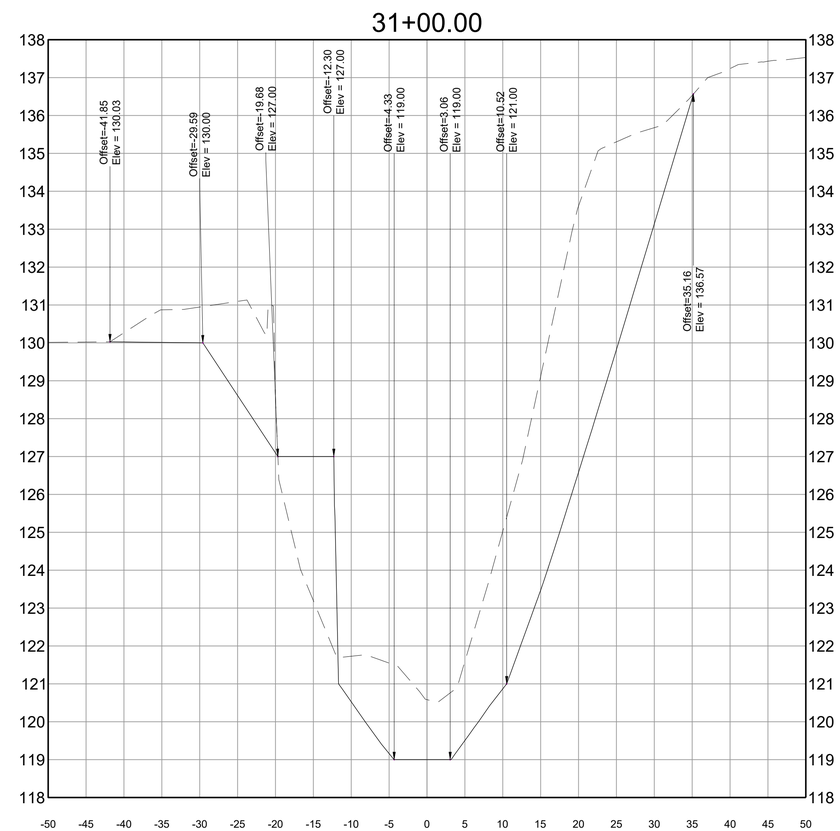
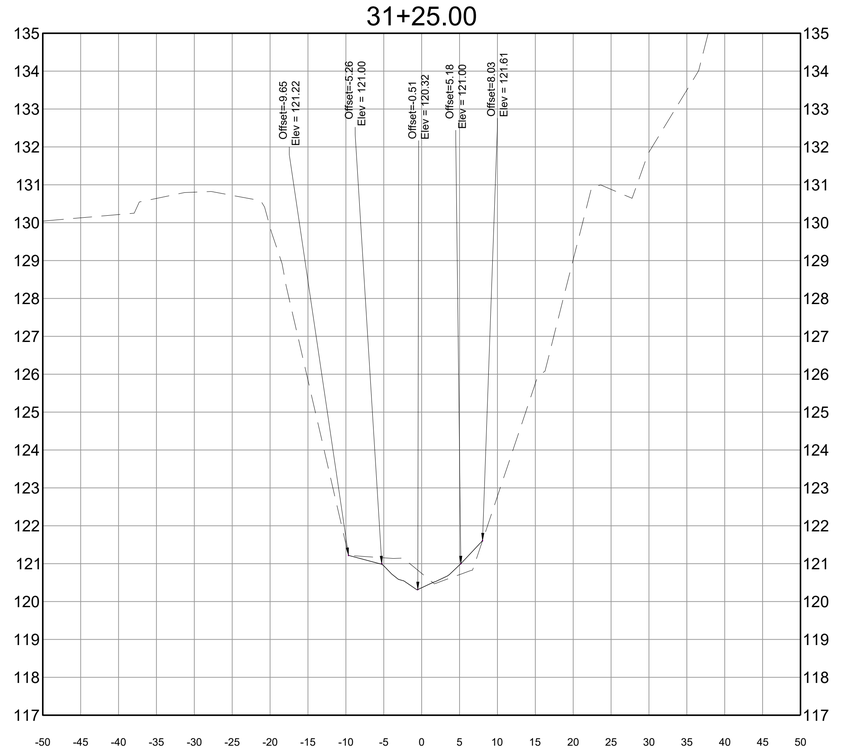
HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 1 0 1 2
SCALE IN FEET 1" = 2'







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CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: CS-07
SCALE: 1:10
SHEET: 33 OF 55

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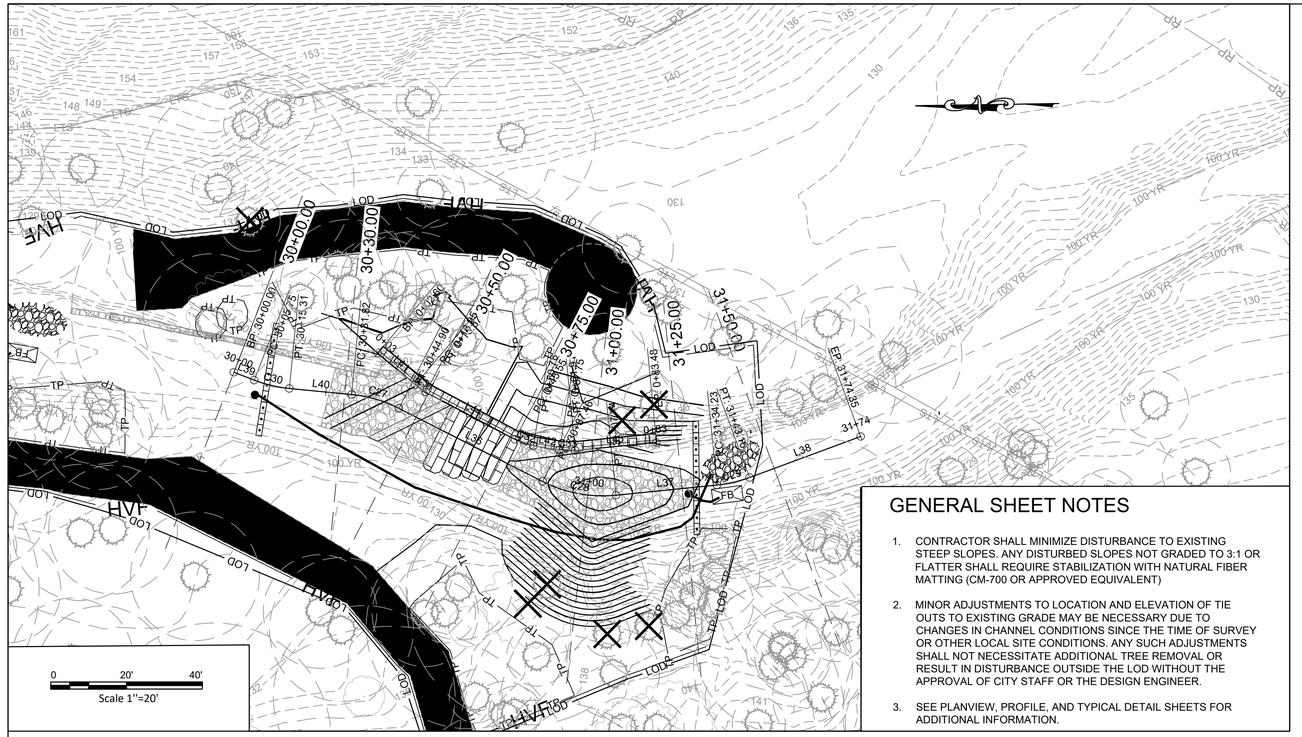

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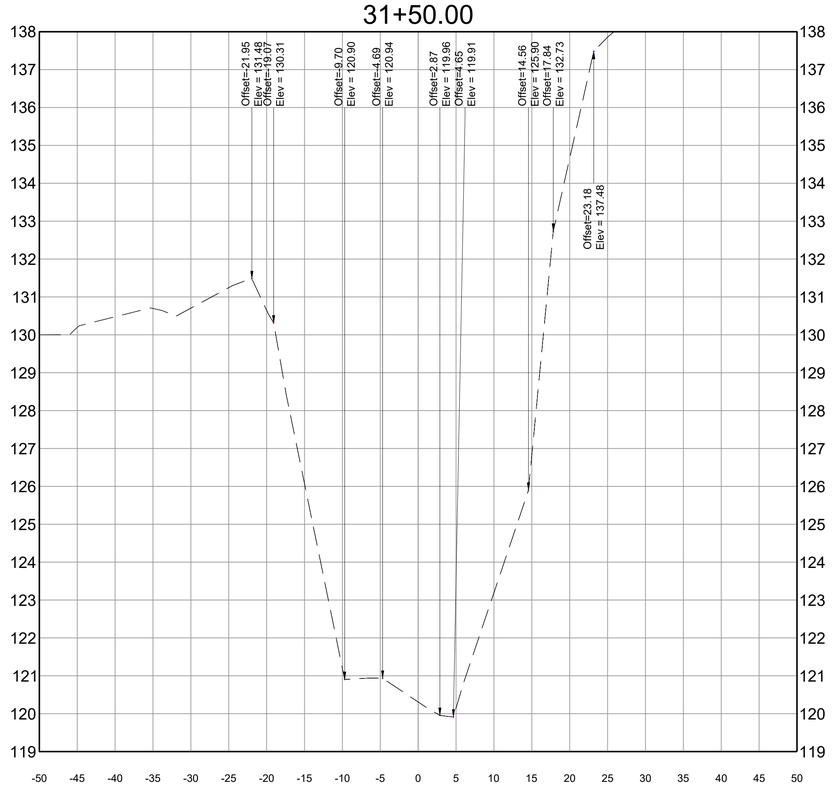
10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL
1 0 1 2
SCALE IN FEET 1" = 2'



NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CROSS SECTIONES

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
CS-08
SCALE:
1:10
SHEET:
34 OF 55

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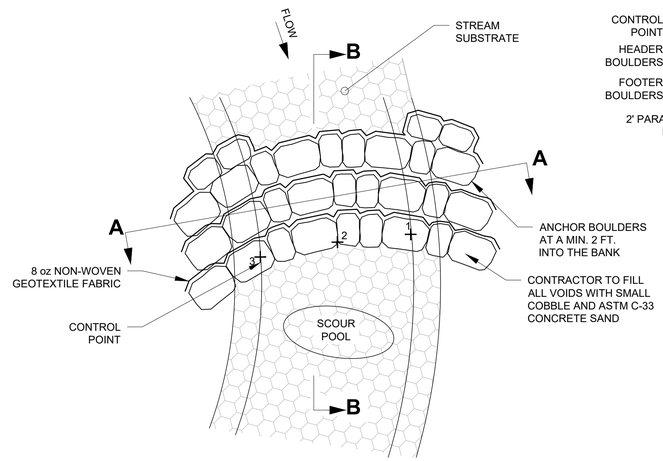
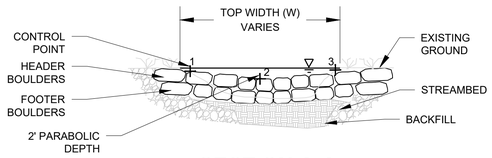
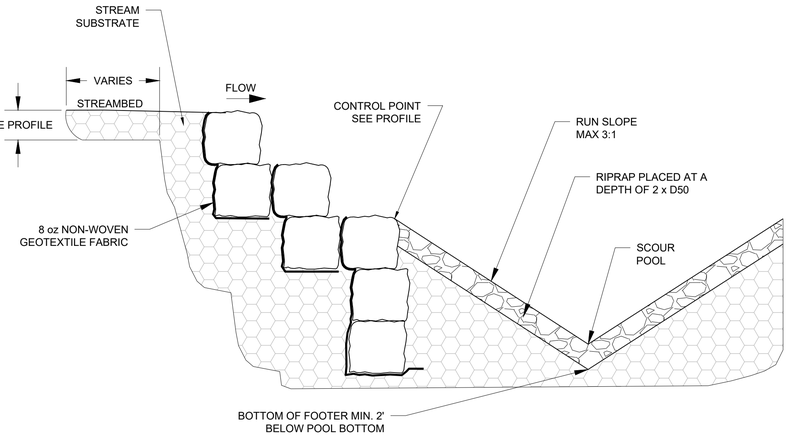
POINT	STATION	OFFSET	NORTHING	EASTING	ELEV.	DESCRIPTION
		DESIGN AREA 1				
1	0+37.85	-15.58'	6985955.478	11886806.45	150.54'	Left Tie
2	0+38.18	0.00'	6985940.416	11886802.44	148.54'	Invert
3	0+38.35	14.84'	6985926.115	11886798.47	150.54'	Right Tie
4	0+42.84	-15.59'	6985954.099	11886811.24	149.54'	Left Tie
5	0+43.16	0.00'	6985939.03	11886807.22	147.54'	Invert
6	0+43.44	15.51'	6985924.059	11886803.17	149.54'	Right Tie
7	0+47.83	-15.60'	6985952.719	11886816.04	148.54'	Left Tie
8	0+48.17	0.00'	6985937.637	11886812.03	146.54'	Invert
9	0+48.44	16.17'	6985922.034	11886807.79	148.54'	Right Tie
		DESIGN AREA 2				
10	10+39.78	-11.12'	6985699.91	11887143.07	142.00'	Left Tie
11	10+39.73	0.00'	6985691.725	11887135.54	140.00'	Invert
12	10+74.95	11.53'	6985659.484	11887153.81	135.00'	Right Tie
13	10+44.79	-11.47'	6985696.797	11887147.01	141.00'	Left Tie
14	10+44.73	0.00'	6985688.357	11887139.24	139.00'	Invert
15	10+69.67	11.50'	6985663.056	11887149.93	136.00'	Right Tie
16	10+49.79	-11.63'	6985693.542	11887150.81	140.00'	Left Tie
17	10+49.73	0.00'	6985684.989	11887142.93	138.00'	Invert
18	10+64.67	11.50'	6985666.425	11887146.23	137.00'	Right Tie
19	10+54.79	-11.58'	6985690.147	11887154.47	139.00'	Left Tie
20	10+54.73	0.00'	6985681.621	11887146.63	137.00'	Invert
21	10+59.68	11.50'	6985669.786	11887142.54	138.00'	Right Tie
22	10+59.80	-11.54'	6985686.737	11887158.15	138.00'	Left Tie
23	10+59.73	0.00'	6985678.254	11887150.33	136.00'	Invert
24	10+54.67	11.50'	6985673.159	11887138.84	139.00'	Right Tie
25	10+64.75	-11.53'	6985683.39	11887161.8	137.00'	Left Tie
26	10+64.73	0.00'	6985674.886	11887154.02	135.00'	Invert
27	10+49.67	11.50'	6985676.527	11887135.15	140.00'	Right Tie
28	10+69.75	-11.50'	6985680	11887165.48	136.00'	Left Tie
29	10+69.74	0.03'	6985671.488	11887157.71	134.00'	Invert
30	10+44.68	11.50'	6985679.893	11887131.45	141.00'	Right Tie
31	10+75.06	-11.34'	6985676.314	11887169.3	135.00'	Left Tie
32	10+74.73	0.01'	6985668.144	11887161.41	133.00'	Invert
33	10+39.67	11.50'	6985683.266	11887127.75	142.00'	Right Tie
		DESIGN AREA 4				
34	30+62.00	-6.82'	6984929.729	11887452.2	126.00'	Left Tie
35	30+62.09	0.00'	6984932.742	11887446.08	124.00'	Invert
36	30+62.19	10.59'	6984937.458	11887436.59	126.00'	Right Tie
37	30+67.02	-6.74'	6984925.292	11887449.86	125.00'	Left Tie
38	30+67.09	0.00'	6984928.286	11887443.81	123.00'	Invert
39	30+67.09	9.27'	6984932.49	11887435.55	125.00'	Right Tie
40	30+72.01	-6.65'	6984920.889	11887447.51	124.00'	Left Tie
41	30+72.09	0.00'	6984923.83	11887441.54	122.00'	Invert
42	30+72.09	7.21'	6984927.098	11887435.12	124.00'	Right Tie
43	30+77.00	-6.60'	6984916.461	11887445.2	123.00'	Left Tie
44	30+77.10	0.05'	6984919.385	11887439.23	121.00'	Invert
45	30+77.09	6.01'	6984922.1	11887433.92	123.00'	Right Tie



PLAN VIEW



SECTION A-A



SECTION B-B

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS		
DATE	BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

STRUCTURE STAKEOUT

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
ST-01

SCALE:
N/A

SHEET:
35 OF 55

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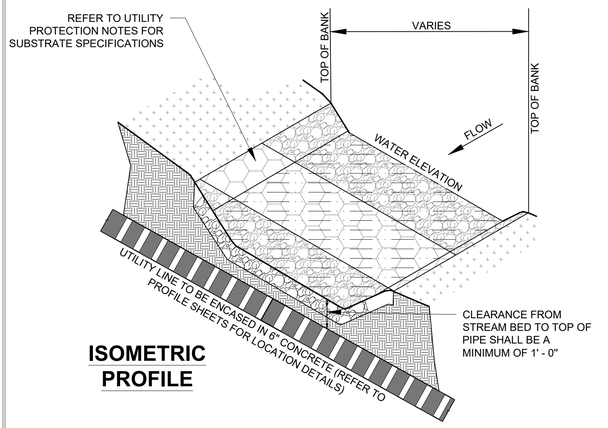
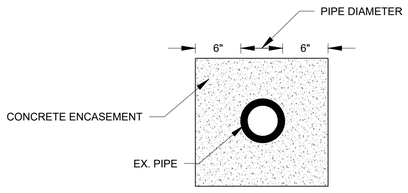


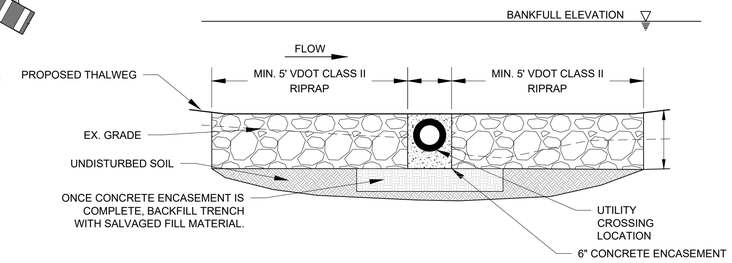
ISOMETRIC PROFILE

NOTES:

1. CONTRACTOR SHALL VERIFY UTILITIES HAVE BEEN MARKED.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR COST OF ANY DAMAGES TO UTILITIES CAUSED BY THE CONSTRUCTION, AND WILL BE REQUIRED TO PERFORM REPAIRS AT THE COUNTY'S REQUEST.
3. STREAM SUBSTRATE SHALL BE USED AS FILL MATERIAL TO RAISE THE EXISTING GRADE TO THE ELEVATION SPECIFIED IN PROFILE SHEETS.
4. CLASS II RIPRAP AND STREAM SUBSTRATE MIX SHALL BE PLACED TO THE SPRINGLINE OF THE CROSSING PIPE.
5. CONCRETE ENCASEMENT SHALL EXTEND A MINIMUM OF 5 FEET BEYOND THE TOP OF BANK ON THE LEFT AND RIGHT. THE CONCRETE ENCASEMENT SHALL START AND END WITHIN 1 FOOT OF THE NEAREST PIPE JOINT.
6. CONCRETE USED FOR THE ENCASEMENT SHALL BE 2500 P.S.I. OR GREATER.



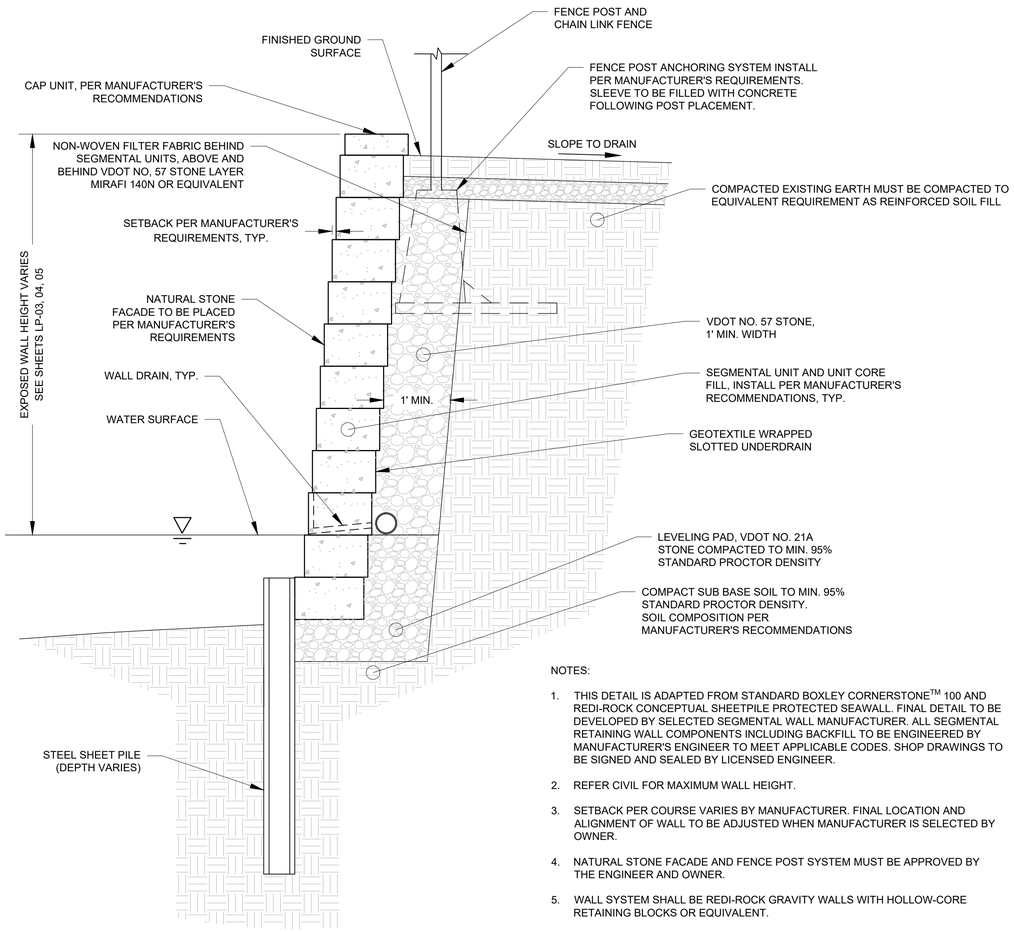
END VIEW



CROSS SECTION VIEW

1 DE-01 ARMOURED UTILITY PROTECTION - WITH PIPE ENCASEMENT

NOT TO SCALE

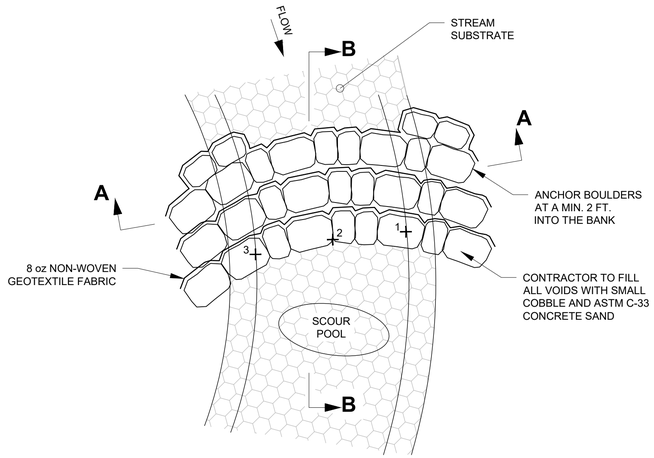


NOTES:

1. THIS DETAIL IS ADAPTED FROM STANDARD BOXLEY CORNERSTONE™ 100 AND REDI-ROCK CONCEPTUAL SHEETPILE PROTECTED SEAWALL. FINAL DETAIL TO BE DEVELOPED BY SELECTED SEGMENTAL WALL MANUFACTURER. ALL SEGMENTAL RETAINING WALL COMPONENTS INCLUDING BACKFILL TO BE ENGINEERED BY MANUFACTURER'S ENGINEER TO MEET APPLICABLE CODES. SHOP DRAWINGS TO BE SIGNED AND SEALED BY LICENSED ENGINEER.
2. REFER CIVIL FOR MAXIMUM WALL HEIGHT.
3. SETBACK PER COURSE VARIES BY MANUFACTURER. FINAL LOCATION AND ALIGNMENT OF WALL TO BE ADJUSTED WHEN MANUFACTURER IS SELECTED BY OWNER.
4. NATURAL STONE FACADE AND FENCE POST SYSTEM MUST BE APPROVED BY THE ENGINEER AND OWNER.
5. WALL SYSTEM SHALL BE REDI-ROCK GRAVITY WALLS WITH HOLLOW-CORE RETAINING BLOCKS OR EQUIVALENT.

2 DE-01 GRAVITY BLOCK WALL

NOT TO SCALE

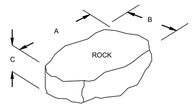


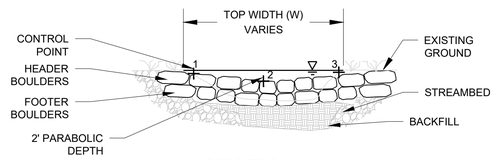
PLAN VIEW

NOTES:

1. BOULDERS THAT DO NOT MEET THE SIZE REQUIREMENTS OUTLINED IN THE SPECIFICATIONS WITHIN 3 INCHES FOR ANY PARAMETER MUST BE APPROVED FOR USE BY THE PROJECT ENGINEER.
2. CONTROL POINT ELEVATIONS ARE MEASURED AS NOTED IN SECTION A-A. CONTROL POINTS ARE PERPENDICULAR TO CHANNEL BANKS. THE CONTRACTOR SHALL BE SURE TO MAINTAIN A PARABOLIC CHANNEL SHAPE WHILE MAINTAINING CONTROL POINT ELEVATIONS. SEE SHEET ST-01 FOR DETAILS.
3. WHEN BOULDERS ARE UNABLE TO BE SILLED INTO THE BANK DUE TO PROXIMITY TO SEGMENTAL BLOCK RETAINING WALLS, THE CONTRACTOR SHALL WORK WITH THE SELECTED MANUFACTURER TO DETERMINE APPROPRIATE METHOD TO RETAIN CASCADE STABILITY, WHETHER BY POCKET KEYING, GROUT, OR SIMILAR. THE CONTRACTOR SHALL COMPACT SUBGRADE BELOW THE CASCADE TO ENSURE SETTLING DOES NOT AFFECT BOULDER CASCADE.

Boulder Sizing Table					
	Min. Density, pcf	A-Axis (Length), feet	B-Axis (Width), feet	C-Axis (Height), feet	Min. Number of Flat Sides
Header	165	2.0 - 3.0	2.0 - 3.0	1.5 - 2.0	1
Footer	165	2.0 - 3.0	2.0 - 3.0	1.5 - 2.0	2

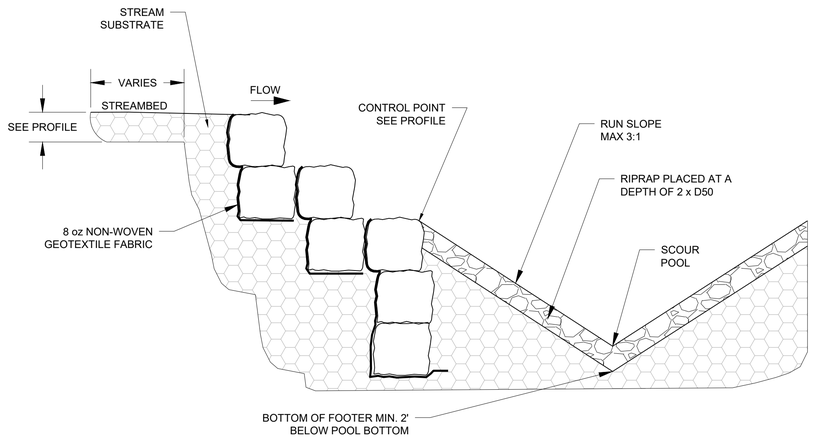




SECTION A-A

3 DE-01 BOULDER CASCADE

NOT TO SCALE



SECTION B-B

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.:	23086
DATE OF PLAN ISSUANCE:	
CONSULTANT PROJECT ID.:	60742359
DESIGNED BY: SB, TN	DATE: 10/2025
DRAWN BY: SB, TN	DATE: 10/2025
CHECKED BY: BA	DATE: 10/2025
APPROVED BY: BA	DATE: 10/2025

SEAL:

CONSTRUCTION DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: DE-01

SCALE: N/A

SHEET: 36 OF 55

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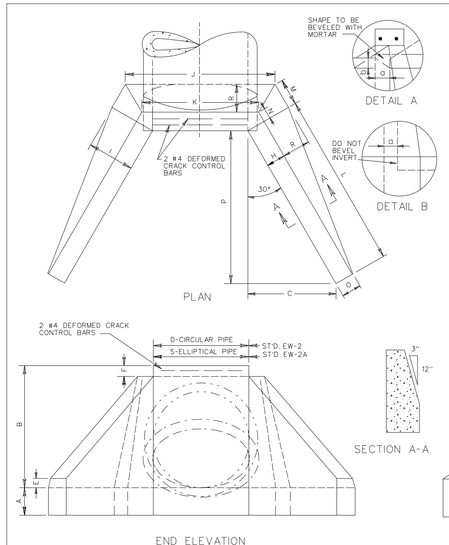
2016 ROAD & BRIDGE STANDARDS

EW-2, 2A



NOTES:

1. FOR TABLE OF DIMENSIONS AND VOLUMES FOR CIRCULAR PIPES (STANDARD EW-2) SEE SHEET 2 OF 3.
2. FOR TABLE OF DIMENSIONS AND VOLUMES FOR ELLIPTICAL PIPES (STANDARD EW-2A) SEE SHEET 3 OF 3.
3. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
4. ON SHALLOW FILLS, WHERE ENDWALLS ARE 1' OR LESS BELOW SHOULDER LINE, THE TOP OF THE ENDWALL SHALL BE CONSTRUCTED PARALLEL TO THE GRADE OF ROAD.
5. ALL CAST IN PLACE CONCRETE TO BE CLASS A3. FOR PRECAST SEE SHEETS 101.06 AND 101.07.
6. IN NO CASE SHALL TOP OF ENDWALL PROJECT ABOVE FILL SLOPE, DITCH SLOPE, OR SHOULDER.
7. THIS STANDARD TO BE USED WITH STRAIGHT CROSSINGS AND SKEW ANGLES TO 15°.
8. COST OF BARS FOR CRACK CONTROL TO BE INCLUDED IN PRICE PER BID PER CUBIC YARD CONCRETE.
9. HEADWALL TO BE BEVELED IN ALL AREAS EXCEPT WHERE A CONFLICT WITH INVERT AND WINGWALLS OCCUR.
10. BEVEL EDGE IS REQUIRED ON THE HEADWALL AT THE INLET END OF THE CULVERT (WHERE THE FLOW ENTERS THE CULVERT). HEADWALL AT THE OUTLET END OF THE CULVERT MAY BE EITHER SQUARE EDGE OR BEVEL EDGE.
11. ¾" CHAMFER MAY BE PROVIDED ON ALL EDGES AT MANUFACTURER'S OPTION.

SPECIFICATION REFERENCE	STANDARD ENDWALL FOR PIPE CULVERTS 42" - 96" CIRCULAR AND 60" x 38" - 106" x 68" ELLIPTICAL PIPES VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS REVISION DATE / SHEET 1 OF 3
105 302		101.03

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

EW-2

TABLE OF DIMENSIONS AND CONCRETE VOLUMES PER ENDWALL
FOR 42" - 96" CIRCULAR PIPE CULVERTS

DIAMETER OF PIPE CULVERTS

	DIMENSION	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	DIMENSION
FOR 1½:1 FILL SLOPE	A	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	A
	B	4'-9½"	5'-4"	5'-10½"	6'-5"	6'-11½"	7'-6"	8'-0½"	8'-7"	9'-2¼"	9'-9¾"	B
	C	3'-3¾"	3'-9"	4'-2¼"	4'-7"	5'-0⅝"	5'-5¾"	5'-11"	6'-4¼"	6'-9⅜"	7'-2⅝"	C
	D	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	D
	E	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	E
	F	0'-5½"	0'-6"	0'-6½"	0'-7"	0'-7½"	0'-8"	0'-8½"	0'-9"	0'-9½"	0'-10"	F
	G	4'-4"	4'-10"	5'-4"	5'-10"	6'-4"	6'-10"	7'-4"	7'-10"	8'-4"	8'-10"	G
	H	0'-10"	0'-10"	0'-11"	1'-0"	1'-1"	1'-2"	1'-3"	1'-4"	1'-5"	1'-6"	H
	I	1'-11"	2'-0½"	2'-3"	2'-5½"	2'-8"	2'-10½"	3'-1"	3'-3½"	3'-6"	3'-8½"	I
	J	5'-8½"	6'-4¼"	7'-1¼"	7'-10"	8'-7"	9'-4"	10'-0¾"	10'-9⅝"	11'-7"	12'-4⅛"	J
	K	4'-5½"	4'-11½"	5'-6⅜"	6'-1⅝"	6'-8"	7'-4⅜"	7'-11¼"	8'-6½"	9'-2"	9'-9¼"	K
	L	6'-7⅝"	7'-6"	8'-4½"	9'-2⅞"	10'-1⅜"	10'-11⅝"	11'-10"	12'-8⅜"	13'-6⅞"	14'-5¼"	L
	M	1'-7¼"	1'-2½"	1'-3⅝"	1'-5"	1'-6½"	1'-8"	1'-9⅝"	1'-10¾"	2'-0⅜"	2'-2"	M
	N	0'-5¾"	0'-5¾"	0'-6⅜"	0'-6¾"	0'-7½"	0'-8⅛"	0'-8⅝"	0'-9¼"	0'-10"	0'-10½"	N
	O	0'-11½"	0'-11½"	1'-0½"	1'-1½"	1'-2½"	1'-3½"	1'-4½"	1'-5½"	1'-6½"	1'-7½"	O
	P	5'-9"	6'-6"	7'-3"	8'-0"	8'-9"	9'-6"	10'-3"	11'-0"	11'-9"	12'-6"	P
	R	1'-1"	1'-2½"	1'-4"	1'-5½"	1'-7"	1'-8½"	1'-10"	1'-11½"	2'-1"	2'-2½"	R
CUBIC YARDS CONCRETE	CONC. PIPE	3.558	4.373	5.635	7.089	8.776	10.702	12.861	15.303	18.195	21.285	CONC. PIPE
	C.M. PIPE	3.791	4.680	6.054	7.642	9.490	11.605	13.984	16.678	19.724	23.107	C.M. PIPE
FOR 2:1 FILL SLOPE	C	4'-4"	4'-10⅞"	5'-5¾"	6'-0¾"	6'-7⅞"	7'-2⅝"	7'-9½"	8'-4½"	8'-11⅝"	9'-6¼"	C
	F	0'-6½"	0'-7"	0'-7½"	0'-8"	0'-8½"	0'-9"	0'-9½"	0'-10"	0'-10½"	0'-11"	F
	G	4'-3"	4'-9"	5'-3"	5'-9"	6'-3"	6'-9"	7'-3"	7'-9"	8'-3"	8'-9"	G
	I	1'-10¾"	2'-0¼"	2'-2¾"	2'-5¼"	2'-7¾"	2'-10¼"	3'-0¾"	3'-3¼"	3'-5¾"	3'-8¼"	I
	J	5'-8¼"	6'-4"	7'-1"	7'-9¾"	8'-6¾"	9'-3½"	10'-0½"	10'-9⅞"	11'-6⅞"	12'-3½"	J
	L	8'-8"	9'-9¾"	10'-11⅝"	12'-1½"	13'-3⅜"	14'-5¼"	15'-7"	16'-9"	17'-10¾"	19'-0⅝"	L
	M	1'-11¼"	1'-2"	1'-3½"	1'-4¾"	1'-6⅛"	1'-7¾"	1'-9¼"	1'-10⅝"	2'-0¼"	2'-1⅝"	M
	P	7'-6"	8'-6"	9'-6"	10'-6"	11'-6"	12'-6"	13'-6"	14'-6"	15'-6"	16'-6"	P
	R	1'-0⅞"	1'-2¼"	1'-3⅝"	1'-5¼"	1'-6¾"	1'-8¼"	1'-9¾"	1'-11¼"	2'-0⅞"	2'-2¼"	R
CUBIC YARDS CONCRETE	CONC. PIPE	4.238	5.230	6.761	8.538	10.602	12.958	15.612	18.623	22.104	25.898	CONC. PIPE
	C.M. PIPE	4.469	5.536	7.177	9.088	11.312	13.856	16.730	19.993	23.618	27.704	C.M. PIPE
FOR 1½:1 AND 2:1 FILL SLOPES	a	0'-4½"	0'-5"	0'-5½"	0'-6¼"	0'-7"	0'-7½"	0'-8¼"	0'-8¾"	0'-9½"	0'-10"	a
	b	0'-3½"	0'-4"	0'-4½"	0'-5"	0'-5½"	0'-6"	0'-6½"	0'-7"	0'-7½"	0'-8"	b

FOR ALL DIMENSIONS NOT SHOWN SEE VALUES LISTED ABOVE FOR 1½:1 FILL SLOPE

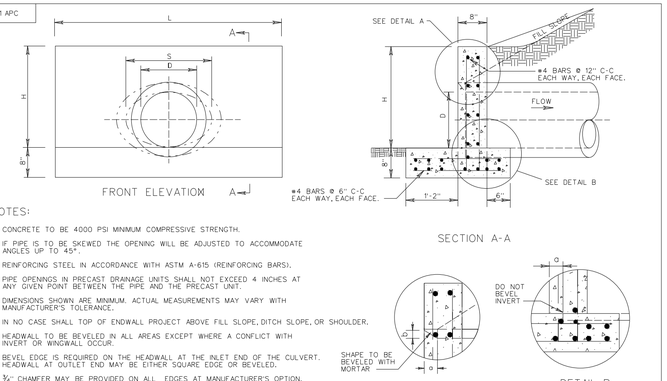
VDOT ROAD AND BRIDGE STANDARDS SHEET 2 OF 3 / REVISION DATE	STANDARD ENDWALL FOR PIPE CULVERTS 42" - 96" CIRCULAR PIPES VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE 105 302
101.04		

2016 ROAD & BRIDGE STANDARDS

4 DE-02 VDOT STANDARD ENDWALL FOR PIPE CULVERTS
NOT TO SCALE

2016 ROAD & BRIDGE STANDARDS

EW-1, 1 APC



NOTES:

1. CONCRETE TO BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH.
2. IF PIPE IS TO BE SKEWED THE OPENING WILL BE ADJUSTED TO ACCOMMODATE ANGLES UP TO 45°.
3. REINFORCING STEEL IN ACCORDANCE WITH ASTM A-615 (REINFORCING BARS).
4. PIPE OPENINGS IN PRECAST DRAINAGE UNITS SHALL NOT EXCEED 4 INCHES AT ANY GIVEN POINT BETWEEN THE PIPE AND THE PRECAST UNIT.
5. DIMENSIONS SHOWN ARE MINIMUM. ACTUAL MEASUREMENTS MAY VARY WITH MANUFACTURER'S TOLERANCE.
6. IN NO CASE SHALL TOP OF ENDWALL PROJECT ABOVE FILL SLOPE, DITCH SLOPE, OR SHOULDER.
7. HEADWALL TO BE BEVELED IN ALL AREAS EXCEPT WHERE A CONFLICT WITH INVERT OR WINGWALL OCCUR.
8. BEVEL EDGE IS REQUIRED ON THE HEADWALL AT THE INLET END OF THE CULVERT. HEADWALL AT OUTLET END MAY BE EITHER SQUARE EDGE OR BEVELED.
9. ¾" CHAMFER MAY BE PROVIDED ON ALL EDGES AT MANUFACTURER'S OPTION.

EW-1P0

ENDWALL FOR CIRCULAR PIPE

DIAMETER OF PIPE CULVERT

	12"	15"	18"	21" OR 24"	27" OR 30"	33" OR 36"
H	2'-0"	2'-3"	2'-6"	3'-2"	3'-10"	4'-4"
L	4'-0"	5'-0"	6'-0"	8'-0"	10'-0"	12'-0"
a	0'-1¼"	0'-1⅝"	0'-2"	0'-2½"	0'-3¼"	0'-3¾"
b	0'-1"	0'-1¼"	0'-1½"	0'-2"	0'-2½"	0'-3"

EW-1AP0

ENDWALL FOR ELLIPTICAL PIPE

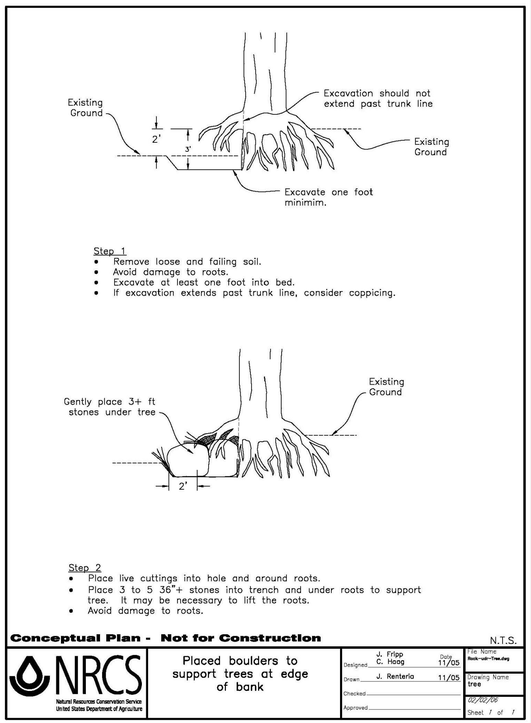
SIZE OF ELLIPTICAL PIPE CULVERT (SPAN x RISE)

S x D	23" x 14"	30" x 19"	34" x 22"	38" x 24"	42" x 27"	45" x 29"	49" x 32"	53" x 34"
H	1'-10"	2'-4"	2'-7"	2'-9"	3'-1"	3'-3"	3'-6"	3'-8"
L	5'-5"	7'-2"	8'-6"	9'-2"	10'-2"	10'-11"	12'-1"	12'-11"
a	0'-2½"	0'-3¼"	0'-3½"	0'-4"	0'-4½"	0'-4¾"	0'-5"	0'-5½"
b	0'-2"	0'-2½"	0'-2¾"	0'-3"	0'-3½"	0'-3⅞"	0'-4"	0'-4½"

VDOT ROAD AND BRIDGE STANDARDS SHEET 1 OF 1 / REVISION DATE	PRECAST ENDWALL FOR PIPE CULVERTS 12" - 36" CIRCULAR AND 23" x 14" - 53" x 34" ELLIPTICAL PIPES VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE 105 302
101.02		

2016 ROAD & BRIDGE STANDARDS

5 DE-02 VDOT PRECAST ENDWALL FOR PIPE CULVERTS
NOT TO SCALE



6 DE-02 ROCK PACKING
NOT TO SCALE

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CONSTRUCTION DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
DE-02

SCALE:
N/A

SHEET:
37 OF 55

C:\Users\Bernheisel,Sean\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0011_CONSTRUCTION DETAILS.dwg Plotted: 5/13/2026 5:50 PM by Bernheisel, Sean

SEQUENCE OF CONSTRUCTION

THE FOLLOWING SEQUENCE OF EVENTS AND EROSION CONTROL MEASURES SHALL BE INCORPORATED INTO THE CONSTRUCTION SCHEDULE FOR THIS PROJECT AND SHALL APPLY TO ALL CONSTRUCTION ACTIVITIES WITHIN THE PROJECT LIMITS:

PROJECT INITIATION:

1. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FROM THE COUNTY AND CONDUCT REQUIRED PRE-CONSTRUCTION MEETINGS AS OUTLINED IN THE CONSTRUCTION SPECIFICATIONS PRIOR TO COMMENCING CONSTRUCTION.
2. THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE (1) WEEK PRIOR TO PRE-CONSTRUCTION MEETING, ONE (1) WEEK PRIOR TO COMMENCEMENT OF LAND DISTURBING ACTIVITY AND ONE (1) WEEK PRIOR TO FINAL INSPECTION.
3. PRIOR TO THE START OF ANY EARTH DISTURBANCE AN ON-SITE PRE-CONSTRUCTION MEETING SHALL BE HELD TO ENSURE THAT ALL AFFECTED PARTIES (DESIGN ENGINEER, CONTRACTOR, CITY OF ALEXANDRIA STAFF, OWNER, AND PROJECT MANAGER) FULLY UNDERSTAND THE CONSTRUCTION SEQUENCING. THE LIMITS OF DISTURBANCE AND GRADING (LOD) SHALL BE MARKED WITH FLAGGING PRIOR TO THIS MEETING TO ALLOW REVIEW PRIOR TO ESTABLISHING PERIMETER CONTROLS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING MISS UTILITY AT 1-800-552-7001 FOR THE LOCATION OF ALL PUBLIC AND PRIVATE UTILITY LINES, PIPES, CABLES, AND ASSOCIATED FEATURES PRIOR TO ANY CONSTRUCTION WORK; ALL UTILITIES SHALL BE CLEARLY IDENTIFIED PRIOR TO CONSTRUCTION.
5. DURING THE PRE-CONSTRUCTION MEETING THE LOD SHALL REVIEWED ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER, OWNER OR OWNER'S REPRESENTATIVE(S), AND A CITY ARBORIST. A DETERMINATION SHALL BE MADE AT THAT TIME REGARDING WHICH TREES WILL BE REMOVED BASED ON THE APPROVED GRADING AND STREAM RESTORATION ACTIVITIES. ADJUSTMENTS MAY BE MADE TO FLAGGING MARKING THE LOD AND TREE PLANKING CALLED FOR TO ADEQUATELY PROTECT TREES TO BE PRESERVED AND FACILITATE THE SAFE REMOVAL OF TREES TO BE REMOVED. THE LOCATION FOR INSTALLATION OF TREE PROTECTION FENCING SHALL BE ADJUSTED IN CONJUNCTION WITH ANY CHANGES TO THE LOD PRIOR TO THE ESTABLISHMENT OF PERIMETER CONTROLS AND COMMENCEMENT OF ANY OTHER CONSTRUCTION ACTIVITIES.
6. PRIOR TO START OF WORK, THE CONTRACTOR SHALL ARRIVE ON SITE AND SET PERIMETER EROSION AND SEDIMENT CONTROLS AS DIRECTED IN PHASE I EROSION & SEDIMENT CONTROL PLANS. MEASURES INCLUDED IN OTHER PHASE I MEASURES ARE TEMPORARY STONE CONSTRUCTION ENTRANCE, ACCESS ROAD DECK MATS, CULVERT OUTLET PROTECTION, TREE PROTECTION/TREE PLANKING, CULVERT INLET PROTECTION, SAFETY FENCE, SUPER SILT FENCE, TEMPORARY STREAM CROSSINGS, PUMP AROUNDS, AND FILTER BAGS.
7. OBTAIN APPROVAL FROM THE CITY FOR EROSION AND SEDIMENT CONTROL MEASURES INSTALLED. THE CONTRACTOR SHALL PROVIDE THE INSPECTOR 48-HOUR NOTIFICATION TO SCHEDULE AN ONSITE PRE-CONSTRUCTION MEETING TO INSPECT THE INSTALLATION OF EROSION AND SEDIMENT MEASURES, PRIOR TO LAND DISTURBANCE.
8. CONTRACTOR SHALL PROVIDE SEED TAGS AND GAIN APPROVAL FOR SAID TAGS FROM CITY STAFF, PRIOR TO COMMENCING ANY WORK. SEED MUST BE ON-SITE PRIOR TO GRADING ACTIVITIES TO ALLOW PROGRESSIVE STABILIZATION.
9. TREES TO BE REMOVED THAT ARE LOCATED ON THE LOD OR IMMEDIATELY ADJACENT TO THE LOD WITHIN THE PROTECTED AREA SHALL BE REMOVED USING CHAIN SAWS TO MINIMIZE ROOT ZONE DISTURBANCE OR TREES TO BE PRESERVED. TREES SHALL BE CUT FLUSH WITH THE GROUND AND ONLY REMOVED IF NECESSARY TO ACCOMPLISH PROPOSED GRADING.
10. TREE PLANKING SHALL BE INSTALLED AS NEEDED ON ANY TREE TO BE PRESERVED (OUTSIDE THE LOD), BUT WHERE RISK OF DAMAGE FROM CONSTRUCTION TRAFFIC IS FORESEEABLE.
11. CONTRACTOR SHALL SUPPLY AND MAINTAIN AN ONSITE CONCRETE WASHOUT STRUCTURE WHICH SHALL BE ON SITE AND AVAILABLE DURING ALL CONCRETE RELATED WORK ACTIVITIES.
12. TEMPORARY SOIL STABILIZATION WILL BE APPLIED WITHIN 7 DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. TREES CAN BE FLUSH CUT IN ONE MOBILIZATION, HOWEVER STUMPS TO BE REMOVED SHALL REMAIN UNTIL AREA IS BEING ACTIVELY WORKED.
13. BASED ON A 3-DAY DRY WEATHER FORECAST, PLACE TEMPORARY SANDBAG DIVERSION AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE WORK AREA, AS INDICATED ON THE PLANS. WHERE INDICATED, STREAM FLOW SHOULD BE PUMPED AROUND THE WORK AREA AND THE PUMP SHOULD BE DISCHARGED ONTO A STABLE VELOCITY DISSIPATOR MADE OF RIPRAP OR SANDBAGS.
14. INSTALL DEWATERING PUMP AROUND PRACTICE FOR THE DAILY WORK ZONE AS SHOWN IN THE EROSION & SEDIMENT CONTROL PLANS.
15. WATER FROM THE WORK AREA SHOULD BE PUMPED TO A SEDIMENT FILTERING DEVICE, SUCH AS A DEWATERING BASIN, FILTER BAG, OR OTHER APPROVED SOURCE. THE MEASURE SHOULD BE LOCATED SUCH THAT THE WATER DRAINS INTO THE EXISTING CHANNEL. APPROXIMATE LOCATIONS FOR DEWATERING MEASURES ARE INDICATED ON THE PLANS AND THE CONTRACTOR IS RESPONSIBLE FOR ADJUSTING THE LOCATION AS NEEDED TO ENSURE THE WORK AREA IS MAINTAINED IN DRY CONDITION.
16. STAKE OUT THE PROPOSED ALIGNMENT AS SHOWN ON THE GEOMETRY PLAN SHEETS. PC AND PT POINTS SHALL BE STAKED ALONG THE CENTERLINE AND AT 25-FOOT DOUBLE OFFSETS, IDENTIFIED BY CORRESPONDING CENTERLINE STATION, ON EACH SIDE OF THE PROPOSED CHANNEL. THE CENTER OF EACH CURVE SHALL BE STAKED AND MARKED WITH THE CORRESPONDING RADIUS OF CURVATURE. VERTICAL CONTROL SHALL BE CLEARLY MARKED AT SEVERAL LOCATIONS ALONG THE PROPOSED CHANNEL.
17. CONSTRUCTION SHALL PROCEED FROM UPSTREAM TO DOWNSTREAM, UNLESS AN ALTERNATIVE SEQUENCE IS APPROVED BY THE CITY. ALL IN-STREAM WORK SHALL BE PROTECTED BY PUMP AROUND DIVERSION. PHASES I AND II MAY BE COMPLETED IN CONJUNCTION. PHASE III SHALL BE COMPLETED PRIOR TO PHASE IV TO ALLOW THE USAGE OF EXCESS MATERIAL FROM PHASE III WITHIN PHASE IV.
18. THE CONTRACTOR MAY REQUEST APPROVAL FOR A CHANGE IN THE SEQUENCE OF CONSTRUCTION WITH APPROVAL FROM THE CITY AND THE PROJECT ENGINEER.

PHASE I:

1. HARVEST AND STOCKPILE SUITABLE FILL MATERIAL AS NEEDED FROM STATION 6+50 - 8+00. TEMPORARILY STABILIZE AREA. ANY TEMPORARY SITE SHALL BE STABILIZED AT A MAXIMUM 3H:1V SLOPE.
2. INSTALL THE 72" STORMWATER PIPE ENDWALL PER THE PLANS AND DETAIL.
3. INSTALL GRAVITY BLOCK RETAINING WALLS. IT IS SOLELY THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE WALL AND IT'S COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, SHEET PILES, GUYS, TIE-INS, OR BOULDER CASCADE SILLS WHICH MAY BE NECESSARY.
4. EXCAVATE STREAM CHANNEL TO THE SUBGRADE.
5. PLACE RIPRAP AS NECESSARY TO INSTALL THE PLUNGE POOL. PRIOR TO PLACING THE RIP RAP IN THE CHANNEL THE CONTRACTOR SHALL ENSURE A WELL GRADED BED MATERIAL IS PLACED THROUGHOUT THE CHANNEL.
6. CONTINUE GRADING AND STRUCTURE INSTALLATION UNTIL ALL GRADING AND IN-STREAM STRUCTURES ARE INSTALLED. TIE OUT SLOPES SHALL NOT EXCEED 2:1. IF BEDROCK CONDITIONS ARE ENCOUNTERED WITHIN THE WORK AREA DURING CONSTRUCTION, CONSULT THE OWNER AND PROJECT ENGINEER FOR INVERT ELEVATION ADJUSTMENTS.
7. ONCE FINAL GRADING HAS BEEN ACHIEVED, APPLY TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCH PRIOR TO FINALIZING INSTALLATION OF COIR MATTING BY SECURING WITH STAKES AND KEYING IN FABRIC PER MANUFACTURER RECOMMENDATIONS AND AS SHOWN IN THE PLANS.

PHASE II:

1. INSTALL THE VIRGINIA PRE-CAST 36" STORMWATER PIPE ENDWALL PER THE PLANS AND DETAIL.
2. PROPERLY ENCASE THE SEWER IN CONCRETE PER THE UTILITY PROTECTION DETAIL.
3. INSTALL GRAVITY BLOCK RETAINING WALLS. IT IS SOLELY THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE WALL AND IT'S COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, SHEET PILES, GUYS, TIE-INS, OR BOULDER CASCADE SILLS WHICH MAY BE NECESSARY.
4. EXCAVATE STREAM CHANNEL TO THE SUBGRADE.
5. PLACE RIPRAP AS NECESSARY ADJACENT TO THE CONCRETE ENCASEMENT PER THE UTILITY PROTECTION DETAIL. PRIOR TO PLACING THE RIP RAP IN THE CHANNEL THE CONTRACTOR SHALL ENSURE A WELL GRADED BED MATERIAL IS PLACED THROUGHOUT THE CHANNEL.
6. CONTINUE GRADING AND STRUCTURE INSTALLATION UNTIL ALL GRADING AND IN-STREAM STRUCTURES ARE INSTALLED. TIE OUT SLOPES SHALL NOT EXCEED 2:1. IF BEDROCK CONDITIONS ARE ENCOUNTERED WITHIN THE WORK AREA DURING CONSTRUCTION, CONSULT THE OWNER AND PROJECT ENGINEER FOR INVERT ELEVATION ADJUSTMENTS.
7. ONCE FINAL GRADING HAS BEEN ACHIEVED, APPLY TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCH PRIOR TO FINALIZING INSTALLATION OF COIR MATTING BY SECURING WITH STAKES AND KEYING IN FABRIC PER MANUFACTURER RECOMMENDATIONS AND AS SHOWN IN THE PLANS.

PHASE III:

1. INSTALL THE VIRGINIA PRE-CAST 36" STORMWATER PIPE ENDWALL PER THE PLANS AND DETAIL.
2. PROPERLY ENCASE THE SEWER IN CONCRETE PER THE UTILITY PROTECTION DETAIL.
3. INSTALL GRAVITY BLOCK RETAINING WALLS. IT IS SOLELY THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE WALL AND IT'S COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, SHEET PILES, GUYS, TIE-INS, OR BOULDER CASCADE SILLS WHICH MAY BE NECESSARY.
4. EXCAVATE STREAM CHANNEL TO THE SUBGRADE.
5. PLACE RIPRAP AS NECESSARY ADJACENT TO THE CONCRETE ENCASEMENT PER THE UTILITY PROTECTION DETAIL. PRIOR TO PLACING THE RIP RAP IN THE CHANNEL THE CONTRACTOR SHALL ENSURE A WELL GRADED BED MATERIAL IS PLACED THROUGHOUT THE CHANNEL.
6. CONTINUE GRADING AND STRUCTURE INSTALLATION UNTIL ALL GRADING AND IN-STREAM STRUCTURES ARE INSTALLED. TIE OUT SLOPES SHALL NOT EXCEED 2:1. IF BEDROCK CONDITIONS ARE ENCOUNTERED WITHIN THE WORK AREA DURING CONSTRUCTION, CONSULT THE OWNER AND PROJECT ENGINEER FOR INVERT ELEVATION ADJUSTMENTS.
7. ONCE FINAL GRADING HAS BEEN ACHIEVED, APPLY TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCH PRIOR TO FINALIZING INSTALLATION OF COIR MATTING BY SECURING WITH STAKES AND KEYING IN FABRIC PER MANUFACTURER RECOMMENDATIONS AND AS SHOWN IN THE PLANS.

PHASE IV:

1. DEMOLISH EXISTING MANHOLE CONCRETE SKIRT.
2. INSTALL GRAVITY BLOCK RETAINING WALLS. IT IS SOLELY THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE WALL AND IT'S COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, SHEET PILES, GUYS, TIE-INS, OR BOULDER CASCADE SILLS WHICH MAY BE NECESSARY.
3. EXCAVATE STREAM CHANNEL TO THE SUBGRADE.
4. CONTINUE GRADING UNTIL ALL GRADING IS COMPLETE. TIE OUT SLOPES SHALL NOT EXCEED 2:1. IF BEDROCK CONDITIONS ARE ENCOUNTERED WITHIN THE WORK AREA DURING CONSTRUCTION, CONSULT THE OWNER AND PROJECT ENGINEER FOR INVERT ELEVATION ADJUSTMENTS.
5. ONCE FINAL GRADING HAS BEEN ACHIEVED, APPLY TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCH PRIOR TO FINALIZING INSTALLATION OF COIR MATTING BY SECURING WITH STAKES AND KEYING IN FABRIC PER MANUFACTURER RECOMMENDATIONS AND AS SHOWN IN THE PLANS.

PROJECT CLOSEOUT:

1. AS THE WORK FOR EACH DESIGN AREA IS COMPLETED, E&SC MEASURES CAN BE REMOVED WITH APPROVAL FROM PROJECT OWNER, ENGINEER, AND THE EROSION AND SEDIMENT CONTROL INSPECTOR.
2. ONCE CONSTRUCTION OF PROJECT AREA HAS BEEN COMPLETED, THE CONSTRACTOR SHALL PROCEED WITH ARRANGEMENT OF COMPOSING APPROVED RECORD DRAWINGS. CONTRACTOR SHALL FIELD SURVEY ALL INSTALLED WORK. FORWARD THE ELECTRONIC SURVEY TO THE PROJECT ENGINEER FOR VERIFICATION THAT THE PROJECT HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLAN. ELECTRONIC COPY OF THE SURVEY MUST BE ACCOMPANIED BY A HARD COPY OF RECORD DRAWINGS SIGNED AND SEALED BY A MARYLAND REGISTERED LAND SURVEYOR.
3. ONCE CONSTRUCTION OF ALL PROJECT AREAS AT THE PROJECT SITE HAVE BEEN COMPLETED, MAINTENANCE OF TRAFFIC DEVICES SHALL BE REMOVED.
4. CONTRACTOR SHALL ARRANGE FOR AND OBTAIN ANY REQUIRED FINAL SITE INSPECTIONS AND CERTIFICATIONS FOR PROJECT CLOSEOUT.

NOT FOR CONSTRUCTION

DATE	REVISIONS BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

SEQUENCE OF CONSTRUCTION

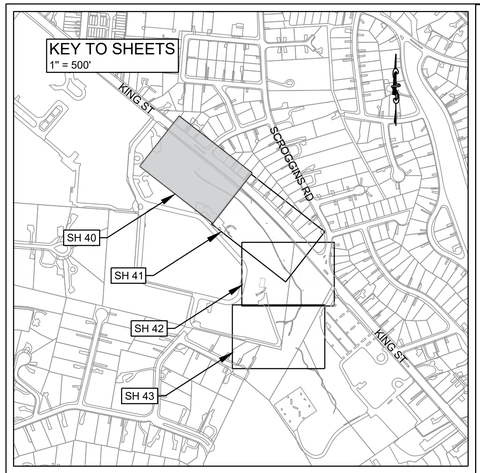
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: SE-01

SCALE: N/A

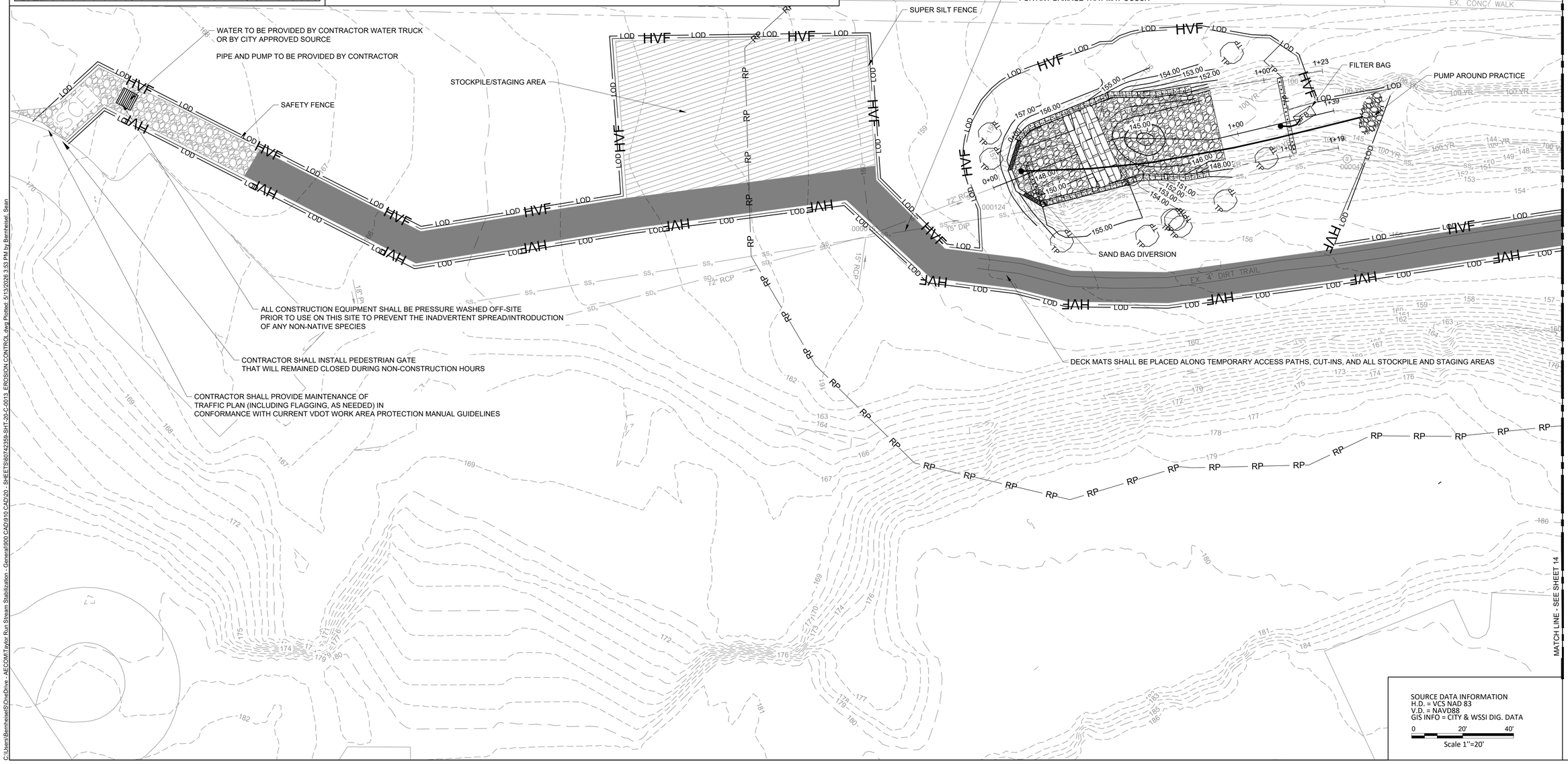
SHEET: 38 OF 55

C:\Users\Bernhiesel\S\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0012_SEQUENCE OF CONSTRUCTION.dwg Plotted: 5/13/2026 3:51 PM by Bernhiesel, Sean



GENERAL SHEET NOTES

1. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT)
2. CALL ALEXANDRIA ARCHAEOLOGY IMMEDIATELY (703-746-4399) IF ANY BURIED STRUCTURAL REMAINS (WALL FOUNDATIONS, WELLS, PRIVIES, CISTERNS, ETC.) OR CONCENTRATIONS OF ARTIFACTS ARE DISCOVERED DURING DEVELOPMENT. WORK MUST CEASE IN THE AREA OF THE DISCOVERY UNTIL A CITY ARCHAEOLOGIST COMES TO THE SITE AND RECORDS THE FINDS. THE LANGUAGE NOTED ABOVE SHALL BE INCLUDED ON ALL FINAL SITE PLAN SHEETS INVOLVING ANY GROUND DISTURBING ACTIVITIES.
3. THE APPLICANT SHALL NOT ALLOW ANY METAL DETECTION AND/OR ARTIFACT COLLECTION TO BE CONDUCTED ON THE PROPERTY, UNLESS AUTHORIZED BY ALEXANDRIA ARCHAEOLOGY. FAILURE TO COMPLY SHALL RESULT IN PROJECT DELAYS. THE LANGUAGE NOTED ABOVE SHALL BE INCLUDED ON ALL FINAL SITE PLAN SHEETS INVOLVING ANY GROUND DISTURBING ACTIVITIES.
4. PROPOSED CONTOURS ARE INTENDED TO DEPICT OVERALL GRADING CONCEPT. EXISTING AND PROPOSED CONDITIONS CONTOURS ARE SHOWN AT 1-FT C.I. THE CONTRACTOR SHALL GRADE AT 3:1 OR FLATTER AT THE DIRECTION OF THE ENGINEER TO MEET EXISTING CONDITIONS IN AREAS WHERE ADDITIONAL INFORMATION IS NEEDED.
5. ENSURE ALL DISCHARGES ARE IN ACCORDANCE WITH CITY OF ALEXANDRIA CODE TITLE 5, CHAPTER 6, ARTICLE B.
6. DEWATERING AND OTHER CONSTRUCTION RELATED DISCHARGE LIMITS TO THE SEWER SYSTEM ARE REGULATED BY ALEXRENEW PRETREATMENT. ENGINEER/OWNER IS REQUIRED TO CONTACT ALEXRENEW'S PRETREATMENT COORDINATOR AT 703-549-3381X2020
7. CONTRACTOR SHALL FOLLOW VIRGINIA WORK ZONE PROTECTION MANUAL GUIDELINES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUBMIT MAINTENANCE OF TRAFFIC PLANS ALONG WITH THE PERMIT APPLICATION.



CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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CHECKED BY:	BA DATE: 10/2025
APPROVED BY:	BA DATE: 10/2025

SEAL:

EROSION AND SEDIMENT CONTROL PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-01
SCALE: 1:20
SHEET: 39 OF 55

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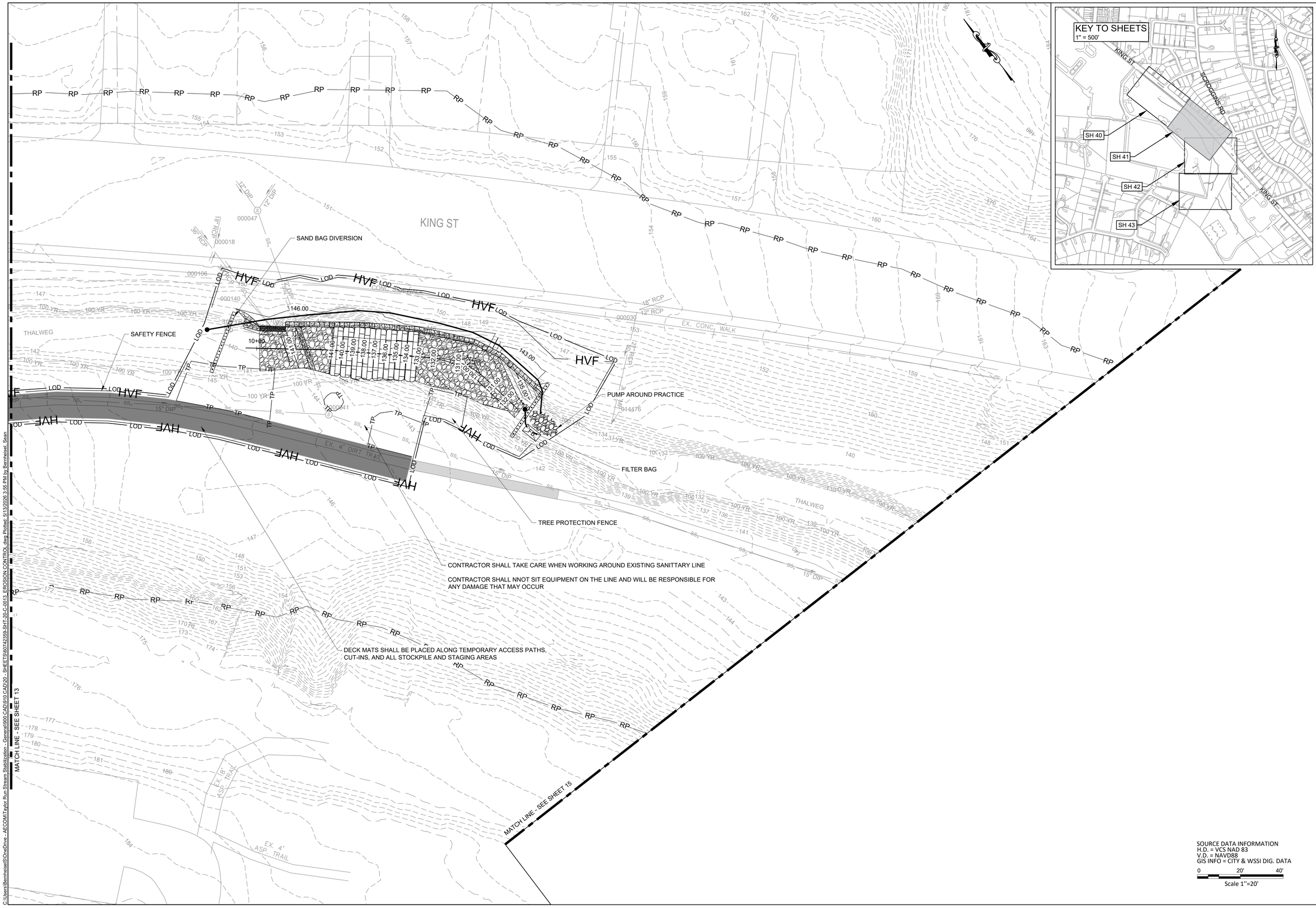

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
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APPROVED BY: BA DATE: 10/2025

SEAL:

EROSION AND SEDIMENT CONTROL PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
ESC-02

SCALE:
1:20

SHEET:
40 OF 55

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MATCH LINE - SEE SHEET 14

MATCH LINE - SEE SHEET 16

CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING SANITTARY LINE

CONTRACTOR SHALL NNOT SIT EQUIPMENT ON THE LINE AND WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR

DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATHS, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS

SAFETY FENCE

SAND BAG DIVERSION

TREE PLANKING, TYP.

FILTER BAG

PUMP AROUND PRACTICE

CHINQUAPIN DR

KING ST

SCROGGINS ROAD

EX. 4' DIRT TRAIL

EX. 8' ASP. TRAIL

EARTHEN TRAIL

THALWEG

15" CMP

2" RCP

RA-1

RA-2

RA-3

TOP= 140.65'

TOP= 140.65'

INV= 139.77'

LOD

100 YR

100-YR

15' FIRE

SS

SD

RP

TP

007530

007526

132.00

128.00

125.00

123.00

KEY TO SHEETS
1" = 500'

SH 40

SH 41

SH 42

SH 43

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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ALEXANDRIA PROJECT NO.: 23086
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APPROVED BY: BA DATE: 10/2025

SEAL:

EROSION AND SEDIMENT CONTROL PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-03
SCALE: 1:20
SHEET: 41 OF 55

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MATCH LINE - SEE SHEET 15

DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATHS, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS

WATER TO BE PROVIDED BY CONTRACTOR WATER TRUCK OR BY CITY APPROVED SOURCE

PIPE AND PUMP TO BE PROVIDED BY CONTRACTOR

CONTRACTOR SHALL INSTALL PEDESTRIAN GATE THAT WILL REMAINED CLOSED DURING NON-CONSTRUCTION HOURS

SAFETY FENCE

SUPER SILT FENCE

TEMPORARY BRIDGE CROSSING, TYP.

FILTER BAG

PUMP AROUND PRACTICE

SAND BAG DIVERSION

ALL CONSTRUCTION EQUIPMENT SHALL BE PRESSURE WASHED OFF-SITE PRIOR TO USE ON THIS SITE TO PREVENT THE INADVERTENT SPREAD/INTRODUCTION OF ANY NON-NATIVE SPECIES

CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING SANITTARY LINE

CONTRACTOR SHALL NNOT SIT EQUIPMENT ON THE LINE AND WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR

KEY TO SHEETS
1" = 500'

KING ST
SCROGGINS RD
SH 40
SH 41
SH 42
SH 43
KING ST

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

ALEXANDRIA PROJECT NO.:	23086
DATE OF PLAN ISSUANCE:	
CONSULTANT PROJECT ID.:	60742359
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DATE	REVISIONS BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

SEAL:

EROSION AND SEDIMENT CONTROL PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
ESC-04

SCALE:
1:20

SHEET:
42 OF 55

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GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION ANDSEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDINGTO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: A "CERTIFIED LAND DISTURBER" (CLD) SHALL BE NAMED IN A LETTER TO THE DIVISION CHIEF OF CONSTRUCTION AND INSPECTION (C&I), DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES PRIOR TO ANY LAND DISTURBING ACTIVITY. IF THE CLD CHANGES DURING THE PROJECT, THAT CHANGE MUST BE NOTED IN A LETTER TO THE DIVISION CHIEF.A NOTE TO THIS EFFECT SHALL BE PLACED ON THE PHASE I E&S PLAN SHEETS OF THE SITE PLAN.

ES-4: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-5: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-6: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-7: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-8: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-9: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-10: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVISES SHALL BE MADE IMMEDIATELY.

ES-11: ANY DENUDED SLOPES, EITHER DISTURBED OR CREATED BY THIS PLAN THAT EXCEED 2500 SQUARE FEET (SUCH AS THOSE ADJACENT TO THE CONSTRUCTION ENTRANCE) SHALL BE SEEDED (PER SEEDING SCHEDULE) AND MATTED IMMEDIATELY FOLLOWING ESTABLISHMENT.

ES-12: ALL VEHICLES SHALL BE CLEANED BEFORE ENTERING ONTO PUBLIC RIGHT-OF-WAY.

ES-13 THE WASH WATER FROM THE CONSTRUCTION ENTRANCE SHALL BE FILTERED THROUGH THE PROVIDED SILT FENCE TO ENSURE THAT NO SEDIMENT LADEN RUNOFF IS ALLOWED TO RUNOFF ON TO THE ADJACENT PROPERTY OR THE PUBLIC RIGHT-OF-WAY.

ES-14: THE FIRE DEPARTMENT SHALL BE NOTIFIED IN AADVANCE OF ANY FIRE HYDRANTS TAKEN OUT OF SERVICE AND OF ALL AREAS AFFECTED AS WORK IS PERFORMED.

ES-15: THE FIRE DEPARTMENT SHALL BE NOTIFIED IN ADVANCE OF ANY FIRE HYDRANTS TAKEN OUT OF SERVICE AND OF ALL AREAS AFFECTED AS WORK IS PERFORMED.

ES-16: THE CONTRATOR SHALL COORDINATE WITH THE CITY OF ALEXANDRIA RECREATION, PARKS, AND CULTURAL ACTIVITIES DEPARTMENT CONCERNING CONSTRUCTION ACCESS ANND TRAIL RESTORATION REQUIREMENTS.

ES-17: PRIOR TO REMOVING ANY TREES—ALIVE OR DEAD, STANDING OR FALLEN—TAKE ALL NECESSARY STEPS TO CONFIRM THAT NO ACTIVE WILDLIFE IS USING THE TREES FOR FOOD, SHELTER, OR NESTING. IF WILDLIFE ACTIVITY IS OBSERVED AND THERE IS ANY UNCERTAINTY ON HOW TO PROCEED, IMMEDIATELY CONTACT THE RPCA NATURAL RESOURCES DEPARTMENT AND/OR THE VA DWR REGION 4 OFFICE FOR GUIDANCE.

MAINTENANCE

ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED AFTER EACH RAINFALL OR WEEKLY, WHICHEVER IS MOST FREQUENT, AND SHOULD BE CLEANED AND REPAIRED ACCORDING TO THE FOLLOWING SCHEDULE:

1. EROSION AND SEDIMENT CONTROL WILL BE CHECKED REGULARLY (MINIMUM WEEKLY) FOR UNDERMINING OR DETERIORATION AND BUILDUP OR CLOGGING WITH SEDIMENT. CORRECTIVE ACTION WILL BE TAKEN IMMEDIATELY.
2. ALL SEEDED AREAS WILL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE RESEEDED AS NEEDED.
3. ALL TEMPORARY EROSION AND SEDIMENT MEASURES SHALL BE DISPOSED OF WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED AND VEGETATION IS ESTABLISHED.

TEMPORARY SEEDING

PLANTING DATES	SPECIES	SEEDING RATE (LBS/ACRE)
SEPT 1 - FEB 15	50 - 50 MIX OF ANNUAL RYEGRASS & CEREAL RYE (SECALE CEREALE)	50-100
FEB 16 - APR 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60-100
MAY 1 - AUG 31	GERMAN MILLET (SETARIA ITALICA)	50

PERMANENT SEEDING

ALL PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE APPROVED SEEDING SCHEDULE (VS-02)

4VAC50-30-40. MINIMUM STANDARDS

NOTE: ALL CONSTRUCTION ON SITE SHALL BE IN CONFORMANCE WITH THE FOLLOWING 19 MINIMUM STANDARDS AS ESTABLISHED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS.

1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
3. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.
4. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
5. STABILIZATION MEASURES SHALL BE APPLIED TO CHANNELS AND EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN. 6.1. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES. 6.2. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.
7. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
8. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
10. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
11. BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
13. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.
14. ALL APPLICABLE FEDERAL, STATE AND LOCAL CHAPTERS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK INTHE WATERCOURSE IS COMPLETED.
16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWINGSTANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
    - 16.1. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
    - 16.2. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
    - 16.3. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
    - 16.4. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
    - 16.5. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER.
    - 16.6. APPLICABLE SAFETY CHAPTERS SHALL BE COMPLIED WITH.
17. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA:
    - 19.1. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.
    - 19.2. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
        - 19.2.1. THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
            - 19.2.1.1. NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.
            - 19.2.1.2. ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND
            - 19.2.1.3. PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
    - 19.3. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
        - 19.3.1. IMPROVE THE CHANNELS TO A CONDITION WHERE A TEN-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO CHANNEL THE BED OR BANKS; OR
        - 19.3.2. IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;
        - 19.3.3. DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TEN-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MANMADE CHANNEL; OR
        - 19.3.4. PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE PLAN APPROVING AUTHORITY TO PREVENT DOWNSTREAM EROSION.
    - 19.4. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
    - 19.5. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
    - 19.6. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE LOCALITY OF A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMEN

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

THIS PROJECT ENTAILS STREAM STABILIZATION USING A 'MINIMAL STABILZIATION' APPROACH TO LIMIT TREE IMPACTS AND DISTURBANCE TO THE COMMUNITY. THE TAYLOR RUN PROJECT AREA BEGINS AT THE 72' RCP CULVERT OUTFALL TO THE NORTHEAST OF THE CHINQUAPIN RECREATION CENTER, ADJACENT TO KING STREE IN THE CITY OF ALEXANDRIA, VIRIGNIA. APPROXIMATELY 1,500 LINEAR FEET OF TAYLOR RUN IS WIHTIN THE PROJECT AREA BUT APPROXIMATELY 590 LINEAR FEET WILL BE IMPACTED. THE PROJECT TERMINANTES DOWNSTREAM OF THE EXISTING SHEET PILE WALL.
WITHIN THE PROJECT AREA, THERE ARE TWO STORMWATER OUTFALLS IN DISREPAIR AND AN UNDERSIZED PLUNGE POOL. SEVERE EROSION HAS UNDERCUT TREES CAUSING THEM TO FALL, EXPOSED ROOTS AND UNDERMINED THE STREAM BANKS, INCLUDING THE CRITICAL ROOT ZONE OF A CHAMPION TREE. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH TWO EXPOSED CROSSINGS AND AN EXPOSED MANHOLE.
THE PROJECT LIES WITHIN A FEMA MAPPED ZONE AE SEPCIAL FLOOD HAZARD AREA (SFHA) AND IS ENTIRELY WITHIN THE CITY RESOURCE PROTECTION AREA (RPA). THE SURROUNDING AREA IS HIGHLY RESIDENTIAL, WHICH INCLUDES THE CITY OF ALEXANDRIA HIGH SCHOOL.

EXISTING SITE CONDITIONS

THE PROJECT REACH IS BOUNDED AT THE UPSTREAM LIMITS OF THE CHANNEL BY AN EXISTING CULVERT OUTFALL DRAINING FROM THE DIRECTION OF THE CHINQUAPIN RECREATION CENTER GROUNDS. THE PROJECT IS LOCATED ON CITY OF ALEXANDRIA PROPERTY. THE DRAINAGE AREA FOR THE PROJECT REACH IS APPROXIMATELY 333 ACRES WITH 38% IMPERVIOUSNESS, MEASURED TO THE DOWNSTREAM EXTENT OF THE PROJECT. THE STREAM CORRIDOR IS HIGHLY DISTURBED, WITH SEVERE EROSION IN VARIOUS LOCATIONS, INCLUDING A 10 TO 20-FT HIGH VERTICAL BANK WHICH CURRENTLY THREATENS THE EXISTING WALKING PATH ALONG THE RIGHT BANK OF THE STREAM. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH TWO DESTABILIZED AND EXPOSED CROSSINGS WITHIN THE RESTORATION AREA.

ADJACENT PROPERTY

THE PROJECT IS LOCATED ON CITY OF ALEXANDRIA PROPERTY. THESE PROPERTIES ARE BOUNDED BY MULTIPLE PRIVATE PARCELS AND FIRST BAPTIST CHURCH OF ALEXANDRIA, HOWEVER CONSTRUCTION ACTIVITIES WILL NOT AFFECT ANY OF THE ADJACENT PROPERTIES.

OFF-SITE AREAS

THE DRIVEWAY TO THE PARKING LOT FOR CHINQUAPIN RECREATION CENTER WILL BE THE LOCATION OF THE CONSTRUCTION ENTRANCE TO THE PROJECT AND MAY CAUSE DISRUPTION TO TRAFFIC FLOW IN THIS AREA. DESIGN FOR THE ACCESS ROAD SHALL BE IN ACCORDANCE WITH APPROVED PLANS. TRAFFIC AND FACILITY SIGNS WILL ALSO BE LOCATED IN OFF-SITE AREAS IN ACCORDANCE WITH LOCAL REGULATIONS. ALL EXCAVATED MATERIAL WILL BE TRUCKED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

CRITICAL AREAS

THIS PROJECT IS LOCATED ENTIRELY WITHIN A STREAM CHANNEL. HOWEVER, THE DESIGN PRESENTED HEREIN PROPOSES TO LIMIT FURTHER EROSION WITHIN THIS DEGRADED STREAM CHANNEL THUS IMPROVING THE WATER QUALITY OF THE DOWNSTREAM RECEIVING WATERS. ADDITIONALLY THE PROJECT IS LOCATED ENTIRELY WITHIN THE RPA. STREAM STABILIZATION PROJECTS ARE WATER DEPENDENT AND AN ALLOWABLE USE IN THE RPA.

SOIL

THE DOMINANT SOIL LOCATED WITHIN THE PROJECT AREA IS SASSAFRAS NEABSCO COMPLEX. THIS SOIL HAS MARGINAL DRAINAGE AND MEDIUM EROSION POTENTIAL.

EROSION AND SAFETY CONTROL MEASURES

ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).

STRUCTURAL PRACTICES
3.01 - SAFETY CHAIN LINK FENCING
3.02 - TEMPORARY STONE CONSTRUCTION ENTRANCE
3.05 - SILT FENCE WITH WIRE SUPPORT
3.23 - STRUCTURAL STREAMBANK STABILIZATION (VANE STRUCTURES, ROCK STEP, ROCK SILLS, STEP POOLS)
3.24 - STREAM CROSSING
3.26 - DEWATERING STRUCTURE (PUMP AROUND)
3.26 - FILTER BAG
3.38 - TREE PROTECTION FENCING
N/A - DECK MATTING
3.08 - CULVERT INLET PROTECTION
3.18 - CULVERT OUTLET PROTECTION

VEGETATIVE PRACTICES
3.30 - TOPSOIL (STOCKPILE)
3.31 - TEMPORARY SEEDING
3.32 - PERMANENT SEEDING
3.35 - MULCHING
3.36 - SOIL STABILIZATION BLANKET

STORMWATER MANAGEMENT

THIS PROJECT WILL IMPROVE STORMWATER QUALITY AS WELL AS PROVIDE CHANNEL PROTECTION. THERE IS NO PROPOSED INCREASE IN IMPERVIOUS SURFACE WITH THIS PROJECT AND DISCHARGES LEAVING THE SITE WILL REMAIN THE SAME.

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

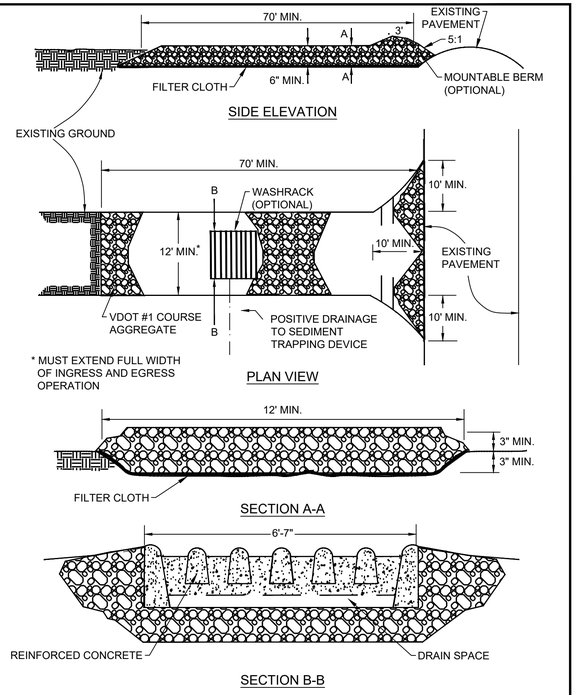
SEAL:

EROSION AND SEDIMENT CONTROL NARRATIVE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-05
SCALE: N/A
SHEET: 43 OF 55

C:\Users\BenthelseiS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0014 EROSION NARRATIVE.dwg Plotted: 5/13/2026 4:05 PM by Benthelsei, Sean



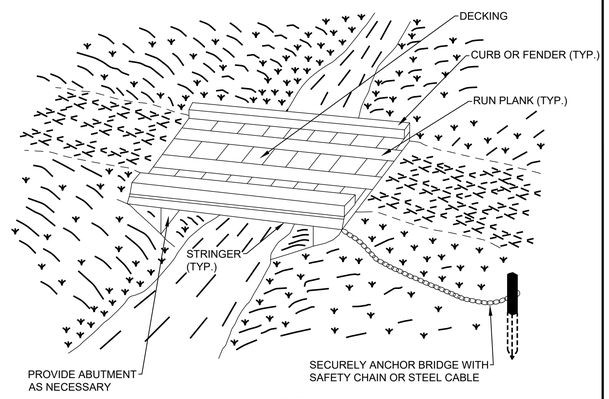
STONE CONSTRUCTION ENTRANCE SPECIFICATIONS:

1. EXCAVATE THE ENTRANCE AREA TO A MINIMUM OF 3 INCHES AND CLEAR THE AREA OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL.
2. CONSTRUCT ANY DRAINAGE FACILITIES ACCORDING TO SPECIFICATIONS. PROVIDE FOR THE CONVEYANCE OF SURFACE WATER UNDER THE ENTRANCE THROUGH CULVERTS.
3. PLACE THE FILTER FABRIC UNDERLAYMENT ATOP THE ENTIRE WIDTH AND LENGTH OF THE ENTRANCE.
4. FOLLOWING THE FILTER FABRIC INSTALLATION, PLACE THE STONE TO THE SPECIFIED DIMENSIONS (INCLUDING THE CONSTRUCTION OF THE MOUNTABLE BERM) AS NECESSARY.
5. IF WASH RACKS ARE USED, INSTALL WASH RACKS ACCORDING TO MANUFACTURER'S SPECIFICATIONS. ENSURE THE WASH RACK CAN CONVEY SEDIMENT-LADEN WATER IMMEDIATELY TO A SEDIMENT CONTROL TREATMENT DEVICE BEFORE ENTERING A WATER BODY.
6. CONFIRM THE LENGTH AND WIDTH OF THE CONSTRUCTION ENTRANCE BEFORE SETTING UP EROSION CONTROL MEASURES AND PERIMETER CONTROL MEASURES.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

STONE CONSTRUCTION ENTRANCE

v1.1 SOURCE: VA. DSWC, MD ESC STDS C-SCM-03-1



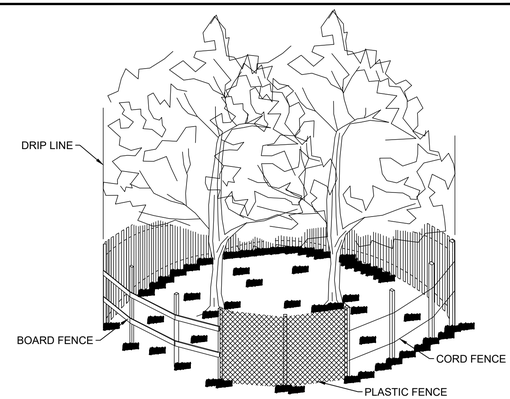
LOCATION PLAN

NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

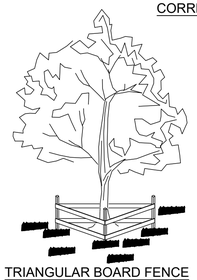
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

TEMPORARY BRIDGE CROSSING

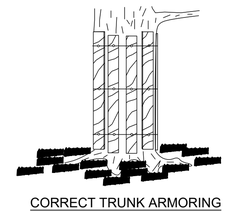
v1.1 SOURCE: MD DEPT. OF ENV. 2011 C-ENV-03-1



CORRECT METHODS OF TREE FENCING



TRIANGULAR BOARD FENCE



CORRECT TRUNK ARMORING

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

FENCING AND ARMORING

v1.1 SOURCE: VA. DSWC C-SSM-01-2

1 ED-01 STONE CONSTRUCTION ENTRANCE
NOT TO SCALE

2 ED-01 TEMPORARY BRIDGE CROSSING
NOT TO SCALE

3 ED-01 TREE FENCING AND ARMORING
NOT TO SCALE

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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EROSION AND SEDIMENT CONTROL DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

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SHEET: 44 OF 55

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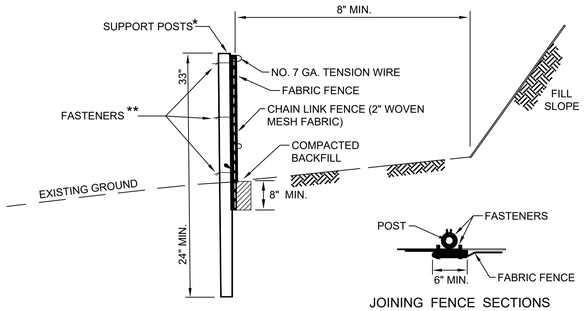


JOINING FENCE SECTIONS

* POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.

* * CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL PRE-FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 13.5 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX C. TO C.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

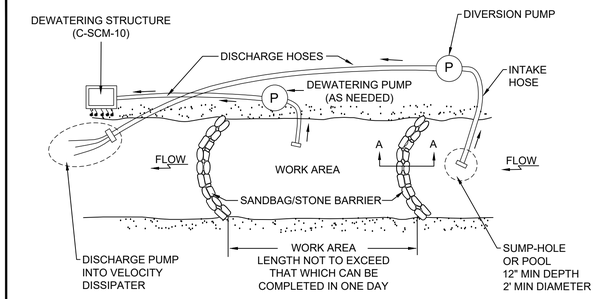
SUPER SILT FENCE INSTALLATION

v1.1 SOURCE: ADAPTED FROM PA DEP 2012 C-PCM-04-3

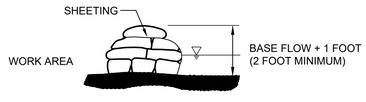
INSTALLATION FOR SUPER SILT FENCE:

1. EXCAVATE AN 8-INCH-DEEP TRENCH, MINIMIZING THE DISTURBANCE ON THE DOWNSLOPE SIDE, WITH THE BOTTOM OF THE TRENCH AT LEVEL GRADE.
2. INSTALL THE CHAIN LINK FENCE IN THE DOWNSLOPE SIDE OF THE TRENCH WITH THE FENCE ON THE UPSLOPE SIDE OF THE SUPPORT POLES. INSTALL 2.5-INCH- DIAMETER GALVANIZED OR ALUMINUM POLES SET AT 10-FOOT MAXIMUM SPACING. INSTALL POLES AT A MINIMUM DEPTH OF 24 INCHES BELOW THE GROUND SURFACE AND EXTEND A MINIMUM OF 33 INCHES ABOVE GROUND. A POSTHOLE DRILL MAY BE NECESSARY TO INSTALL POLES APPROPRIATELY FOR MOST SITES. POLES DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO FENCE POSTS WITH WIRE TIES.
4. ENSURE CHAIN LINK IS GALVANIZED NO. 11.5 GA. STEEL WIRE WITH 2.25-INCH OPENING, NO. 11 GA. ALUMINUM COATED STEEL WIRE IN ACCORDANCE WITH ASTM-A-491, OR GALVANIZED NO. 9 GA. STEEL WIRE TOP AND BOTTOM WITH GALVANIZED NO. 11 GA. STEEL INTERMEDIATE WIRES. INSTALL NO. 7 GAGE TENSION WIRE HORIZONTALLY THROUGH HOLES AT THE TOP OF THE CHAIN LINK FENCE OR ATTACH WITH HOG RINGS, WIRE FASTENERS, STAPLES, OR PREFORMED CLIPS AT 5-FOOT (MAXIMUM) CENTERS.
5. STRETCH FILTER FABRIC AND SECURELY FASTEN TO THE FENCE WITH WIRE FASTENERS, STAPLES, OR PREFORMED CLIPS. EXTEND THE FABRIC A MINIMUM OF 33 INCHES ABOVE THE GROUND SURFACE. ENSURE THE FILTER FABRIC WIDTH IS A MINIMUM OF 42 INCHES.
6. FASTEN THE FILTER FABRIC SECURELY TO THE CHAIN LINK FENCE WITH FASTENERS, STAPLES, OR PREFORMED CLIPS SPACED HORIZONTALLY 24 INCHES AT THE GROUND SURFACE, TOP, AND MIDSECTION.
7. WHEN ATTACHING TWO SUPER SILT FENCES, THE OVERLAP JOINING METHOD SHOULD BE USED. SEE FIGURE C-PCM-04-5.8 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2.
8. PLACE THE FABRIC TOE IN THE BOTTOM OF THE TRENCH, THEN BACKFILL AND COMPACT THE TRENCH.
9. REMOVE AND PROPERLY DISPOSE OF SUPER SILT FENCE WHEN THE DISTURBED AREA TRIBUTARY TO THE FENCE IS PERMANENTLY STABILIZED.

1 ED-02 SUPER SILT FENCE
NOT TO SCALE



PLAN



CROSS-SECTION OF SANDBAG DIKE

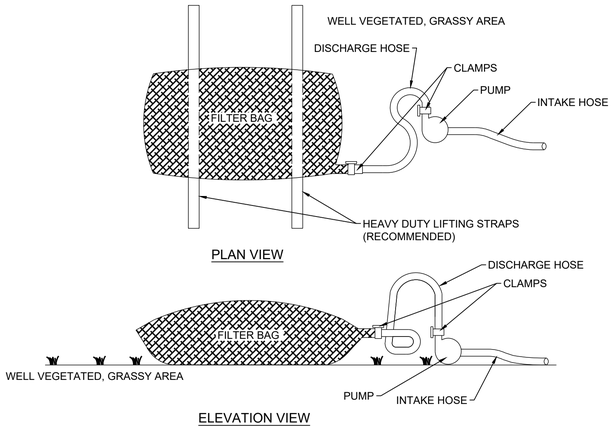
SECTION A-A

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

PUMP-AROUND DIVERSION PRACTICE

v1.1 SOURCE: VA DRC 2004 C-ENV-08-1

2 ED-02 PUMP-AROUND DIVERSION
NOT TO SCALE



PLAN VIEW

ELEVATION VIEW

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

FILTER BAG

v1.1 SOURCE: PADEP 2012 C-SCM-10-4

PUMPED WATER FILTER BAG NOTES ON PROPER USE:

- USE LOW-VOLUME FILTER BAGS MADE FROM NON-WOVEN MONOFILAMENT GEOTEXTILE MATERIAL SEWN WITH HIGH-STRENGTH, DOUBLE-STITCHED "J" TYPE SEAMS. USE FILTER BAGS CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
- USE HIGH-VOLUME FILTER BAGS MADE FROM WOVEN MONOFILAMENT THAT MEET THE REQUIREMENTS INCLUDED IN TABLE C-SCM-10-3.
- PROVIDE A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES. REPLACE FILTER BAGS WHEN THEY BECOME HALF FULL OF SEDIMENT. KEEP SPARE BAGS AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. PLACE BAGS ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.
- LOCATE BAGS IN A WELL-VEGETATED (GRASSY) AREA AND DISCHARGE ONTO STABLE, EROSION-RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, PROVIDE A GEOTEXTILE UNDERLAYMENT AND FLOW PATH. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. DO NOT PLACE BAGS ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.
- NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. INSTALL SILT FENCE (BMP C-PCM-04) OR COMPOST FILTER SOCK (BMP C-PCM-05) BELOW BAGS LOCATED WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE A GRASSY AREA IS NOT AVAILABLE.

Table C-SCM-10-3 Material Specifications for Pumped Water Filter Bag

Property	Test Method	Minimum Standard
Avg. Wide Width Strength	ASTM D-4884	60 lb/in
Grab Tensile	ASTM D-4632	205 lb
Puncture	ASTM D-4833	110 lb
Mullen Burst	ASTM D-3786	350 psi
UV Resistance	ASTM D-4355	70%
AOS % Retained	ASTM D-4751	80 Sieve

3 ED-02 FILTER BAG
NOT TO SCALE

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
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SEAL:

EROSION AND SEDIMENT CONTROL DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-07
SCALE: N/A
SHEET: 45 OF 55

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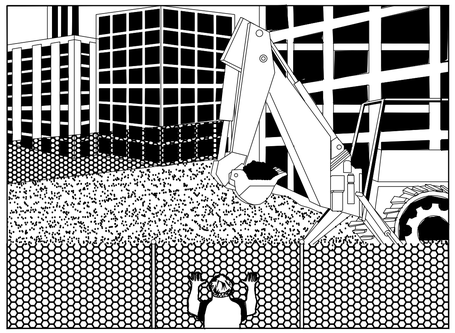
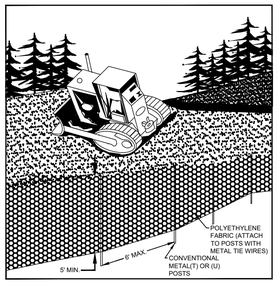
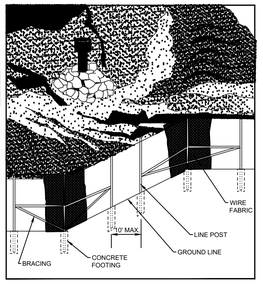


PERSPECTIVE VIEW



PERSPECTIVE VIEW
PLASTIC FENCE



PERSPECTIVE VIEW
METAL FENCE

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

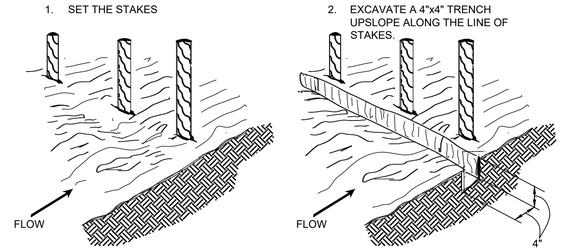
SAFETY FENCE

SOURCE: VDOT STDS., VA DSWC, CONWED PLASTICS

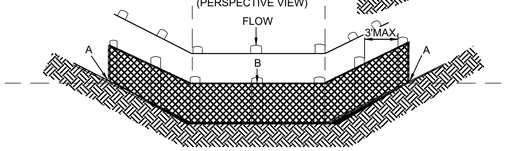
C-PCM-01-1

SAFETY FENCE CONSTRUCTION SPECIFICATIONS:

1. SAFETY FENCES SHOULD BE INSTALLED BEFORE THE EROSION AND SEDIMENT CONTROL MEASURE BECOMES ACCESSIBLE.
2. THE POLYETHYLENE WEB OF THE PLASTIC SAFETY FENCE SHOULD BE SECURED TO A CONVENTIONAL METAL "T" OR "U" POST DRIVEN INTO THE GROUND TO A MINIMUM DEPTH OF 18 INCHES; POSTS SHOULD BE SPACED AT 6-FOOT CENTERS. SEE PERSPECTIVE VIEW ON FIGURE C-PCM-01-1 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2.
3. THE METAL SAFETY FENCE SHOULD BE INSTALLED AS PER THE FOLLOWING PROCEDURE:
   - 3.a. LINE POSTS SHOULD BE PLACED AT INTERVALS OF 10 FEET MEASURED FROM CENTER TO CENTER OF ADJACENT POSTS. IN DETERMINING THE POST SPACING, MEASUREMENT WILL BE MADE PARALLEL WITH THE GROUND SURFACE. SEE PERSPECTIVE VIEW ON FIGURE C-PCM-01-1 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2.
   - 3.b. POSTS WILL BE SET IN CONCRETE AND BACKFILLED OR ANCHORED BY OTHER ACCEPTABLE MEANS.
   - 3.c. POSTS SET IN THE TOPS OF CONCRETE WALLS SHOULD BE GROUTED INTO PRE-FORMED HOLES TO A MINIMUM DEPTH OF 12 INCHES.
   - 3.d. ALL CORNER POSTS, END POSTS, GATE POSTS, AND PULL POSTS SHOULD BE EMBEDDED, BRACED, AND TRUSSED AS SHOWN IN THE "STANDARD FENCE - CHAIN LINK" DETAIL FOUND IN THE LATEST VERSION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE STANDARDS.
   - 3.e. FENCING FABRIC SHOULD NOT BE STRETCHED UNTIL AT LEAST 4 DAYS AFTER THE POSTS ARE GROUTED INTO WALLS OR 14 DAYS AFTER THE POSTS ARE SET INTO CONCRETE.
   - 3.f. THE FABRIC SHOULD BE STRETCHED TAUT AND SECURELY FASTENED BY MEANS OF TIE CLIPS TO THE POSTS AT INTERVALS NOT EXCEEDING 15 INCHES AND TO THE TOP RAILS OR TENSION WIRES AT INTERVALS NOT EXCEEDING 2 FEET. CARE SHOULD BE TAKEN TO EQUALIZE THE TENSION ON EACH SIDE OF EACH POST.
4. APPLICABLE WARNING SIGNS NOTING HAZARDOUS CONDITIONS MUST BE INSTALLED IMMEDIATELY UPON INSTALLATION OF SAFETY FENCE.
5. SEE TABLE C-PCM-01-1 "PHYSICAL PROPERTIES OF PLASTIC SAFETY FENCE" IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2



SHEET FLOW INSTALLATION
(PERSPECTIVE VIEW)



POINTS A SHOULD BE HIGHER THAN POINT B.

DRAINAGEWAY INSTALLATION
(FRONT ELEVATION)

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

CONSTRUCTION OF SILT FENCE WITHOUT WIRE SUPPORT

SOURCE: ADAPTED FROM STRAW & FAB. BARRIERS, SHERWOOD & WYANT

C-PCM-04-2B

INSTALLATION FOR STANDARD SILT FENCE:

1. INSTALL SILT FENCE (AFTER TRENCHING) A MINIMUM HEIGHT OF 18 INCHES ABOVE THE ORIGINAL GROUND SURFACE FOR STANDARD SILT FENCE.
2. TURN THE FENCE UPHILL AT 45-DEGREE ANGLES AT THE END OF EACH FENCE RUN TO PREVENT RUN-AROUND BYPASS.
3. WHERE SILT FENCE CANNOT BE INSTALLED ALONG THE CONTOUR, J-HOOKS SHOULD BE USED AT THE END OF EACH FENCE RUN.
4. PURCHASE THE FILTER FABRIC IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS.
5. AT FABRIC ENDS, WRAP BOTH ENDS AROUND THE SUPPORT STAKE AND STAPLE (SEE FIGURE C-PCM-04-2 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2). IF THE FABRIC COMES ALREADY ATTACHED TO THE STAKES, HOLD THE END STAKES TOGETHER WHILE THE FABRIC IS WRAPPED AROUND THE STAKES AT LEAST ONE REVOLUTION (360 DEGREES) BEFORE DRIVING THE STAKES.
6. EXCAVATE A TRENCH APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ON THE UPSLOPE SIDE OF THE PROPOSED LOCATION OF THE MEASURE.
7. WHEN WIRE SUPPORT IS USED (REINFORCED SILT FENCE), STANDARD-STRENGTH FILTER FABRIC MAY BE USED. FOR THIS TYPE OF INSTALLATION, PLACE POSTS A MAXIMUM OF 10 FEET APART (SEE FIGURE C-PCM-04-3 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2). FASTEN THE WIRE MESH FENCE SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES, OR HOG RINGS. EXTEND THE WIRE INTO THE TRENCH A MINIMUM OF 2 INCHES AND DO NOT EXTEND MORE THAN 34 INCHES ABOVE THE ORIGINAL GROUND SURFACE. STAPLE OR WIRE THE STANDARD-STRENGTH FABRIC TO THE WIRE FENCE AND EXTEND 8 INCHES OF THE FABRIC INTO THE TRENCH. DO NOT STAPLE THE FABRIC TO EXISTING TREES.
8. WHEN WIRE SUPPORT IS NOT USED (STANDARD SILT FENCE OR HIGH-PERFORMANCE SILT FENCE), USE EXTRA-STRENGTH FILTER FABRIC. PLACE POSTS FOR THIS TYPE OF FABRIC A MAXIMUM OF 6 FEET APART (SEE FIGURE C-PCM-04-3 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2). FASTEN THE FILTER FABRIC SECURELY TO THE UPSLOPE SIDES OF THE POSTS USING 1-INCH-LONG (MINIMUM) HEAVY-DUTY WIRE STAPLES OR TIE WIRES AND EXTEND 8 INCHES OF THE FABRIC INTO THE TRENCH. THIS METHOD OF INSTALLATION IS MORE COMMONPLACE THAN THE USE OF THE REINFORCED SILT FENCE. DO NOT STAPLE THE FABRIC TO EXISTING TREES.
9. WHEN ATTACHING TWO SILT FENCES, FIRST PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL. DRIVE BOTH POSTS A MINIMUM OF 18 INCHES INTO THE GROUND AND BURY THE FLAP IN A TRENCH.
10. IF A SILT FENCE IS TO BE CONSTRUCTED ACROSS A DITCH LINE OR SWALE, ENSURE THE MEASURE IS OF SUFFICIENT LENGTH TO ELIMINATE END-FLOW, AND THE PLAN CONFIGURATION RESEMBLES AN ARC OR HORSESHOE WITH THE ENDS ORIENTED UPSLOPE (SEE FIGURE C-PCM-04-3 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2). USE EXTRA-STRENGTH FILTER FABRIC FOR THIS APPLICATION WITH A MAXIMUM 3-FOOT SPACING OF POSTS.
11. DRIVE STAKES A MINIMUM OF 18 INCHES BELOW GROUND SURFACE.
12. BACKFILL AND COMPACT THE 4-INCH BY 4-INCH TRENCH WITH SOIL OVER THE FILTER FABRIC.
13. REMOVE THE SILT FENCE WHEN THE FENCE HAS SERVED ITS USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

1 DE-03 SAFETY FENCE
NOT TO SCALE

2 DE-03 SILT FENCE
NOT TO SCALE

NOT FOR CONSTRUCTION

REVISIONS BY	DATE	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: __BA__ DATE: 10/2025
APPROVED BY: __BA__ DATE: 10/2025

SEAL:

EROSION AND SEDIMENT CONTROL DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-08
SCALE: N/A
SHEET: 46 OF 55

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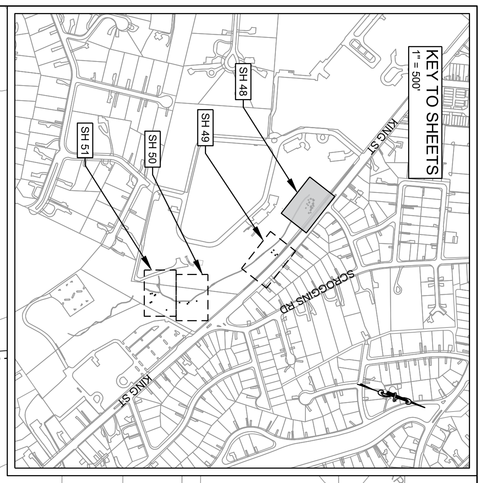

MIX - SEE PLANT SCHEDULE SHEET PM-03

1 - LT
1 - AR
3 - LB
1 - IO
2 - HV

1 - IO
1 - AS
6 - KL
1 - RP

1 - LT
1 - AS
3 - HV

2 - HV
1 - IO

1 - AR
1 - AS
1 - IV
1 - AN

3 - KL
8 - LB
1 - AN
2 - RP

1 - IO
1 - IV
1 - UA
1 - PS
1 - HV

KING ST

EX. 4' DIRT TRAIL

EX. CONC. WALK

MATCH LINE - SEE SHEET 48

SOURCE DATA INFORMATION
H.D. = NAD83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

DRAWING: PP-01
SCALE: 1:10
SHEET: 47 OF 55

PLANTING PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

SEAL:

ALEXANDRIA PROJECT NO.:	23086
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REVISIONS

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301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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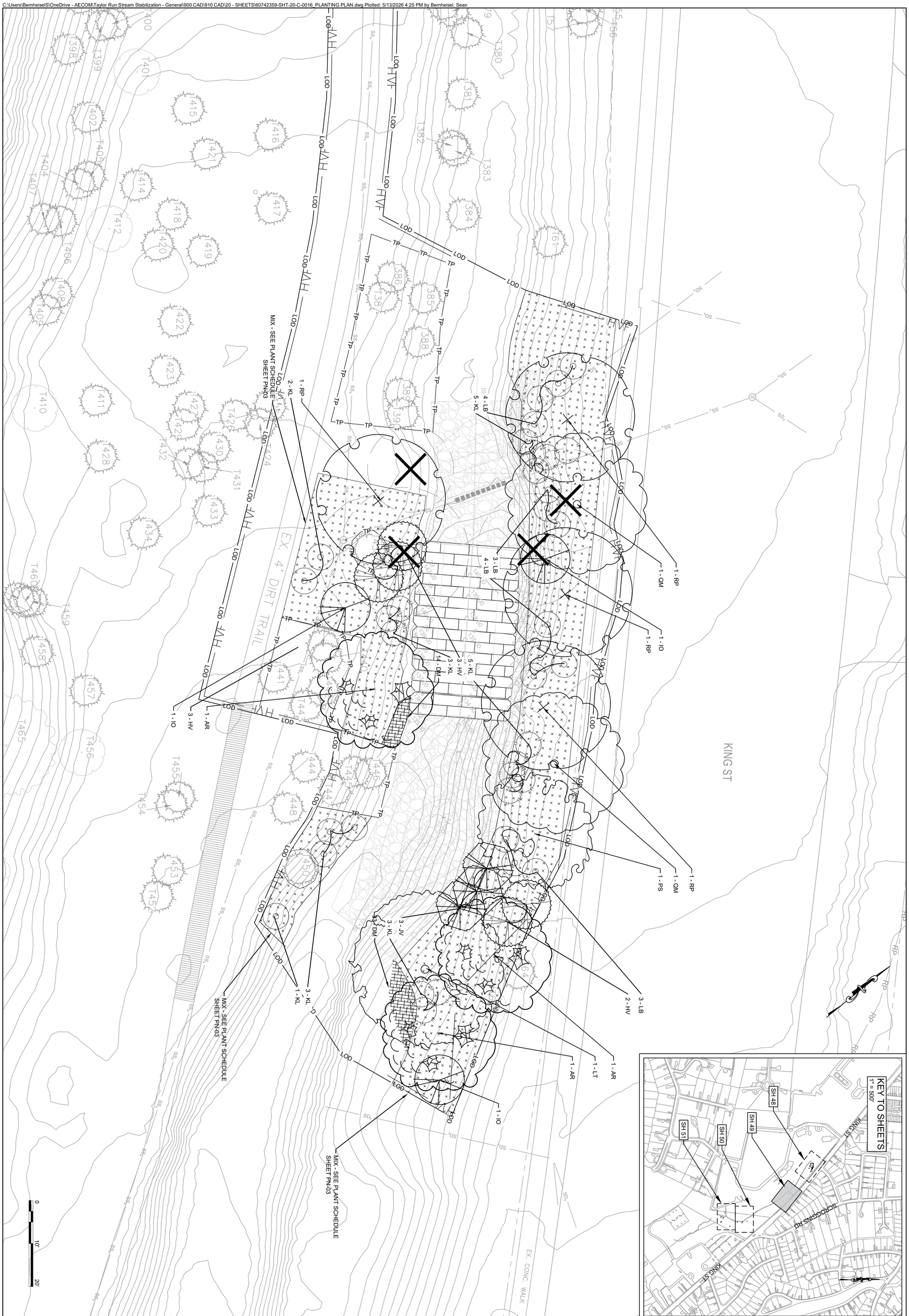

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DRAWING: PP-02
SCALE: 1:10
SHEET: 48 OF 55

PLANTING PLAN

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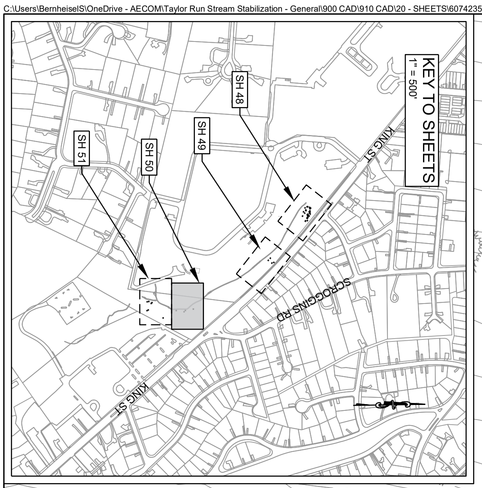

MATCH LINE - SEE SHEET 16

MIX - SEE PLANT SCHEDULE SHEET PN-03

MIX - SEE PLANT SCHEDULE SHEET PN-03

4' DIRT TRAIL

3 - LB
1 - PS
4 - LB
1 - IO
4 - KL
2 - HV
1 - AR
10 - DM
3 - LB
1 - RP
3 - HV
1 - AR
1 - JV

LOD
HVE
TP
RP
SS

0
10'
20'

NOT FOR CONSTRUCTION

DRAWING: PP-03
SCALE: 1:10
SHEET: 49 OF 55

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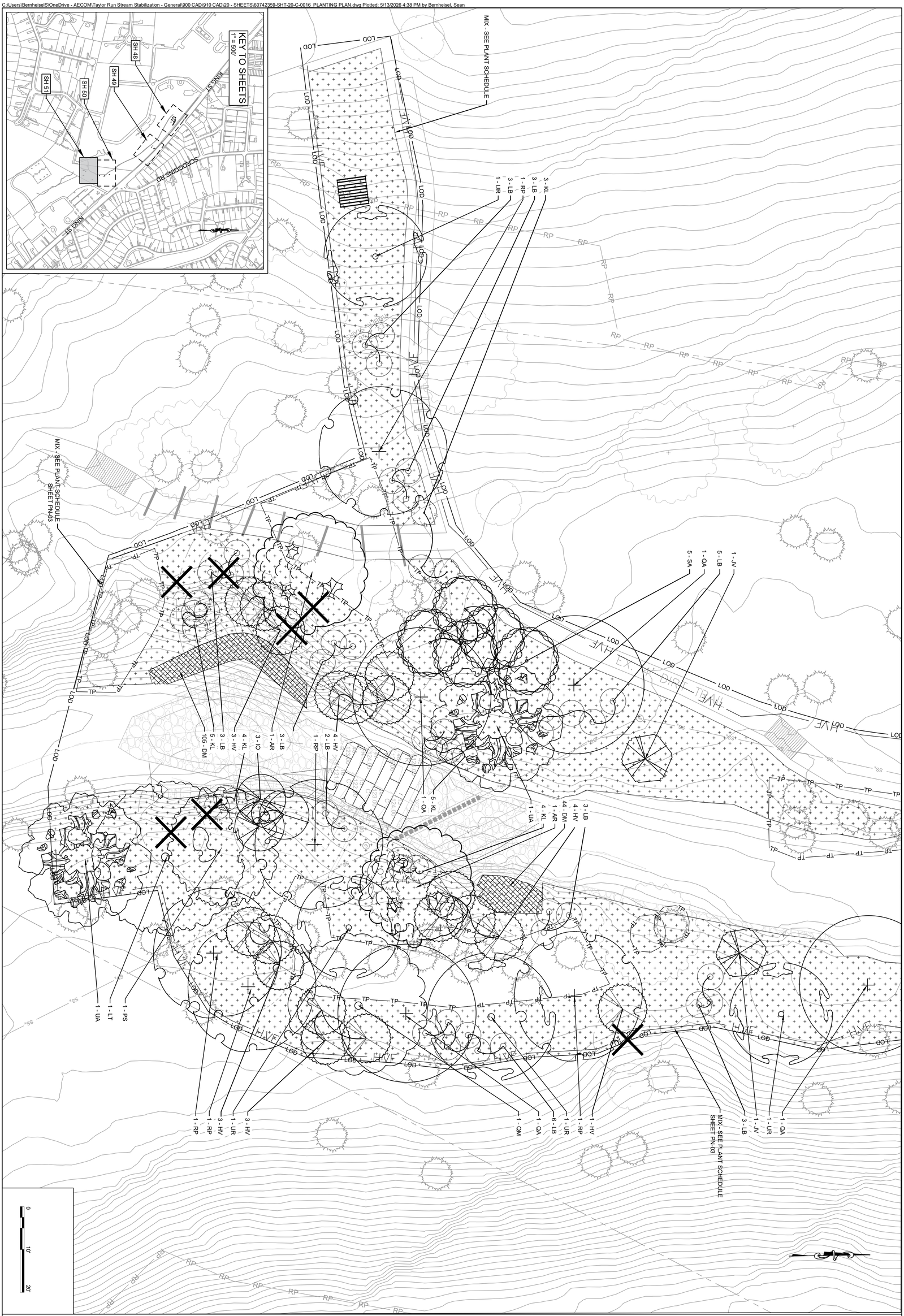

NOT FOR CONSTRUCTION

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SCALE: 1:10
SHEET: 50 OF 55

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(301) 250-2934

SEAL:

ALEXANDRIA PROJECT NO.:	23086
DATE OF PLAN ISSUANCE:	
CONSULTANT PROJECT ID.:	60742359
DESIGNED BY:	SB, TN DATE: 10/2025
DRAWN BY:	SB, TN DATE: 10/2025
CHECKED BY:	BA DATE: 10/2025
APPROVED BY:	BA DATE: 10/2025

REVISIONS

DATE	BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

CITY OF ALEXANDRIA VIRGINIA

PLANTING SPECIFICATIONS

1. PLAN DETAILS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE.
2. THE SUPPLIER OF ALL SEEDS AND/OR VEGETATION SHALL CERTIFY THAT THE ORIGIN OF THE SEEDS FROM WHICH THE PLANTS OR SEEDS WERE PRODUCED IS FROMHARDINESS ZONES 6 AND 7, FROM THE EASTERN OR CENTRAL PORTIONS OF THE U.S., PRIOR TO PLANTING.
3. ANY NURSERY SUPPLYING THE STOCK SHALL PROVIDE A CURRENT NURSERY INSPECTION CERTIFICATE FROM THE STATE DEPARTMENT OF AGRICULTURE, OR PROVIDE AT LEAST THIRTY DAYS ADVANCE NOTICE FOR THE CITY TO INSPECT THE PLANT SOURCE AREAS AT THE CITY'S DISCRETION. ANY SUCH INSPECTION IS NOT DEEMED APPROVAL OF THE PLANT MATERIALS.
4. ALL PLANTS SHALL BE SET STRAIGHT, OR PLUMB.
5. PLANTING SHALL ONLY BE PERMITTED BETWEEN SEPTEMBER 30 AND MARCH 30. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN. SEEDING SHALL BE COMPLETED DURING MARCH THROUGH MAY OR SEPTEMBER THROUGH NOVEMBER. MATTED STREAM BANK AREAS SHALL BE SEEDED IMMEDIATELY UPON REACHING FINAL GRADE. THESE TIME LIMITS MAY NOT BE MODIFIED UNLESS APPROVED BY THE CITY IN ADVANCE WITH THE RISK OF SURVIVAL BORNE SOLELY BY THE CONTRACTOR.
6. PLANTING HOLES FOR BARE ROOT TREES SHALL BE 1-2" DEEPER THAN THE ROOT COLLAR (I.E. 1-2" DEEPER THAN THEY WERE GROWING IN THE NURSERY). BARE ROOT SEEDLINGS (IF REQUIRED) SHALL BE INSTALLED WITH THE USE OF A "SHARPSHOOTER SHOVEL", AS DEPICTED WITHIN THESE PLANS. THE PLANTING HOLE SHALL BE LARGE ENOUGH TO AVOID THE NEED FOR ROOT TRIMMING WHERE EVER POSSIBLE. NO J-ROOTS (SEE PLANTING DETAILS) SHALL BE ALLOWED; IT IS EXTREMELY CRITICAL THIS BE ADHERED TO FOR EVERGREENS. BARE ROOT STOCK SHALL BE PLANTED WITH THEIR ROOT-COLLAR 1 TO 2 INCHES DEEPER THAN THE ADJACENT SOIL ELEVATION, USING ADJACENT SOIL TO CREATE A HUMMOCK OR MOUND THAT THE SEEDLING IS SET WITHIN.
7. PLANTING HOLES FOR CONTAINER GROWN PLANTS SHALL BE ONE FOOT (1') DEEP PLUS THE CONTAINER DEPTH IN WHICH THE PLANT HAS BEEN GROWN AND TWO FEET (2') WIDER THAN CONTAINER.
8. BACKFILL THE PLANTING HOLES WITH THE IN-SITU SOIL MATERIALS REMOVED FOR PLANTING AFTER REMOVING ALL STONES, ROOTS, AND OTHER DEBRIS GREATER THAN 1-1/2" IN DIAMETER.
9. FOLLOWING THE BACKFILLING, WATER TO THE POINT OF SOIL SATURATION (IF NOT PLANTED IN THE "WET") AND TAMP TO COMPACT THE BACKFILL MIXTURE. ADD EXISTING SOIL TO BRING THE FINAL GRADE IN THE PLANTING HOLE TO THE SURROUNDING SOIL SURFACE. RAKE THE UNUSED EXISTING SOIL OUTSIDE THE PLANTING HOLES, TAKING CARE NOT TO MOUND THE SOIL OR TO SIGNIFICANTLY ALTER THE EXISTING GRADES AND THEN PLACE MULCH (MIN. 2" THICK) ATOP ENTIRE PLANTING HOLE (EXCEPT THAT NO MULCH IS REQUIRED FOR EMERGENT PLANTINGS). THE PLANTING HOLE AREAS MUST NOT BE DEPRESSED BELOW THE SURROUNDING SOIL SURFACE ELEVATIONS. SAID AREAS SHALL BE SLIGHTLY RAISED (2-3"), RELATIVE TO THE SOIL SURFACE.
10. AS INDICATED IN THE PLANT LIST, THE SHRUBS THAT ARE SPECIFIED AS CONTAINER GROWN SPECIMENS SHALL BE BETWEEN 15" AND 18" IN HEIGHT. THEY SHALL BE HEALTHY, VIGOROUS, WELL ROOTED AND ESTABLISHED IN THE PLANTING CONTAINER IN WHICH THEY ARE GROWING. A CONTAINER SHRUB SHALL BE IN THAT CONTAINER A SUFFICIENT TIME SUCH THAT FIBROUS ROOTS ARE FORMED SO THE SHAPE WILL REMAIN AND THE MEDIUM WILL HOLD TOGETHER WHEN REMOVED FROM THE CONTAINER (REFER TO AMERICAN STANDARD FOR NURSERY STOCK).
11. DO NOT REMOVE PLANTS FROM CONTAINERS UNTIL IMMEDIATELY BEFORE PLANTING. EXAMINE THE ROOTS TO SEE IF THEY ARE POT BOUND. CAREFULLY SEPARATE ANY POT BOUND OR CRAMPED ROOTS AND SPREAD THEM OUT WHEN PLACING THE PLANT SO THAT THE ROOTS CAN GROW WITHOUT FURTHER CONSTRUCTION OF THE ROOT BALL.
12. AS RECOMMENDED BY THE CONTRACTOR AND APPROVED BY ENGINEER, THE CONTRACTOR SHALL WATER THE PLANTS AS NEEDED DURING THE CARE AND REPLACEMENT PERIOD OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST.
13. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING NON- SURVIVING TREES AND SHRUBS DURING THE CARE AND REPLACEMENT PERIOD (12 MONTHS, UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS) OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST, AS REQUIRED BY THE TERMS OF THE SURVIVAL WARRANTY SPECIFIED HEREIN AND/OR IN CONTRACT DOCUMENTS. THE SPECIFICATIONS FOR THE REPLACED PLANTS SHALL BE THOSE PROVIDED IN THE PLANT LIST.
14. REFER TO APPLICABLE SKETCHES WITHIN THIS PLAN SET FOR ADDITIONAL GUIDANCE ON PLANTING REQUIREMENTS.
15. INVASIVE AND NOXIOUS WEEDS SHALL BE REMOVED BY HAND WITH LOCALIZED APPLICATIONS OF RODEO OR (APPROVED EQUAL SUITABLE FOR USE AROUND AQUATIC ENVIRONMENTS) WHERE NECESSARY.
16. ALL BARE ROOT SEEDLINGS SHALL BE TREATED WITH ROOT DIP ABSORBENT POLYMERS AND MYCORRHIZAL ROOT DIP INOCULATES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. SAID ROOT DIP SHALL BE MYCORTREE™ ROOT DIP OR APPROVED EQUAL.

SEEDING SPECIFICATIONS

1. SEED SHALL HAVE BEEN COLLECTED THE SAME YEAR OF SEEDING. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
2. THE SPECIFIED SEED SHALL BE BROADCAST IN AREAS SPECIFIED ON THE PLANTING PLAN. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8TH OF AN INCH BY THE USE OF A HAND RAKE.
3. THE LANDSCAPE CONTRACTOR SHALL INSPECT THE AREAS AND CONDITIONS UNDER WHICH THE SEEDING WORK IS TO BE PERFORMED PRIOR TO COMMENCING WORK. IF CONDITIONS ARE DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK, HE/SHE SHALL NOTIFY THE OWNER'S REPRESENTATIVE VERBALLY AND IN WRITING AND POSTPONE COMMENCING WORK UNTIL THE UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
4. PRIOR TO SEEDING, THE TOP SOIL SHALL BE RAKED SMOOTH AND CLEARED OF ALL STONES LARGER THAN 5" AND TRASH, DEBRIS, BRANCHES AND OTHER MATTER DETRIMENTAL TO THE SUCCESS OF SEEDING.
5. MULCH SHALL BE STRAW CAN BE SUBSTITUTED IF APPLIED AT A RATE SPECIFIED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1992.
6. CARE SHOULD BE EXERCISED TO INSURE UNIFORM SEED COVERAGE IS OBTAINED. SEED SHALL BE APPLIED AT THE RATE SPECIFIED ON THE PLANTING SCHEDULE.
7. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8 OF AN INCH BY THE USE OF A CULTIPACTOR, YORK RAKE, OR HAND RAKE. PLANTING AND SEEDING SURVIVAL WARRANTY

PLANTING AND SEEDING SURVIVAL WARRANTY

1. LANDSCAPE CONTRACTOR SHALL GUARANTEE A MINIMUM SURVIVAL RATE OF EACH VEGETATION SPECIES AFTER TWELVE (12) MONTHS OF 85% FOR B&B, CONTAINER GROWN, AND TUBLINGS, AND 60% FOR BARE ROOT AND TUBER STOCK.
2. IF SURVIVAL RATES ARE LESS THAN THE ABOVE WARRANTY RATES, THEN LANDSCAPE CONTRACTOR SHALL REPLACE THE QUANTITY OF DEAD PLANTS WITHIN THE NEXT PLANTING WINDOW (SEPTEMBER 30 THROUGH MARCH 30, EXCLUDING FROZEN GROUND PERIODS) FOLLOWING THE END OF THE APPLICABLE WARRANTY PERIOD. PRODUCT HANDLING, STORAGE, AND DELIVERY

PRODUCT HANDLING, STORAGE, AND DELIVERY

1. HANDLE PLANTS AT ALL TIMES SO THAT ROOTS OR BALLS ARE ADEQUATELY PROTECTED FROM BREAKAGE OF BALLS, FROM SUN AND DRYING WINDS. PLANTS WITH DRIED OUT TOPS OR ROOTS SHALL BE REJECTED.
2. ALL PLANT MATERIALS SHALL BE STORED AND DELIVERED IN SUCH A FASHION AND FOR TIME INTERVALS CONSISTENT WITH SOUND SILVICULTURAL PRACTICES.
3. PLANT MATERIAL WILL BE TRANSPORTED FROM THE NURSERY TO THE PLANTING AREAS BY SUCH MEANS AS TO AVOID WIND DAMAGE, OVER-CROWDING, OR OTHER MECHANISMS BY WHICH PHYSICAL DAMAGE MAY RESULT TO THE PLANTS.
4. PLANT MATERIAL MAY BE RANDOMLY INSPECTED BY THE CITY/DESIGN TEAM UPON ARRIVAL AT EACH PLANTING AREA AND DURING PLANTING ACTIVITIES. MATERIAL FOUND TO BE UNACCEPTABLE WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO SUPPLY REPLACEMENT MATERIAL WITHIN 1-WEEK). UNACCEPTABLE MATERIAL IS TO BE DEFINED AS THE FOLLOWING:
   (A) PLANTS WITH BENT TRUNKS OR MULTIPLE LEADERS, UNLESS CHARACTERISTICS FOR THE SPECIES;
   (B) PLANTS WITH DISEASED TRUNKS, STEMS, OR LEAVES;
   (C) PLANTS WITH PEST-INFESTED TRUNKS, STEMS, OR LEAVES;
   (D) PLANTS OF INSUFFICIENT SIZE (LESS THAN A SPECIFIED HEIGHT);
   (E) PLANTS OF THE WRONG SPECIES/SUB-SPECIES;
   (F) PLANTS HAVING ROOT GIRDLING IN THE CONTAINER; UNLESS OTHERWISE APPROVED BY THE CITY/DESIGN TEAM. JUSTIFICATION FOR USE OF TENTATIVELY REJECTED MATERIAL MAY BE PRESENTED TO THE CITY/DESIGN TEAM

CITY STANDARD LANDSCAPE NOTES

1. THE PROPERTY OWNER AND/OR APPLICANT, SPECIFIER, CONTRACTOR AND INSTALLER OF PLANT MATERIAL ARE RESPONSIBLE FOR UNDERSTANDING AND ADHERING TO THE STANDARDS SET FORTH IN THE MOST RECENT VERSION OF THE CITY OF ALEXANDRIA LANDSCAPE GUIDELINES AND APPLICABLE CONDITIONS OF APPROVAL. ALL QUESTIONS REGARDING APPLICATION OF, OR ADHERENCE TO, THE STANDARDS AND/OR CONDITIONS OF APPROVAL SHALL BE DIRECTED TO THE CITY PRIOR TO COMMENCEMENT OF DEMOLITION, CONSTRUCTION, OR ANY LAND DISTURBING ACTIVITY.
2. THE CITY-APPROVED CITY-APPROVED LANDSCAPE PLAN SUBMISSION, INCLUDING PLANT SCHEDULE, NOTES AND DETAILS SHALL BE THE DOCUMENT USED FOR INSTALLATION PURPOSES AND ALL PROCEDURES SET FORTH IN THE LANDSCAPE GUIDELINES MUST BE FOLLOWED.
3. THE CONTRACTOR CONTRACTOR SHALL NOT INTERFERE WITH ANY TREE PROTECTION MEASURES OR IMPACT ANY EXISTING VEGETATION IDENTIFIED TO BE PRESERVED PER THE APPROVED TREE AND VEGETATION PROTECTION PLAN.
4. ANY CHANGES, ALTERATIONS OR MODIFICATIONS TO THE SITE CONDITIONS THAT AFFECT VEGETATION PROTECTION ZONES WILL REQUIRE AN AMENDMENT TO THE APPROVED TREE AND VEGETATION PROTECTION PLAN AND/OR DETAILS.
5. INSTALLATION OF PLANT MATERIAL MAY ONLY OCCUR DURING THE PLANTING SEASONS IDENTIFIED IN THE LANDSCAPE GUIDELINES.
6. IN LIEU OF MORE STRENUOUS SPECIFICATIONS, ALL LANDSCAPE RELATED WORK SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CURRENT AND MOST UP-TO-DATE EDITION (AT TIME OF CONSTRUCTION) OF LANDSCAPE SPECIFICATION GUIDELINES AS PRODUCED BY THE LANDSCAPE CONTRACTORS ASSOCIATION OF MARYLAND, DISTRICT OF COLUMBIA AND VIRGINIA; GAITHERSBURG, MARYLAND.
7. SUBSTITUTIONS TO THE APPROVED PLANT MATERIAL SHALL NOT OCCUR UNTIL WRITTEN APPROVAL IS PROVIDED BY THE CITY..
8. MAINTENANCE FOR THIS PROJECT SHALL BE PERFORMED BY THE OWNER, APPLICANT, SUCCESSOR(S) AND/OR ASSIGN(S) IN PERPETUITY AND IN COMPLIANCE WITH CITY OF ALEXANDRIA LANDSCAPE GUIDELINES AND AS CONDITIONED BY PROJECT APPROVAL, AS APPLICABLE.

CITY STANDARD TREE PRESERVATION NOTES

1. VEGETATION DESIGNATED FOR PROTECTION AND/OR PRESERVATION SHALL CONTINUOUSLY RECEIVE AN ENHANCED LEVEL OF MAINTENANCE THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.
   1.1. MAINTENANCE SHALL BE PRO-ACTIVE.
   1.2. MAINTENANCE OPERATIONS SHALL AGGRESSIVELY MONITOR THE HEALTH, GROWTH AND VIGOR OF VEGETATION AND PRESCRIBE SELECTIVE PRUNING, REMOVAL OF VOLUNTEER AND/OR INVASIVE SPECIES, WATERING, FERTILIZATION AND INSTALLATION OF MULCH/TOPDRESSING.
   1.3. WHEN PRESERVED VEGETATION IS LOCATED ON CITY PROPERTY, MAINTENANCE SHALL BE PERFORMED TO THE SATISFACTION OF THE CITY.
2. AREAS DESIGNATED FOR PROTECTION AND/OR PRESERVATION OF VEGETATION SHALL NOT BE ENTERED OR UTILIZED (APPROVED MAINTENANCE PROCEDURES AND WATERING EXCEPTED) THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. PROHIBITED ITEMS/ACTIVITIES INCLUDE, BUT ARE NOT LIMITED TO:
   2.1. MODIFYING SITE TOPOGRAPHY IN A MANNER THAT DIRECTLY OR INDIRECTLY ALTERS EXISTING SITE DRAINAGE WITHIN PROTECTION ZONE INCLUDING TRENCHING OR GRADING OPERATIONS AND PLACING, STORING OR STOCKPILING SOIL OR CONSTRUCTION RELATED SUPPLIES.
   2.2. FELLING AND STORING VEGETATION. III. INCINERATING MATERIALS WITHIN OR IN CLOSE PROXIMITY.
   2.3. OPERATING MACHINERY OR EQUIPMENT, INCLUDING VEHICLE/EQUIPMENT PARKING OR STORAGE.
   2.4. TEMPORARY OR PERMANENT UTILITY CONSTRUCTION, PAVING OR IMPERVIOUS SURFACE INSTALLATION.
   2.5. DISPOSAL OF DEBRIS OR CHEMICALS.
   2.6. TEMPORARY FACILITIES OR OCCUPATION BY WORK FORCE.
   2.7. STORAGE OF CONSTRUCTION MATERIALS OR WASTE.

CITY OF ALEXANDRIA, VIRGINIA

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

NOT FOR CONSTRUCTION

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.:	23086
DATE OF PLAN ISSUANCE:	
CONSULTANT PROJECT ID.:	60742359
DESIGNED BY: SB, TN	DATE: 10/2025
DRAWN BY: SB, TN	DATE: 10/2025
CHECKED BY: BA	DATE: 10/2025
APPROVED BY: BA	DATE: 10/2025

SEAL:

PLANTING DETAILS

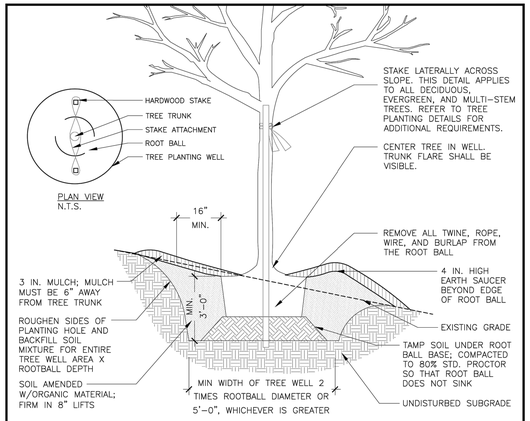
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: PN-01

SCALE: N/A

SHEET: 51 OF 55

C:\Users\BernheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0017 PLANTING DETAILS.dwg Plotted: 5/13/2026 4:38 PM by Bernheisel, Sean



NOTES

1. AT PLANTING PRUNE ONLY CROSSING LIMBS, BROKEN OR DEAD BRANCHES, AND ANY BRANCHES THAT POSE A HAZARD TO PEDESTRIANS PER ANSI STANDARDS A300. DO NOT PRUNE INTO OLD WOOD ON EVERGREENS.
2. CONTRACTOR SHALL MAXIMIZE EXCAVATED AREA FOR TREE WELL WITHOUT ADVERSELY IMPACTING ADJACENT SITE FEATURES
4. UNLESS OTHERWISE DIRECTED BY PROJECT SPECIFICATIONS OR CITY STAFF, SOIL MIXTURE SHALL BE CLEANED OF DEBRIS, AND MEET SOIL COMPOSITION REQUIREMENTS OF CITY OF ALEXANDRIA LANDSCAPE GUIDELINES.
5. TREES PLANTED WITHOUT THE TRUNK FLARE VISIBLE WILL BE REJECTED.
6. REFER TO STAKING DETAILS.
7. ALL PLANTS MUST BE WATERED AT INSTALLATION AND AGAIN WITHIN 48-HOURS OF INSTALLATION, ESTABLISHMENT WATERING SHALL BE PER THE SPECIFICATIONS ON ALL DETAILS.

A TREE PLANTING ON SLOPE
NOT TO SCALE

OF UPDATES: 01 LAST UPDATED: 12/02/2019

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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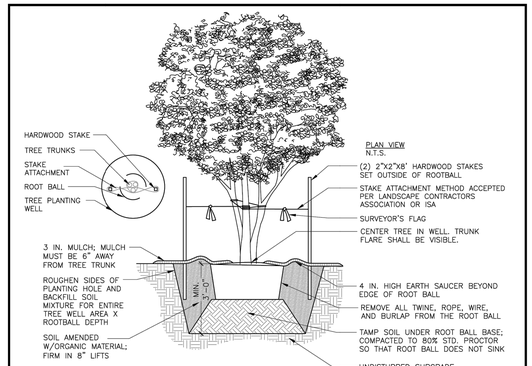
Source: CITY OF ALEXANDRIA	TREE PLANTING ON SLOPE
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 004



NOTES

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7. STAKES WILL BE INSTALLED USING ARBORICULTURE PRACTICES, TREES SHALL STAND PLUM AFTER STAKING.
8. INSTALLATION WILL INCLUDE THE REMOVAL OF ALL STAKING MATERIAL ONE YEAR AFTER INSTALLATION. ANY HOLES LEFT BY REMOVING STAKING SHALL BE FILLED WITH APPROVED TOPSOIL / BACKFILL MIXTURE.
9. CONTRACTOR SHALL USE GALVANIZED EYESCREW & TURNBUCKLE INSTEAD OF ARBOR TIE ONLY FOR TREES OF SIGNIFICANT SIZE AS DIRECTED BY CITY STAFF.

A MULTI-STEM TREE PLANTING
NOT TO SCALE

OF UPDATES: 01 LAST UPDATED: 12/02/2019

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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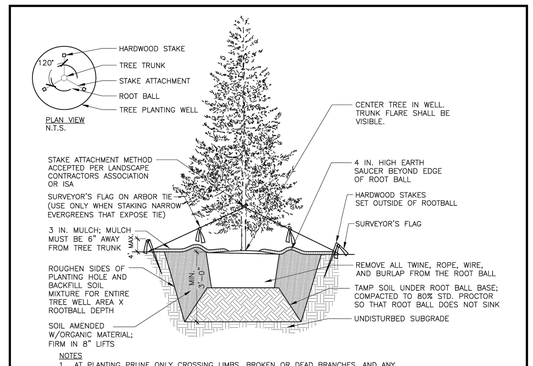
Source: CITY OF ALEXANDRIA	MULTI-STEM TREE PLANTING
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 003



NOTES

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8. INSTALLATION WILL INCLUDE THE REMOVAL OF ALL STAKING MATERIAL ONE YEAR AFTER INSTALLATION. ANY HOLES LEFT BY REMOVING STAKING SHALL BE FILLED WITH APPROVED TOPSOIL / BACKFILL MIXTURE.
9. CONTRACTOR SHALL USE GALVANIZED EYESCREW & TURNBUCKLE INSTEAD OF ARBOR TIE ONLY FOR TREES OF SIGNIFICANT SIZE AS DIRECTED BY CITY STAFF.

A EVERGREEN TREE PLANTING
NOT TO SCALE

OF UPDATES: 01 LAST UPDATED: 12/02/2019

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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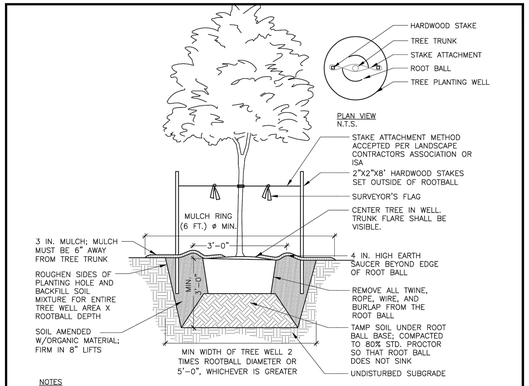
Source: CITY OF ALEXANDRIA	EVERGREEN TREE PLANTING
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 002



NOTES

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10. CONTRACTOR SHALL USE GALVANIZED EYESCREW & TURNBUCKLE INSTEAD OF ARBOR TIE ONLY FOR TREES OF SIGNIFICANT SIZE AS DIRECTED BY CITY STAFF.

A DECIDUOUS TREE PLANTING
NOT TO SCALE

OF UPDATES: 01 LAST UPDATED: 12/02/2019

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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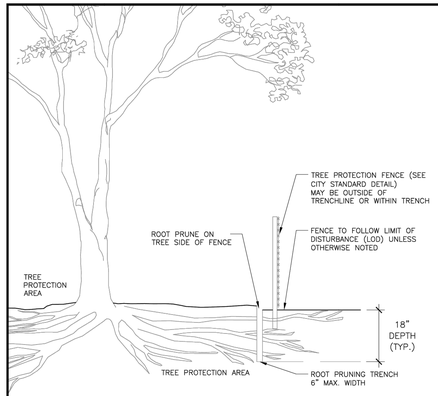
Source: CITY OF ALEXANDRIA	DECIDUOUS TREE PLANTING
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 001



NOTES

1. ROOT PRUNING SHALL BE DONE WITH TRENCHER OR VIBRATORYPLOW TO DEPTH OF 18". ROOTS OVER 1.5" IN DIAMETER SHALL HAVE A CLEAN CUT MADE BY A CLEAN SAW ON THE SURFACE OF THE ROOT, WHICH IS STILL ATTACHED TO THE TREE. DO NOT BREAK OR CHOP. DO NOT PAINT THE CUT ROOT END. IF EXCAVATION IS FOR INSTALLATION OF UNDERGROUND UTILITIES, LEAVE THE ROOT INTACT AND THREAD THE LINES UNDERNEATH.
2. ROOT PRUNING SHALL TAKE PLACE PRIOR TO ANY CLEARING AND GRADING. EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING AND SHALL BE APPROVED BY CITY STAFF.
3. ROOT PRUNING SHALL BE CONDUCTED WITH THE SUPERVISION OF AN ISA CERTIFIED ARBORIST. CERTIFICATION SHALL BE PROVIDED TO THE CITY UPON COMPLETION.
4. BACKFILL THE ROOT-PRUNING TRENCH WITH APPROVED LOOSE TOPSOIL MIX AND TOP WITH 3-4" BARK MULCH AND MARK LOCATION FOR FUTURE REFERENCE. SILT FENCE MAY BE INSTALLED IN TRENCH PRIOR TO BACKFILLING AS LONG AS THE TRENCH IS NOT OPEN FOR LONGER THAN 48 HOURS WITHOUT WATERING.
5. ROOT PRUNING WORK SHALL NOT BE DONE WHEN MORE THAN THE TOP 1 INCH OF SOIL IS FROZEN. ROOT PRUNING SHALL NOT BE UNDERTAKEN WHEN THE SOIL IS WET AND CONDITIONS ARE MUDDY.
6. CITY OF ALEXANDRIA STAFF SHALL BE NOTIFIED 72 HOURS PRIOR TO TRENCHING AND WHEN ALL ROOT PRUNING AND TREE PROTECTION FENCE INSTALLATION IS COMPLETE.

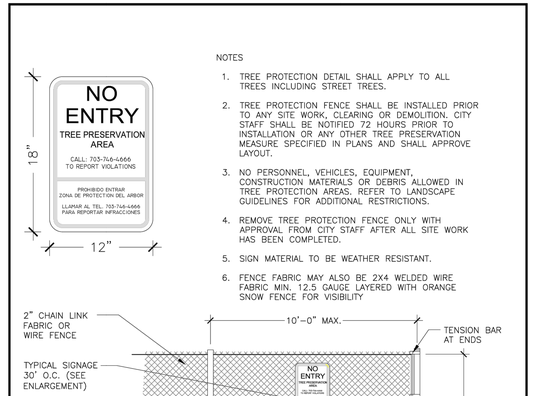
A ROOT PRUNING
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

NOTE: THE INFORMATION SHOWN HEREIN THIS DOCUMENT IS FOR GENERAL GUIDANCE ONLY AND IS NOT INTENTED FOR CONSTRUCTION PURPOSES. ITS USE SHALL NOT RELIEVE THE DESIGN PROFESSIONAL OR CONTRACTOR OF ANY LEGAL RESPONSIBILITY.

Source: CITY OF ALEXANDRIA	ROOT PRUNING
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 015



NOTES

1. TREE PROTECTION DETAIL SHALL APPLY TO ALL TREES INCLUDING STREET TREES.
2. TREE PROTECTION FENCE SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION. CITY STAFF SHALL BE NOTIFIED 72 HOURS PRIOR TO INSTALLATION OR ANY OTHER TREE PRESERVATION MEASURE SPECIFIED IN PLANS AND SHALL APPROVE LAYOUT.
3. NO PERSONNEL, VEHICLES, EQUIPMENT, CONSTRUCTION MATERIALS OR DEBRIS ALLOWED IN TREE PROTECTION AREAS. REFER TO LANDSCAPE GUIDELINES FOR ADDITIONAL RESTRICTIONS.
4. REMOVE TREE PROTECTION FENCE ONLY WITH APPROVAL FROM CITY STAFF AFTER ALL SITE WORK HAS BEEN COMPLETED.
5. SIGN MATERIAL TO BE WEATHER RESISTANT.
6. FENCE FABRIC MAY ALSO BE 2X4 WELDED WIRE FABRIC MIN. 12.5 GAUGE LAYERED WITH ORANGE SNOW FENCE FOR VISIBILITY

A TREE PROTECTION FENCE
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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Source: CITY OF ALEXANDRIA	TREE PROTECTION FENCE
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 014

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

NOT FOR CONSTRUCTION

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

PLANTING DETAILS

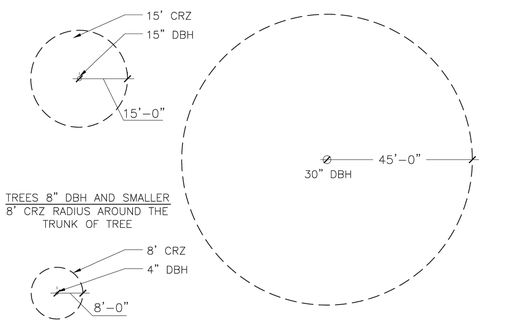
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: PN-02

SCALE: N/A

SHEET: 52 OF 55

C:\Users\BennheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0017 PLANTING DETAILS.dwg Plotted: 5/13/2026 4:38 PM by Bennheisel, Sean



NOTES:

1. GRAPHICALLY, THE CRITICAL ROOT ZONE (CRZ) IS REPRESENTED AS A CIRCULAR REGION MEASURED OUTWARD FROM A TREE TRUNK REPRESENTING THE AREA OF ROOTS THAT MUST BE MAINTAINED OR PROTECTED FOR THE TREE'S SURVIVAL.
2. PLOT ACCURATE TRUNK LOCATIONS OF ALL TREES GREATER THAN 2" DIAMETER AT 54" ABOVE GRADE AND/OR TREE STANDS WITHIN DEVELOPMENT AREAS ON ALL PLANS FOR THE PROJECT AND DELINEATE THEIR ESTIMATED CRITICAL ROOT ZONE.
3. PLOT ACCURATE TRUNK LOCATIONS OF OFFSITE TREES WHICH WILL HAVE THEIR CRZ AFFECTED BY DEVELOPMENT AND DELINEATE THEIR ESTIMATED CRITICAL ROOT ZONE.

A TREE PROTECTION DETAIL FOR DETERMINING CRITICAL ROOT ZONE
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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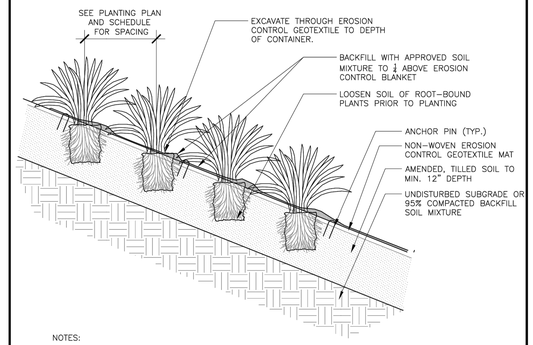
Source: CITY OF ALEXANDRIA	CRITICAL ROOT ZONE	
Approved by: COA	Date drawn: 01/01/19	LD 013
1 OF 1		



NOTES:

1. REFER TO CITY OF ALEXANDRIA GROUND COVER AND PERENNIAL PLANTING DETAIL AND NOTES FOR ADDITIONAL SPECIFICATIONS.
2. ALL PLANTS MUST BE WATERED TWICE, ONCE AT INSTALLATION AND AGAIN WITHIN 48 HOURS OF INSTALLATION PER THE SPECIFICATIONS.

A GROUNDCOVER & PERENNIAL PLANTING ON SLOPE
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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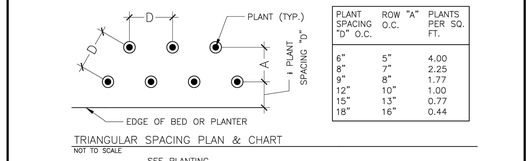
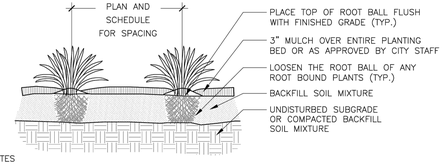
Source: CITY OF ALEXANDRIA	GROUNDCOVER & PERENNIAL PLANTING ON SLOPE	
Approved by: COA	Date drawn: 01/01/19	LD 012
1 OF 1		



PLANT SPACING "D" O.C.	ROW "A" O.C.	PLANTS PER SQ. FT.
6"	5"	4.00
8"	7"	2.25
9"	8"	1.77
12"	10"	1.00
15"	13"	0.77
18"	16"	0.44

TRIANGULAR SPACING PLAN & CHART
NOT TO SCALE



NOTES

1. PLANTING WELL / TRENCH SHALL BE DUG TO ALLOW TOP OF ROOT BALL TO SET FLUSH WITH EXISTING GRADE.
2. SET PLANTS IN ERECT, STABLE, AND UNIFORM POSITIONS. ORIENT BEST FACE OF PLANT TO BE MOST VISIBLE.
3. GROUND COVERS AND PERENNIALS SHALL BE INSTALLED WITH TRIANGULAR SPACING. REFER TO CHART.
4. UNLESS OTHERWISE DIRECTED BY PROJECT SPECIFICATIONS OR CITY STAFF, SOIL MIXTURE SHALL BE CLEANED OF DEBRIS, AND MEET SOIL COMPOSITION REQUIREMENTS OF CITY OF ALEXANDRIA LANDSCAPE GUIDELINES.
5. DO NOT PLACE MULCH IN CONTACT WITH STEM OR CROWN OF PLANTS.
6. ALL PLANTS MUST BE WATERED AT INSTALLATION AND AGAIN WITHIN 48–HOURS OF INSTALLATION, PER THE SPECIFICATIONS.

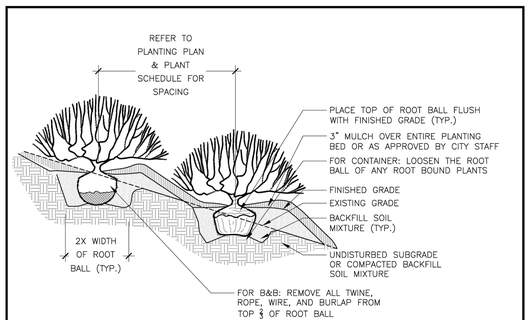
A GROUNDCOVER & PERENNIAL PLANTING
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

NOTE: THE INFORMATION SHOWN HEREIN THIS DOCUMENT IS FOR GENERAL GUIDANCE ONLY AND IS NOT INTENTED FOR CONSTRUCTION PURPOSES. ITS USE SHALL NOT RELIEVE THE DESIGN PROFESSIONAL OR CONTRACTOR OF ANY LEGAL RESPONSIBILITY.

Source: CITY OF ALEXANDRIA	GROUNDCOVER & PERENNIAL PLANTING	
Approved by: COA	Date drawn: 01/01/19	LD 011
1 OF 1		



NOTES

1. AT PLANTING, PRUNE ONLY BROKEN OR DEAD BRANCHES PER ANSI 300 STANDARD.
2. PLANTING WELL / TRENCH SHALL BE DUG TO ALLOW TOP OF ROOT BALL TO SET FLUSH WITH EXISTING GRADE.
3. SET PLANTS IN ERECT, STABLE, AND UNIFORM POSITIONS. ORIENT BEST FACE OF PLANT TO BE MOST VISIBLE.
4. UNLESS OTHERWISE DIRECTED BY PROJECT SPECIFICATIONS OR CITY STAFF, SOIL MIXTURE SHALL BE CLEANED OF DEBRIS, AND MEET SOIL COMPOSITION REQUIREMENTS OF CITY OF ALEXANDRIA LANDSCAPE GUIDELINES.
5. DO NOT PLACE MULCH IN CONTACT WITH STEM OF PLANTS.
6. ALL PLANTS MUST BE WATERED AT INSTALLATION AND AGAIN WITHIN 48–HOURS OF INSTALLATION, ESTABLISHMENT WATERING SHALL BE PER THE SPECIFICATIONS ON ALL DETAILS.

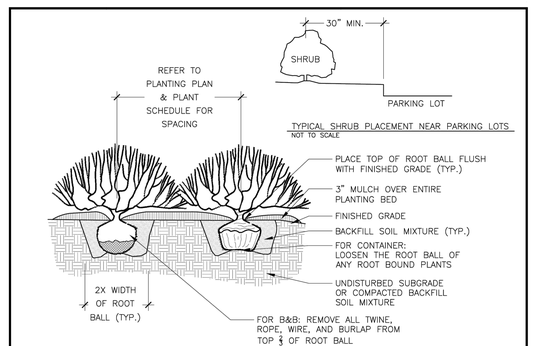
A SHRUB PLANTING ON SLOPE
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

NOTE: THE INFORMATION SHOWN HEREIN THIS DOCUMENT IS FOR GENERAL GUIDANCE ONLY AND IS NOT INTENTED FOR CONSTRUCTION PURPOSES. ITS USE SHALL NOT RELIEVE THE DESIGN PROFESSIONAL OR CONTRACTOR OF ANY LEGAL RESPONSIBILITY.

Source: CITY OF ALEXANDRIA	SHRUB PLANTING ON SLOPE	
Approved by: COA	Date drawn: 01/01/19	LD 010
1 OF 1		



TYPICAL SHRUB PLACEMENT NEAR PARKING LOTS
NOT TO SCALE

NOTES

1. AT PLANTING, PRUNE ONLY BROKEN OR DEAD BRANCHES PER ANSI 300 STANDARD.
2. PLANTING WELL / TRENCH SHALL BE DUG TO ALLOW TOP OF ROOT BALL TO SET FLUSH WITH EXISTING GRADE.
3. SET PLANTS IN ERECT, STABLE, AND UNIFORM POSITIONS. ORIENT BEST FACE OF PLANT TO BE MOST VISIBLE.
4. UNLESS OTHERWISE DIRECTED BY PROJECT SPECIFICATIONS OR CITY STAFF, SOIL MIXTURE SHALL BE CLEANED OF DEBRIS, AND MEET SOIL COMPOSITION REQUIREMENTS OF CITY OF ALEXANDRIA LANDSCAPE GUIDELINES.
5. DO NOT PLACE MULCH IN CONTACT WITH STEM OF PLANTS.
6. ALL PLANTS MUST BE WATERED AT INSTALLATION AND AGAIN WITHIN 48–HOURS OF INSTALLATION, ESTABLISHMENT WATERING SHALL BE PER THE SPECIFICATIONS ON ALL DETAILS.

A SHRUB PLANTING
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

NOTE: THE INFORMATION SHOWN HEREIN THIS DOCUMENT IS FOR GENERAL GUIDANCE ONLY AND IS NOT INTENTED FOR CONSTRUCTION PURPOSES. ITS USE SHALL NOT RELIEVE THE DESIGN PROFESSIONAL OR CONTRACTOR OF ANY LEGAL RESPONSIBILITY.

Source: CITY OF ALEXANDRIA	SHRUB PLANTING	
Approved by: COA	Date drawn: 01/01/19	LD 009
1 OF 1		

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	COMMENTS
Trees							
QM	3	*Quercus montana*	Chestnut oak	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
RP	13	*Robinia pseudoacacia*	Black locust	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
LT	3	*Liriodendron tulipifera*	Tulip poplar	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
IO	11	*Ilex opaca*	American Holly	8'-10' ht.	B&B	PER PLAN	Full, Symmetrical
JV	7	*Juniperus virginiana*	Eastern Red Cedar	8'-10' ht.	B&B	PER PLAN	Full, Symmetrical
PS	4	*Prunus serotina*	Black cherry	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
AN	2	*Acer negundo*	Box Elder	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
AR	9	*Acer rubrum*	Red maple	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
AS	3	*Acer saccharinum*	Silver maple	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
UR	4	*Ulmus rubra*	Slippery elm	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
QA	3	*Quercus alba*	White oak	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
SA	5	*Sassafras albidum*	Sassafras	3" Cal.	B&B	PER PLAN	Full, Symmetrical
UA	3	*Ulmus americana*	American elm	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
Understory							
LB	73	*Lindera benzoin*	Spicebush	24-36" ht.	Container	PER PLAN	Full
HV	36	*Hamamelis virginiana*	Witchhazel	24-36" ht.	Container	PER PLAN	Full
KL	51	*Kalmia latifolia*	Mountain Laurel	24-36" ht.	Container	PER PLAN	Full
DM	186	*Dryopteris marginalis*	Marginal Wood Fern	1 qt.	Container	18" O.C.	

KEY	AREA (ACRES)	MIX NAME	DISTRIBUTER
Seed Mix			
MIX	0.6	Shady Woodland Seed Mix	Prairie Moon Nursery

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

DATE	REVISIONS BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

PLANTING DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: PN-03
SCALE: N/A
SHEET: 53 OF 55

C:\Users\Bernheisel\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0017 PLANTING DETAILS.dwg Plotted: 5/13/2026 4:38 PM by Bernheisel, Sean

TAYLOR RUN
WATER QUALITY IMPACT ASSESSMENT

THIS PROJECT INVOLVES THE RESTORATION OF APPROXIMATELY 600 LINEAR FEET OF TAYLOR RUN. THE TOTAL DISTURBED AREA WILL BE ROUGHLY 73,949 SQUARE FEET (1.70 ACRES), 64,911 SQUARE FEET (1.49 ACRES) OF WHICH IS WITHIN THE RPA. THE PORTION OF THE DISTURBED AREA OUTSIDE OF THE RPA IS ONLY FOR CONSTRUCTION ACCESS AND STOCKPILE AREA AND IS CURRENTLY GRASSED AREA THAT WILL BE REESTABLISHED AS GRASS. THE PROJECT WILL TAKE PLACE ON THE PROPERTY OWNED BY THE CITY OF ALEXANDRIA. PROJECT WORK OF THE MAIN CHANNEL BEGINS AT THE DOWNSTREAM END OF A 72" CULVERT OUTFALL TO THE NORTHEAST OF CHINQUAPIN RECREATION CENTER ADJACENT TO KING STREET IN THE CITY OF ALEXANDRIA, VIRGINIA. THE STREAM FLOWS SOUTHEAST FOR APPROXIMATELY 2025 LINEAR FEET BEFORE REACHING AN EXISTING ROAD CROSSING (DRIVEWAY TO THE OVERFLOW PARKING LOT FOR THE FIRST BAPTIST CHURCH OF ALEXANDRIA). THE STREAM TIES INTO A TWIN 80" RCP CULVERT AT THIS CROSSING. THIS PROJECT INCLUDES DESIGN OF A 'MINIMAL STABILIZATION' APPROACH TO PROVIDE STREAM STABILIZATION REQUIRED TO PROTECT AT-RISK INFRASTRUCTURE ALONG TAYLOR RUN. THE PROJECT FOCUSES ON STABILIZATION OF THREE FOCUS AREAS WHICH INCLUDE AT-RISK INFRASTRUCTURE SUCH AS DEGRADED OUTFALLS, EXPOSED SANITARY SEWER MANHOLES, AND SANITARY SEWER STREAM CROSSINGS.

PURSUANT TO THE AMENDMENTS TO CITY OF ALEXANDRIA ARTICLE XIII ENVIRONMENTAL MANAGEMENT ORDINANCE, SECTION 13_114(D), A WATER QUALITY MAJOR IMPACT ASSESSMENT IS REQUIRED FOR DEVELOPMENT OR REDEVELOPMENT WITHIN RPAS THAT DISTURBS MORE THAN 5,000 SQUARE FEET. THE LOD FOR THIS PROJECT ENCOMPASSES 64,911 SQUARE FEET (1.49 ACRES) WITHIN THE RPA, HOWEVER WE BELIEVE THAT THE PROJECT (INFRASTRUCTURE STABILIZATION WITHIN TAYLOR RUN) MEETS THE INTENT OF THE SECTION. THE SUBMISSION REQUIREMENTS AND THE APPLICABLE PERFORMANCE CRITERIA NARRATIVE FOR THE WATER QUALITY MAJOR IMPACT ASSESSMENT ARE INCLUDED AS PART OF THESE CONSTRUCTION DRAWINGS (AS OUTLINED BELOW).

1. LOCATION AND DESCRIPTION OF EXISTING CHARACTERISTICS AND RPA COMPONENTS:

EXISTING SITE FEATURES ARE DEPICTED ON EC_01 THROUGH EC_04 AND IN THE PLAN VIEW ABOVE. THE RPA SURROUNDS TAYLOR RUN IN THE VICINITY OF THE PROJECT.

2. LOCATION AND NATURE OF PROPOSED ENCROACHMENT:

THE PROPOSED RPA ENCROACHMENT IS AS DEPICTED IN THE PLAN VIEW ON THIS SHEET. THE RPA AREA WITHIN THE LOD IS 64,911 SQUARE FEET (1.49 ACRES), WITH 27,333 SQUARE FEET (0.63 ACRES) OF PLANTABLE AREA (EXCLUDING THE STREAM CHANNEL, EXISTING SANITARY EASEMENTS, EXISTING TRAILS, AND THE OPEN GRASS FIELD AT THE UPPER END OF THE PROJECT). THE AREAS WITHIN THE SANITARY EASEMENTS, BOUNDING THE EXISTING TRIAL, AND THE OPEN FIELD WILL BE RE-SEEDED, BUT NOT PLANTED. A PORTION OF THE FIELD WILL BE SEEDED AS A POLLINATOR MEADOW, PROVIDING INCREASED HABITAT OVER THE EXISTING LOW CUT GRASS. NO NEW IMPERVIOUS AREA WILL RESULT FROM THIS PLAN; THE PROJECT PROPOSES TO PROVIDE NATURAL CHANNEL DESIGN STREAM RESTORATION ALONG APPROXIMATELY 535 LF OF TAYLOR RUN. CLEARING WITHIN THE RPA WILL BE LIMITED TO JUST THAT NECESSARY TO PERFORM THE RESTORATION AS WELL AS ACCESS TO THE SITE.

3. TYPE AND LOCATION OF ENHANCED VEGETATION AND/OR PROPOSED BMPS:

SEE PC_01 THROUGH PC_04 FOR THE PROPOSED REVEGETATION PLAN FOR THIS PROJECT, PN_03 FOR THE PROPOSED VEGETATION SCHEDULE, AND PN_01 FOR PLANTING NOTES AND DETAILS.THIS PROJECT WILL NOT RESULT IN ANY INCREASE IN IMPERVIOUS AREA, SWM BMPS ARE NEITHER REQUIRED NOR WARRANTED.

4. EXISTING VEGETATION WITHIN THE RPA BUFFER:

AS DEPICTED ON EC_01 THROUGH EC_04, THE EXISTING VEGETATION WITHIN THE RPA CONSISTS OF SMALL TO LARGE TREES IN A PRIMARY SUCCESSIONAL FOREST SETTING. THE 6" CALIPER AND LARGER TREES SURROUNDING THE EXISTING STREAM HAVE BEEN SURVEY_LOCATED AND LABELED BY SIZE/SPECIES. THE PROPOSED DESIGN MINIMIZES DISTURBANCE TO MATURE TREES TO THE MAXIMUM EXTENT PRACTICABLE, HOWEVER 43 TREES ARE SLATED FOR REMOVAL AS PART OF THIS PLAN, ALL OF WHICH ARE WITHIN THE RPA. SEE TI_01 THROUGH TI_04 FOR DETAILED TREE INFORMATION.

5. REVEGETATION PLAN:

SEE PP_01 THROUGH PP_04 FOR THE PROPOSED REVEGETATION PLAN FOR THIS PROJECT, PN_03 FOR THE PROPOSED VEGETATION SCHEDULE, AND PN_01 ANND PN_02 FOR PLANTING NOTES AND DETAILS. THE PLAN WILL USE A DIVERSE MIX OF NATIVE SPECIES, RELYING PREDOMINANTLY ON SMALLER STOCK TO AVOID DAMAGES DURING FLOOD EVENTS WHILE PROMOTING THE MOST RAPID ROOT DEVELOPMENT FOR SOIL STABILIZATION. THE LOST TREES WILL BE REPLACED BY A MIXTURE OF ONE_GALLON CONTAINERIZED TREES, 2" CALIPER TREES, SHRUBS, LIVE STAKES, AND NATIVE RIPARIAN SEED. THE PLANTING PLAN CALLS FOR SMALLER STOCK TO MINIMIZE DAMAGE BY OVERBANK FLOW EVENTS AND THE NEED FOR SUPPLEMENTAL WATERING, BUT ALSO INCLUDES A LARGER STOCK TO BE PLANTED IN UPLAND AREAS LESS PRONE TO DAMAGING FLOODING WITHIN THE LOD. THE SIZE AND SPECIES RECOMMENDED ARE BASED ON EXPERIENCE WITH SIMILAR PROJECTS THROUGHOUT THE REGION. IN ORDER TO MEET THE CITY DENSITY REQUIREMENTS, PLANTINGS WILL INCLUDE 55 OVERSTORY TREES, AND 360 SHRUBS ALONG VULNERABLE STREAM BANK AREAS. THIS MEETS THE CITY DENSITY REQUIREMENT OF: FOR EVERY 400 SQUARE-FOOT UNIT (20'X20') OR FRACTION THEREOF PLANT: ONE (1) CANOPY TREE @ 1½" - 2" CALIPER OR LARGE EVERGREEN @ 6' TWO (2) UNDERSTORY TREES @ ¾" - 1 ½" CALIPER OR EVERGREEN @ 4' OR ONE (1) UNDERSTORY TREE AND TWO (2) LARGE SHRUBS @ 3'-4' THREE (3) SMALL SHRUBS OR WOODY GROUNDCOVER @ 15" - 18".

6. DESCRIBE THE EXISTING TOPOGRAPHY, SOILS, HYDROLOGY, AND GEOLOGY OF THE SITE:

EXISTING TOPOGRAPHY WAS OBTAINED FROM FIELD_RUN SURVEY DATA BY WETLAND STUDIES AND SOLUTIONS AND RICE ASSOCIATES. THE PROJECT IS LOCATED WITHIN A RIPARIAN CORRIDOR, AND THE SITE IS DEFINED BY STEEP AND ERODED BANKS THAT WILL BE STABILIZED DURING CONSTRUCTION. IN CERTAIN PLACES, 3_ TO 10_FT_HIGH VERTICAL BANKS CURRENTLY THREATEN THE EXISTING WALKING PATH ALONG THE SOUTHERN BANK OF THE STREAM. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH MULTIPLE DESTABILIZED AND EXPOSED CROSSINGS WITHIN THE RESTORATION AREA. THE DOMINANT SOIL LOCATED WITHIN THE PROJECT AREA IS SASSAFRAS NEABSCO COMPLEX. THIS SOIL HAS MARGINAL DRAINAGE AND MEDIUM EROSION POTENTIAL. THE DRAINAGE AREA FOR THE RESTORATION REACH IS APPROXIMATELY 333 ACRES WITH 38% IMPERVIOUSNESS, MEASURED TO THE DOWNSTREAM EXTENT OF THE PROJECT.

7. DESCRIBE THE IMPACTS OF THE PROPOSED DEVELOPMENT OR REDEVELOPMENT ON TOPOGRAPHY, SOILS, HYDROLOGY, AND GEOLOGY ON THE SITE:

THIS PROJECT INVOLVES INFRASTRUCTURE STABILIZATION OF TAYLOR RUN. THE PROJECT WILL IMPACT TOPOGRAPHY ALONG THE STREAM CHANNEL BY FORTIFYING ERODED BANKS TO RESIST EROSION. THE PROPOSED PROJECT DOES NOT SIGNIFICANTLY AFFECT SITE GEOLOGY, AS NO MAJOR CUT OR FILL AREAS ARE REQUIRED.

8. DISTURBANCE OR REDUCTION OF WETLANDS AND JUSTIFICATION FOR SUCH ACTION:

THERE ARE NO PROPOSED IMPACTS TO JURISDICTIONAL WETLANDS.

9. DISRUPTIONS OR REDUCTIONS IN THE SUPPLY OF WATER TO WETLANDS, STREAMS, LAKES, RIVERS, OR OTHER BODIES:

NO DISTURBANCE OR REDUCTION IN THE SUPPLY OF WATER WILL OCCUR AS A RESULT OF THIS PROJECT.

10. DISRUPTIONS TO EXISTING HYDROLOGY, INCLUDING WETLAND AND STREAM PATTERNS:

THE EXISTING STREAM PATTERN OF TAYLOR RUN WILL REMAIN MORE OR LESS THE SAME AS EXISTING DUE TO THE LIMITED INTERVENTION OF THIS DESIGN.

11. SOURCE LOCATION AND DESCRIPTION OF PROPOSED FILL MATERIAL:

FOR GRADING OF THE INFRASTRUCTURE STABILIZATION, IN_SITU SOIL WILL BE USED AS FILL WHERE POSSIBLE. BORROW MATERIAL WILL BE USED FOR ADDITIONAL FILL AS NEEDED. BORROW MATERIAL SPECIFICATIONS WILL BE OUTLINED IN THE SPECIFICATION BOOK. WITHIN THE PROPOSED STREAM CHANNEL, CLASS I/II RIPRAP AND IMBRICATED STONE WILL BE PLACED PER PROPOSED PLAN DETAILS AND SPECIFICATIONS. THIS MATERIAL IS NECESSARY TO CREATE A STABLE, EROSION_RESISTANT STREAM BED.

12. LOCATIONS OF AND IMPACTS ON ADJACENT SHELLFISH BEDS, SUBMERGED AQUATIC VEGETATION, AND FISH SPAWNING AREAS:

NONE OF THESE ARE LOCATED WITHIN THE DISTURBED AREA OF THE PROJECT.

13. THE ESTIMATED PRE_ AND POST_DEVELOPMENT POLLUTANT LOADS IN RUNOFF:

THIS PROJECT IS NOT DESIGNED TO REDUCE POLLUTANT LOADINGS IN THE TAYLOR RUN WATERSHED. APPLICATION OF THE VIRGINIA RUNOFF REDUCTION METHOD SPREADSHEET FOR RE_DEVELOPMENT CONFIRMS COMPLIANCE WITH STATE STORMWATER REGULATIONS AND NO TP REMOVAL IS REQUIRED.

14. ESTIMATION OF PERCENT INCREASE IN IMPERVIOUS SURFACE:

THERE IS NO INCREASE IN IMPERVIOUS AREA PROPOSED IN THIS PROJECT.

15. PERCENT OF SITE TO BE CLEARED:

APPROXIMATELY 86% OF THIS SITE AREA WITHIN THE LIMITS OF DISTURBANCE BUT OUTSIDE OF THE STREAM ITSELF WILL BE CLEARED. THIS PERCENTAGE IS VERY HIGH DUE TO THE LOD BEING LIMITED TO ONLY THOSE AREAS NECESSARY FOR STREAM RESTORATION.

16. ANTICIPATED DURATION AND PHASING SCHEDULE OF THE CONSTRUCTION:

PROJECT CONSTRUCTION IS ANTICIPATED TO TAKE UP 6 MONTHS. PHASING IS PRIMARILY AT THE CONTRACTOR'S DISCRETION WITH THE EXCEPTION OF EROSION AND SEDIMENT CONTROL MEASURES AS NOTED IN THE SEQUENCE OF CONSTRUCTION PROVIDED ON THE PLANS.

17. LISTING OF ALL REQUISITE PERMITS:

PROJECT REQUIRES AUTHORIZATION BY U.S. ARMY CORPS (COE) NATIONWIDE PERMITS (#3 - MAINTENANCE, #13 - BANK STABILIZATION, #18 - MINOR DISCHARGES). IMPLEMENTATION WILL ALSO REQUIRE A CITY OF ALEXANDRIA SITE PLAN/GRADING PERMIT. VSMP REQUIREMENTS WILL BE MET THROUGH PROCUREMENT OF A CONSTRUCTION GENERAL PERMIT AND MAINTENANCE OF A SWPPP ON SITE.

18. PROPOSED EROSION AND SEDIMENT CONTROL MEASURES:

THE EROSION AND SEDIMENT CONTROL WILL INCLUDE A STABILIZED STONE CONSTRUCTION ENTRANCE WITH WASH RACK, PUMP_AROUND DIVERSIONS WITH SANDBAG DIKES, LOD FENCING, SILT FENCE WITH WIRE SUPPORT, TIMBER BRIDGE STREAM CROSSINGS, FILTER BAGS, AND TEMPORARY DECK MATTING HAUL ROAD. SITE DISTURBANCE SHALL BE LIMITED TO THE SECTION OF STREAM CHANNEL BEING STABILIZED THAT DAY. ALL TREE CLEARING IS TO OCCUR AT ONCE. STUMPS WILL BE LEFT TO MINIMIZE DISTURBANCE UNTIL GRADING COMMENCES. NO SECTION OF STREAM WILL BE LEFT UNSTABILIZED OVERNIGHT. ANY WORK AREA WILL BE ISOLATED FROM THE ACTIVE STREAM CHANNEL VIA PUMP_AROUND DIVERSION, WHICH WILL REMAIN UNTIL STABILIZATION IS COMPLETE.

19. PROPOSED STORMWATER MANAGEMENT SYSTEM:

STREAM AREAS WILL BE CONSTRUCTED IN THE DRY, PROTECTED BY A PUMP AROUND DIVERSION. SEDIMENT LADEN RUNOFF THAT ENTERS THE TEMPORARILY DRY WORK AREAS WILL BE PUMPED TO A FILTER BAG AND RELEASED DOWNSTREAM IN A NON-EROSIVE MANNER.

20. CREATION OF WETLAND TO REPLACE THOSE LOST:

THERE ARE NO PROPOSED IMPACTS TO JURISDICTIONAL WETLANDS.

21. MINIMIZING CUT AND FILL:

CUT MATERIAL WILL BE USED ON SITE TO THE GREATEST EXTENT PRACTICAL, FILLING EXISTING CHANNEL AREAS WHERE A SHIFT IN CHANNEL GEOMETRY IS PROPOSED. THE PROJECT HAS AN OVERALL NET FILL, AND CLEAN FILL WILL NEED TO BE IMPORTED ONTO THE SITE.

22. A SUPPLEMENTAL LANDSCAPING PLAN:

THE TAYLOR RUN STREAM RESTORATION PLAN INCLUDES A PLANTING PLAN (PP-01 THROUGH PP-04) WITH CORRESPONDING VEGETATION SCHEDULES (PN-03) AND PLANTING NOTES AND DETAILS (PN-01 AND PN-02). THESE SHEETS IDENTIFY THE DIVERSE NATIVE VEGETATION TO BE PLANTED WITHIN THE RPA.

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: __BA__ DATE: 10/2025
APPROVED BY: __BA__ DATE: 10/2025

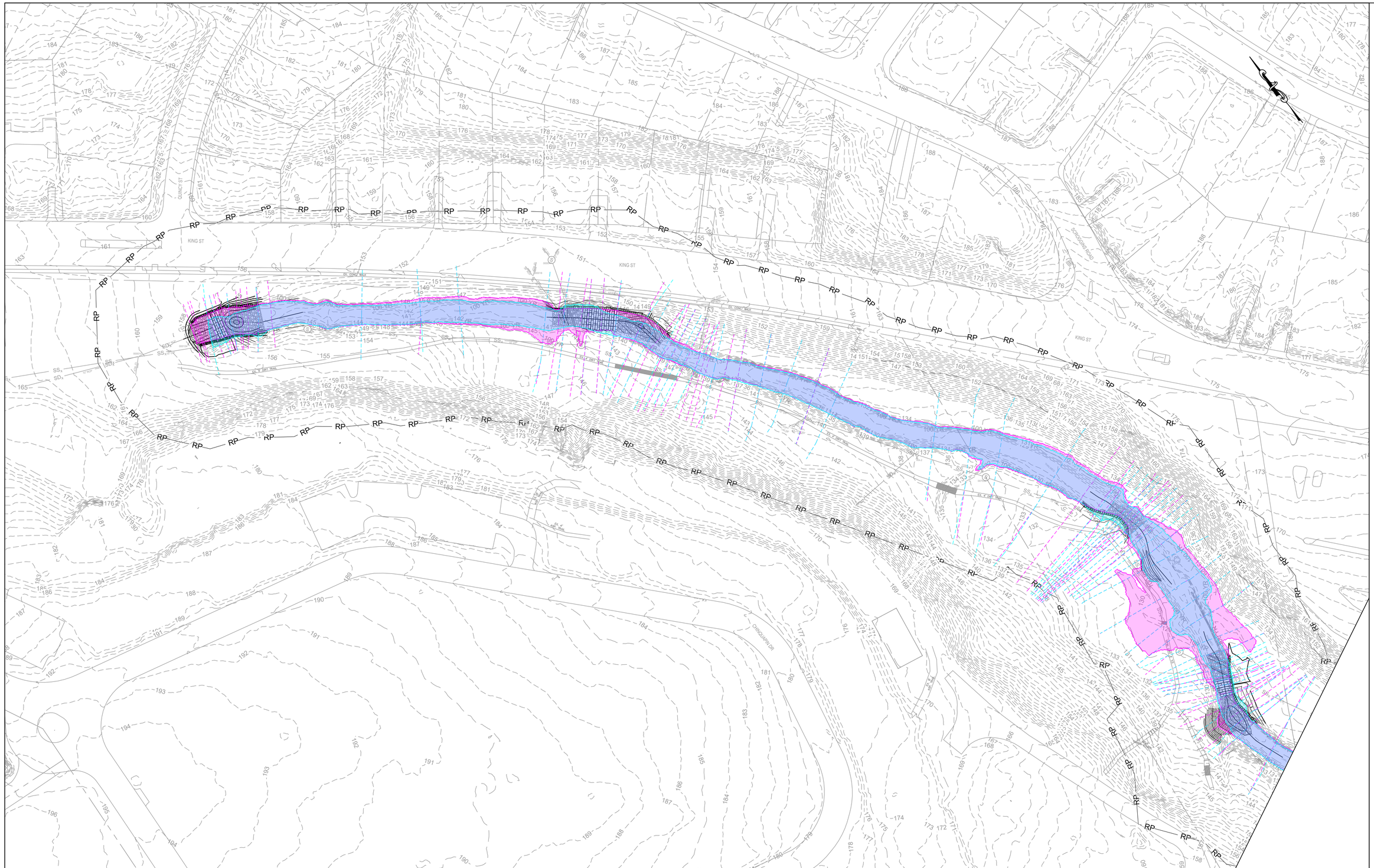
SEAL:

WATER QUALITY IMPACT ASSESSMENT

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: WQIA-01
SCALE: 1" = 60'
SHEET: 54 OF 55

C:\Users\BamhesielS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0019_WQIA.dwg Plotted: 5/13/2026 4:41 PM by Bamhesiel, Sean


KING ST
QUINCY ST
Chesapeake Dr
Scroggins Road
RP
EX. CONC. BOX
EX. 6' DIA. RCP
EX. 6' DIA. CMP
EX. 6' DIA. CMP
EX. 6' DIA. RCP
EX. 6' DIA. RCP
EX. 6' DIA. RC

Agenda

Meeting name Pre-Application Meeting	**Subject** JPA Planning and Discussion	**Attendees** See Attendee List Below
Meeting date December 12, 2025	**Time** 10:00 AM	
Location Microsoft Teams	**Project name** Task Order #7 (Taylor Run Stream Stabilization)	
AECOM project number 60742359	**Prepared by** AECOM	

Meeting Purpose: Discuss project details with USACE to agree on the appropriate permit pathway and identify all elements necessary for a complete JPA submission and timely approval for construction.

Welcome & Introductions

- **Introduce participants and roles**
- **Meeting Objectives**

Project Overview

- **Purpose & Need**
  - AECOM reviews the community meeting presentation for project background
    - Review of project goals
      - Protect infrastructure
      - Stabilize streambanks
      - Preserve trees and wetlands
      - Minimize LOD and impacts
- **Project History** (No previous permits received)
  - Originally designed as stream restoration project around 2018
    - Community engagement and fear of tree impacts resulted in shift to infrastructure stabilization
- **Project Approach, Size, and Location**
    - Review of different design areas and LOD
      - Total disturbed area is 1.6 acres; stream length approximately 600 non-continuous linear feet
      - Design Area 1
        - Undersized plunge pool
        - Failing wingwalls
        - Debris in channel
      - Design Area 2
        - Exposed sanitary pipe
        - Debris in channel
        - Largest vertical banks along reach

        - Failing wingwall
    - Design Area 3
        - Exposed sanitary manhole
        - Woody debris accumulation
        - Risk of sanitary sewer exposure
    - Design Area 4
        - Failing sheet pile wall
        - Exposed sanitary pipe and manhole
        - Root exposure and damage to significant maple tree

Permit Pathway Discussion

- **Jurisdictional Determination** (Final Report dated March 2020)
    - Discussion of wetland delineation timeline
        - ACOE does not require submission of PJD or AJD but will require a new delineation dated within the last five years
            - Ensure concurrence (i.e. reverification)
                - Get new data sheets and reissue report assuming no aquatic resources have changed
- **RTE/Cultural Resources** (No habitat or significant findings during wildlife observation surveys dated Aug 2019)
    - Anticipated TOYR Restrictions
        - ACOE does not coordinate with DWR but they coordinate with FWS
            - Northern long-eared bat will likely be flagged
                - May get a “may effect” determination if clearing during the summer season
                - If clearing during the summer is necessary AECOM could conduct nighttime survey
                    - ACOE will have to verify, but these surveys might not qualify for larger diameter trees
            - ACOE is the only permit clearing house
                - ACOE automatically forwards relevant information to other agencies
                - AECOM does not have to coordinate with other agencies separate from ACOE
    - Discussion of previous surveys and endangered species
        - IPaC and VCRIS map would be sufficient
        - If a specimen (such as small whorled pogonia) was a possibility onsite than a new survey would be required, but this is unlikely
- **Permit Pathway** anticipated NWP 3 or 13
    - NWPs set to expire March 2026
        - ACOE indicates these are set to be renewed
            - If construction is proceeding forward in March of 2027 then AECOM could submit prior to March 2026
            - If going to construction after, submission should wait until they are renewed
    - All four sewer crossings should be filed separately under NWP 3
    - Bank stabilization effort is all under one NWP

        - Boulder weir would likely be authorized separately under NWP 18 as it is not necessary for function of the preceding plunge pool according to the ACOE
            - Impact plates could have arrows that point out different types of work as opposed to totals on the sheet
    - **Mitigation Requirements** (if applicable)
        - Discussion of permitting limits
            - Two LOD areas for bank stabilization are considered separate impacts, so project would not be over the 500 LF of stream that would require a waiver
            - Other restriction is for bank hardening activities that exceed one cubic yard per running foot
        - Discussion of self-certification and authorization for discharges
            - NWP 13 does not appear to have mitigation requirements
            - AECOM is planning to discuss alternatives and how this is minimal approach in narrative to the ACOE
        - Discussion of plunge pool sizing
            - ACOE has no experience in relation to requirements of plunge pool sizes; this would be a question for DEQ
    - **Schedule for Permit Submission and Construction** (Early Spring 2026 and Spring/Summer 2027)
        - Plan to delay until new NWP are renewed in mid-March as construction will primarily be in summer 2027

USACE Feedback and Agreement

- **Timeline & Review Process**
    - Best to submit this after March of 2026
        - ACOE says typical review is 60 days or less; all depends on impacts
        - Will need to coordinate with BDHR if archaeology impacts which is 30 days
        - Would have to coordinate with VDHR (60 days) if abiding by time of year restrictions for tree removal
- **Additional Data Needs**
    - Will need to reverify wetland delineation
    - Need to pull cultural and RTE databases to ensure they’re still up to date
        - No onsite survey required at this time
    - Will need to have drawings that show impacts overlaid with project drawings
- **Pre-construction notifications and public notice requirements**
    - All NWP currently require PCMs but no public notices (could change with new NWPs)

Open Discussion/Questions

Action Items

Attendee List

Name	Department	Role on Project
Alex Haptemariam, PE, CFM	City of Alexandria DPI	City Managing Project Manager
Camille Liebnitzky, PE, ENV SP	City of Alexandria T&ES	City Sponsor Project Manager
Daniel Medina, PE	City of Alexandria DPI	DPI Technical Team
Jesse Maines, MPA, PMP	City of Alexandria T&ES	T&ES Technical Team
Brian Rahal, PE, CFM	City of Alexandria T&ES	T&ES Technical Team
Brandon Alderman, CERP	AECOM	Project Manager
Sean Bernheisel, PE	AECOM	Design Engineer
Tori Nelson, PE	AECOM	Design Engineer
Robert Howell	USACE	Regulatory Reviewer

Appendix H Stormwater Pollution Prevention Plan

Stormwater Pollution Prevention Plan (SWPPP)

For

Taylor Run Infrastructure Stabilization

Plan Number (DSP, DSUP, GRD)

3210 King Street
Alexandria, VA 22302

Prepared for:
City of Alexandria
Department of Project Implementation

Prepared by:
AECOM

Date
May 15, 2026

Infrastructure Stabilization
Plan #

Stormwater Pollution Prevention Plan (SWPPP)

In compliance with:

Stormwater Construction General Permit No. VAR10
Virginia Stormwater Management Program
(VSMP)

SWPPP Coordinator:

_____
(Signature)

_____
(Name of Person)

_____
(Title)

_____
(Company)

_____
(Phone #)

_____
(Cell Phone #/pager #)

“I certify under penalty of law that I have read and understand this document and that this document and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.” "I certify that the SWPPP coordinator named above is my duly authorized representative for this Project".

Signature: _____Date: _____
[Authorized Representative per Section III K 1 of the Permit, Appendix A]
Name: _____
Title: _____
Legal Entity: _____

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I. Introduction

A) Purpose

This Stormwater Pollution Prevention Plan (SWPPP) has been developed as a requirement of the Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater from Construction Activities (Permit), as defined in 9VAC 25-880 et seq. The purpose of this SWPPP is to:

a) Identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the construction site, and,

b) To describe and ensure the implementation of practices that will be used to reduce pollutants in stormwater discharges from the construction site and to assure compliance with the conditions of the Permit.

Implementation of the components of this SWPPP is required as a condition of the Permit (Appendix 1). The City of Alexandria, VA has been granted authority to administer the VSMP program and is therefore the regulatory authority overseeing the implementation of the SWPPP.

B) Background

The Permit has an expiration date of June 30, 2029. To obtain a Permit, operators must submit a Registration Statement (Appendix 2) and complete SWPPP to the City of Alexandria for review and approval prior to the commencement of any land disturbing activities.

The Permit authorizes discharge of stormwater until expiration of the permit once coverage is received or until a Notice of Termination (Appendix 5) is approved. The Permit also authorizes the discharge of stormwater from offsite support activities, provided that certain conditions are met as outlined in the Permit (Part I.A). Certain nonstormwater discharges are also authorized by the Permit, provided the conditions contained in the Permit (Part I.E) are met.

Within 30 days of meeting the conditions found in Part I.F, a Notice of Termination must be submitted to the City. Termination of authorizations to discharge shall be effective upon notification from the Virginia Department of Environmental Quality or within 60 days after submittal of a complete and accurate notice of termination, whichever occurs first.

C) Description of Construction Activity

The Taylor Run Stream Stabilization Design Project (Project) is located in the City of Alexandria, Virginia. The goal of the project is to implement a ‘minimal stabilization’

approach to protect at-risk infrastructure and provide stream stabilization along approximately 535 linear feet of non-continuous stream necessary to provide long-term infrastructure protection.

The project has been divided into four distinct areas, each addressing specific infrastructure vulnerabilities:

1. Upstream Stormwater Outfall: Currently in disrepair, surrounding stream banks are actively eroding, and outfall discharges into an undersized plunge pool causing excessive bed scour.
2. Sanitary Sewer Crossing 1 and Stormwater Outfall: Sanitary sewer crossing is at-risk of structural damage, adjacent stormwater outfall in deteriorating, contributing to eroding stream bed and banks.
3. Exposed Sanitary Sewer Manhole: Exposed sanitary sewer manhole is exposed and vulnerable to damage from storm flows or debris.
4. Sanitary Sewer Crossing 2 and Retaining Wall: The roots of a large Red Maple tree are exposed, putting the tree at risk of falling, stream bank and bed erosion has exposed an existing sanitary sewer crossing risking structural damage, and a nearby retaining wall is failing due to insufficient embedment depth. , etc.).

Project Areas 1 and 2 exhibit signs of outfall instability due to erosion. In Project Area 1, the right wingwall of the existing 72-inch reinforced concrete pipe (RCP) outfall will be replaced to match the specifications of the left wingwall, while the headwall and left wingwall will remain in place. In Project Area 2, the existing 36-inch RCP outfall will be replaced with a new cast-in-place endwall constructed in accordance with Virginia Department of Transportation (VDOT) standards. To mitigate future erosion during high-flow events, riprap will be installed around the headwall perimeter. The outfalls will feature a rock façade finish to match the gravity walls and blend with the natural environment.

Gravity walls will be installed throughout the design areas to stabilize channel banks. This solution was selected over other alternatives due to its minimal disturbance footprint, ease of material handling, and expedited construction timeline, which collectively reduce tree clearing and minimize disruption to park activities. Sheet piles will be installed along the toe of the gravity walls to prevent erosion-related undermining from risk of excessive bed scour. These were chosen over deeper wall embedment depths due to the scour potential at the base of the boulder cascades and cost considerations. Specific embedment depths and sheet pile locations will be provided in future submissions. All gravity walls will feature a rock façade finish to blend with the natural environment. A one-foot freeboard above the proposed 100-year water surface elevation has been incorporated, as the walls are not intended to meet FEMA flood wall or load bearing wall accreditation standards, which would require a three-foot freeboard. This

will allow for a shorter wall to be constructed in some areas reducing project costs. Due to the proximity of the high school and frequent community use, vertical gravity walls will be implemented in Project Areas 1, 2, and 4 to discourage climbing or sitting, thereby reducing the risk of injury and improving safety to the community. To further enhance safety, a railing will be constructed along the top of each gravity wall to prevent falls from elevated wall sections. This addition is especially important in areas with high pedestrian activity, such as near the high school, park trails, or sidewalks and bike lanes.
In Project Area 1, gravity walls will be constructed on both banks, tying into the existing headwall at elevation 155.0 feet. On the left bank, the wall will reach a maximum height of approximately 7.5 feet over 38 linear feet, then taper down to elevation 149.17 feet over 55 linear feet. On the right bank, the wall will maintain elevation 155.0 feet over 39 linear feet, with wall heights ranging from 7.5 to 10.5 feet. The tallest section, at 10.5 feet, spans 13.5 linear feet, followed by a tapering segment ranging from 3 to 9.05 feet over 52 linear feet, tying into existing grade at elevation 150.5 feet.
In Project Area 2, the gravity wall will tie into the proposed headwall upstream at elevation 146.0 feet, with wall heights ranging from 9 to 10.5 feet over 47 linear feet. The wall will then transition to elevation 144.5 feet over 90 linear feet, with a maximum height of 12 feet spanning 69 linear feet.

In Project Area 3, following the removal of large woody debris, the banks will be stabilized using native plantings. Rock packing will be used to reinforce undercut roots and will extend through the critical root zone of the large Red Maple tree in Project Area 4. Additionally, 3’x2’x2’ boulders will be placed at the toe of the bank to prevent future erosion beneath the tree.

In Project Area 4, the existing sheet pile wall on the left bank will be replaced with a gravity wall that ties into existing grade at elevation 130.0 feet. Wall heights vary from 3 to 12 feet over 35 linear feet, with the tallest section (12 feet) spanning 6 linear feet. The wall will then taper over 48 linear feet to tie into existing grade at elevation 125.5 feet, with wall heights ranging from 6 to 10.5 feet depending on base elevation.

Channel blockages, consisting mostly of woody and concrete debris, occur throughout the stream and were created from erosion of the City infrastructure and channel banks. Removal of the large debris blockages in Project Areas 2 through 4 will require the realignment of the thalweg towards the center of the channel and performing grading to stabilize the channel.

The plunge pool immediately downstream of the 72-inch outfall in Project Area 1 will be modified to meet Virginia Department of Environmental Quality (VDEQ) standards. The pool will be designed as a Type I plunge pool with dimensions of 36’ L x 30’ W, 3’ H. Immediately downstream of the plunge pool, a boulder cascade (approximately 56 linear feet) will be used to quickly drop the stream down multiple feet (approximately 4 feet) to

tie into the existing stream elevation at 144.35'. Downstream of the 36-inch outfall in Project Area 2, a similar cascade will be implemented over approximately 95 linear feet. The stream elevation will rapidly drop 7.5 feet to tie into the existing stream elevation at 132.5'. A third boulder cascade will be installed in Project Area 4, downstream of the sanitary sewer pipe crossing. The cascade will extend approximately 73 feet and will lower the stream elevation 3.4 feet to tie into existing ground at elevation 120.66'. Boulder cascades will be constructed of strategically placed imbricated rocks, following Regenerative Step Pool Conveyance Design Guidelines, developed for the Anne Arundel County, Maryland Public Works Department.

Portions of sanitary sewer pipes cross Taylor Run in Project 2 and Project 4. Both pipes will be encased in concrete. The boulder cascades, described in Section 0, will provide protection. No cover will be placed on top of the concrete encasements. The gravity walls, described in Section 5.2, will stabilize the banks and protect the sanitary manhole behind the existing sheet pile wall.

A gravity wall will be used to protect the exposed sanitary sewer manhole in Project Area 3. To meet the minimum radius recommended for convex curves (14.5 feet), the wall extends up and downstream of the sanitary sewer manhole. The wall ties into existing bank grade at elevations 133' for approximately 38.5 linear feet, wall heights ranging from 5-9 feet. The maximum height of the wall is 9 feet for approximately 7.7 linear feet. The wall height steps down to tie into existing grade at elevation 130', with wall heights ranging from 1.5-7.5 feet.

II. SWPPP Requirements

A) General Requirements

1) Deadlines

The SWPPP shall be prepared prior to the submittal of the Registration Statement and shall provide for compliance with the terms and schedule of the Permit beginning with the initiation of land disturbance activities.

2) Incorporation of other plans by reference

The SWPPP requirements of the Permit are satisfied by incorporating by reference other plans developed for this construction activity, provided the other plans meet or exceed the requirements of Part II.A of the Permit. The construction plans developed for this project, PLAN #, have been approved by the City of Alexandria. The construction plans meet current City of Alexandria requirements regarding erosion and sediment control and stormwater management, and comply with State regulatory requirements as presented in the Virginia Stormwater Management Handbook, Third Edition, 2024. All plans incorporated by reference into the SWPPP are enforceable under the Permit.

3) SWPPP Administration

The SWPPP is certified in accordance with the Permit per the certification statement contained in the beginning of the SWPPP.

Copies of the SWPPP shall be kept on-site and be made available to the City of Alexandria or other regulatory agencies having authority upon request. The SWPPP shall also be available to all operators identified as having responsibilities to carry out provisions contained in the SWPPP. The SWPPP shall be made available to the agencies listed in the Part II.E.2 of the Permit at the time of on-site inspections. The SWPPP shall be maintained on-site when no personnel are present; if no such location exists on-site, notice of the SWPPP's location shall be posted in accordance with Part II.E of the Permit. Additionally, the SWPPP shall be made available to the public either electronically or by hard copy per Part II.E.3.

Upon commencement of land disturbance, the notice of coverage letter shall be posted conspicuously near the main entrance of the construction activity. The operator shall maintain the posted information until termination of general permit coverage as specified in Part I.F.

4) SWPPP Updates and Modifications

The SWPPP shall be amended whenever there is a change in design, construction, operation, or maintenance of the construction site that has a significant effect on the potential for the discharge of pollutants to surface waters that has not been addressed in the normal implementation of the SWPPP. The SWPPP shall also be updated whenever it is found to be ineffective in meeting the requirements of the Permit.

The operator shall update the SWPPP as soon as possible, but no later than seven days following any modification to its implementation.

All modifications or updates to the SWPPP shall be noted and shall include the following items:

a. A record of dates when:
    (1) Major grading activities occur;
    (2) Construction activities temporarily or permanently cease on a portion of the site; and
    (3) Stabilization measures are initiated;
b. Documentation of replaced or modified controls where periodic inspections or other information have indicated that the controls have been used inappropriately or incorrectly and were modified;

c. Areas that have reached final stabilization and where no further SWPPP or inspection requirements apply;
d. All properties that are no longer under the legal control of the operator and the dates on which the operator no longer had legal control over each property;
e. The date of any prohibited discharges, the discharge volume released, and what actions were taken to minimize the impact of the release;
f. Measures taken to prevent the reoccurrence of any prohibited discharge; and
g. Measures taken to address any evidence identified as a result of an inspection required under Part II G.

Amendments, modifications, or updates to the SWPPP shall be signed in accordance with Part III K.

If approval by the City is necessary for the control measure, revisions to the SWPPP shall be completed no later than seven calendar days following approval. Implementation of these additional or modified control measures shall be accomplished as described in Part II.H.

Modifications to the SWPPP shall be noted within the SWPPP modifications form found in Appendix 7. If modification or amended activities cannot be adequately described on the form, additional documentation shall be included within the SWPPP. Dates of major land disturbance, stabilization and activity shall be noted in the records of land disturbance (Appendix 8).

5) Notice of Termination Procedure

Within 30 days of meeting the conditions found in Part I.F, a Notice of Termination must be submitted to the City. Termination of authorizations to discharge shall be effective upon notification from the Virginia Department of Environmental Quality or within 60 days after submittal of a complete and accurate notice of termination, whichever occurs first.

B) Specific Requirements

1) Site Description

The items required by the Permit regarding the site description (Part II.B) can be found in the project design plans, which are incorporated by reference into this SWPPP. A summary of the required elements is provided in the table below, with a reference to the sheet number in the design plans where the required element can be located.

2) Site Description Elements

The following elements can be found on the approved site plan incorporated by reference. For each of the following, the appropriate site plan page numbers or appendix numbers are referenced:

Element	Narrative Description	Location (Plan page or Appendix)
Flows	Directions of stormwater flow and approximate slopes anticipated after major grading activities	EC-01 through EC-04
LOD	Limits of land disturbance including steep slopes and natural buffers around surface waters that will not be disturbed	PC-01 through PC-04
Controls	Locations of major structural and nonstructural control measures including sediment basins and traps, perimeter dikes, sediment barriers, and other measures intended to filter, settle, or similarly treat sediment that will be installed between disturbed areas and the undisturbed vegetated areas, to increase sediment removal and maximize stormwater infiltration	ESC-01 through ESC-04
Surface waters	Location of surface waters	EC-01 through EC-04
Concentrated Stormwater Discharge	Locations where concentrated stormwater is discharged	EC-01 through EC-04
Support Activities	Locations of support activities, when applicable and when required by the VSMP authority, including but not limited to: (i) areas where equipment and vehicle washing, wheel wash water, and other wash water is to occur; (ii) storage areas for chemicals such as acids, fuels, fertilizers and	ESC-01 through ESC-04

	other lawn care chemicals; (iii) concrete wash out areas; (iv) vehicle fueling and maintenance areas; (v) sanitary waste facilities, including those temporarily placed on the construction site; and (vi) construction waste storage	
Rain gauge	When applicable, the location of the on-site rain gauge, or the methodology established in consultation with the VSMP authority, used to identify measurable storm events for inspection purposes as allowed by Part II.G.2	NA

3) Controls and Measures

The Permit requires the implementation of various types of controls and measures that are implemented to control pollutants in stormwater discharges from the project site. The Permit specifically requires the implementation of erosion and sediment control practices (both structural and non-structural), stormwater management practices, and specific other controls to reduce pollutants. All E&S and SWM/BMP controls employed in this project were selected to meet and/or exceed state and local requirements and are detailed in the Project Design Plan(s).

4) Erosion and Sediment Control (ESC) Plan

The plan has an erosion and sediment control plan approved by the City as authorized under the Erosion and Sediment Control Regulations (9VAC25-875). The design plans for this project, Plan #, contain detailed information regarding erosion and sediment controls used in this project. Specifically, erosion and sediment control measures can be found on Sheet(s) ESC-01 through ESC-04. A brief narrative of each of the following with the appropriate site plan page number describes the approved ESC plan.

a) Sequence of Activities –

Project Initiation

1. The Contractor shall obtain all required permits from the County and conduct required pre-construction meetings as outlined in the construction specifications prior to commencing construction.
2. The plan approving authority must be notified one (1) week prior to the pre-construction meeting, one (1) week prior to commencement of land-disturbing activity, and one (1) week prior to final inspection.
3. Prior to the start of any earth disturbance, an on-site pre-construction meeting shall be held to ensure that all affected parties (Design Engineer, Contractor, City of Alexandria staff, Owner, and Project Manager) fully understand the construction sequencing. The

limits of disturbance and grading (LOD) shall be marked with flagging prior to this meeting to allow review prior to establishing perimeter controls.

4. The Contractor shall be responsible for contacting Miss Utility at 1-800-552-7001 for the location of all public and private utility lines, pipes, cables, and associated features prior to any construction work. All utilities shall be clearly identified prior to construction.
5. During the pre-construction meeting, the LOD shall be reviewed on-site with the Contractor, Design Engineer, Owner or Owner's representative(s), and a City Arborist. A determination shall be made at that time regarding which trees will be removed based on the approved grading and stream restoration activities. Adjustments may be made to flagging marking the LOD and tree planking called for to adequately protect trees to be preserved and facilitate the safe removal of trees to be removed. The location for installation of tree protection fencing shall be adjusted in conjunction with any changes to the LOD prior to the establishment of perimeter controls and commencement of any other construction activities.
6. Prior to the start of work, the Contractor shall arrive on-site and set perimeter erosion and sediment controls as directed in Phase I Erosion & Sediment Control Plans. Measures included in other Phase I measures are temporary stone construction entrance, access road deck mats, culvert outlet protection, tree protection/tree planking, culvert inlet protection, safety fence, super silt fence, temporary stream crossings, pump-arounds, and filter bags.
7. Obtain approval from the City for erosion and sediment control measures installed. The Contractor shall provide the inspector 48-hour notification to schedule an on-site pre-construction meeting to inspect the installation of erosion and sediment measures prior to land disturbance.
8. Contractor shall provide seed tags and gain approval for said tags from City staff prior to commencing any work. Seed must be on-site prior to grading activities to allow progressive stabilization.
9. Trees to be removed that are located on the LOD or immediately adjacent to the LOD within the protected area shall be removed using chain saws to minimize root zone disturbance or damage to trees to be preserved. Trees shall be cut flush with the ground and only removed if necessary to accomplish proposed grading.
10. Tree planking shall be installed as needed on any tree to be preserved (outside the LOD), but where risk of damage from construction traffic is foreseeable.
11. Contractor shall supply and maintain an on-site concrete washout structure, which shall be on-site and available during all concrete-related work activities.
12. Temporary soil stabilization will be applied within seven (7) days to denuded areas that may not be at final grade but will remain dormant for longer than fourteen (14) days. Trees can be flush-cut in one mobilization; however, stumps to be removed shall remain until the area is being actively worked.
13. Based on a three-day dry weather forecast, place temporary sandbag diversion at the upstream and downstream ends of the work area, as indicated on the plans. Where indicated, stream flow shall be pumped around the work area, and the pump shall discharge onto a stable velocity dissipator made of riprap or sandbags.
14. Install dewatering pump-around practice for the daily work zone as shown in the Erosion & Sediment Control Plans.

15. Water from the work area shall be pumped to a sediment filtering device, such as a dewatering basin, filter bag, or other approved source. The measure shall be located such that the water drains into the existing channel. Approximate locations for dewatering measures are indicated on the plans, and the Contractor shall be responsible for adjusting the location as needed to ensure the work area is maintained in dry condition.
16. Stake out the proposed alignment as shown on the geometry plan sheets. PC and PT points shall be staked along the centerline and at 25-foot double offsets, identified by corresponding centerline station, on each side of the proposed channel. The center of each curve shall be staked and marked with the corresponding radius of curvature. Vertical control shall be clearly marked at several locations along the proposed channel.
17. Construction shall proceed from upstream to downstream unless an alternative sequence is approved by the City. All in-stream work shall be protected by pump-around diversion. Phases I and II may be completed in conjunction. Phase III shall be completed prior to Phase IV to allow the usage of excess material from Phase III within Phase IV.
18. The Contractor may request approval for a change in the sequence of construction with approval from the City and the Project Engineer.

Phase I

1. Harvest and stockpile suitable fill material as needed from Station 6+50 to 8+00. Temporarily stabilize area. Any temporary site shall be stabilized at a maximum 3H:1V slope.
2. Install the 72-inch stormwater pipe endwall per the plans and detail.
3. Install gravity block retaining walls. It is solely the Contractor's responsibility to determine the erection procedure and sequence to ensure the safety of the wall and its component parts during erection. This includes, but is not limited to, the addition of temporary bracing, sheet piles, guys, tie-ins, or boulder cascade sills which may be necessary.
4. Excavate stream channel to the subgrade.
5. Place riprap as necessary to install the plunge pool. Prior to placing the riprap in the channel, the Contractor shall ensure a well-graded bed material is placed throughout the channel.
6. Continue grading and structure installation until all grading and in-stream structures are installed. Tie-out slopes shall not exceed 2:1. If bedrock conditions are encountered within the work area during construction, consult the Owner and Project Engineer for invert elevation adjustments.
7. Once final grading has been achieved, apply temporary seeding, permanent seeding, and mulch prior to finalizing installation of coir matting by securing with stakes and keying in fabric per manufacturer recommendations and as shown in the plans.

Phase II

1. Install the Virginia Pre-Cast 36-inch stormwater pipe endwall per the plans and detail.
2. Properly encase the sewer in concrete per the utility protection detail.

3. Install gravity block retaining walls. It is solely the Contractor's responsibility to determine the erection procedure and sequence to ensure the safety of the wall and its component parts during erection. This includes, but is not limited to, the addition of temporary bracing, sheet piles, guys, tie-ins, or boulder cascade sills which may be necessary.
4. Excavate stream channel to the subgrade.
5. Place riprap as necessary adjacent to the concrete encasement per the utility protection detail. Prior to placing the riprap in the channel, the Contractor shall ensure a well-graded bed material is placed throughout the channel.
6. Continue grading and structure installation until all grading and in-stream structures are installed. Tie-out slopes shall not exceed 2:1. If bedrock conditions are encountered within the work area during construction, consult the Owner and Project Engineer for invert elevation adjustments.
7. Once final grading has been achieved, apply temporary seeding, permanent seeding, and mulch prior to finalizing installation of coir matting by securing with stakes and keying in fabric per manufacturer recommendations and as shown in the plans.

Phase III

1. Install the Virginia Pre-Cast 36-inch stormwater pipe endwall per the plans and detail.
2. Properly encase the sewer in concrete per the utility protection detail.
3. Install gravity block retaining walls. It is solely the Contractor's responsibility to determine the erection procedure and sequence to ensure the safety of the wall and its component parts during erection. This includes, but is not limited to, the addition of temporary bracing, sheet piles, guys, tie-ins, or boulder cascade sills which may be necessary.
4. Excavate stream channel to the subgrade.
5. Place riprap as necessary adjacent to the concrete encasement per the utility protection detail. Prior to placing the riprap in the channel, the Contractor shall ensure a well-graded bed material is placed throughout the channel.
6. Continue grading and structure installation until all grading and in-stream structures are installed. Tie-out slopes shall not exceed 2:1. If bedrock conditions are encountered within the work area during construction, consult the Owner and Project Engineer for invert elevation adjustments.
7. Once final grading has been achieved, apply temporary seeding, permanent seeding, and mulch prior to finalizing installation of coir matting by securing with stakes and keying in fabric per manufacturer recommendations and as shown in the plans.

Phase IV

1. Demolish existing manhole concrete skirt.
2. Install gravity block retaining walls. It is solely the Contractor's responsibility to determine the erection procedure and sequence to ensure the safety of the wall and its component parts during erection. This includes, but is not limited to, the addition of

temporary bracing, sheet piles, guys, tie-ins, or boulder cascade sills which may be necessary.

3. Excavate stream channel to the subgrade.
4. Place riprap as necessary adjacent to gravity block retaining wall per the XX Detail. Prior to placing the riprap in the channel, the Contractor shall ensure a well-graded bed material is placed throughout the channel.
5. Continue grading until all grading is complete. Tie-out slopes shall not exceed 2:1. If bedrock conditions are encountered within the work area during construction, consult the Owner and Project Engineer for invert elevation adjustments.
6. Once final grading has been achieved, apply temporary seeding, permanent seeding, and mulch prior to finalizing installation of coir matting by securing with stakes and keying in fabric per manufacturer recommendations and as shown in the plans.

Project Closeout

1. As the work for each design area is completed, E&SC measures may be removed with approval from the Project Owner, Engineer, and the Erosion and Sediment Control Inspector.
2. Once construction of the project area has been completed, the Contractor shall proceed with arrangement of composing approved record drawings. Contractor shall field-survey all installed work and forward the electronic survey to the Project Engineer for verification that the project has been constructed in accordance with the plans. The electronic copy of the survey shall be accompanied by a hard copy of record drawings signed and sealed by a Maryland Registered Land Surveyor.
3. Once construction of all project areas at the project site has been completed, maintenance of traffic devices shall be removed.
4. Contractor shall arrange for and obtain any required final site inspections and certifications for project closeout.

b) Controls and measures - Erosion and sediment control measures will include pumps and stilling basin, temporary vehicular stream crossings, stabilized construction entrances, silt fence, super silt fence, and sediment traps

c) Maintenance of erosion and sediment controls – Erosion and sediment control measures will include pumps and stilling basin, temporary vehicular stream crossings, stabilized construction entrances, silt fence, super silt fence, and sediment traps that will undergo continuous sediment removal from Contractor.

d) Soil Stabilization - Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site;

e) Nutrient application - Nutrients and/or fertilizers shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events;

f) Inspection Schedule - Inspections shall be conducted at least once every 4 business days or at least once every 5 business days and no later than 24 hours following a measurable storm event.

5) Stormwater Management (SWM) Plan

A Stormwater Management (SWM) Plan has been developed and approved in accordance with Section 13-115 of the Environmental Management Ordinance and Part II.B.3 of the Permit. The design plans for this project, Plan #, contain detailed information regarding stormwater management controls used in this project. Specifically, stormwater control measures can be found on Sheet(s) ESC-01 through ESC-04.

6) Pollution Prevention (P2P) Plan

The following Pollution Prevention Plan addresses potential pollution generating activities that may be reasonably be expected to affect the quality of stormwater discharges from construction and related support activities. Specific locations of potential pollutants can be found on the design plans or as referenced on the ESC sheets located in Appendix 12 to be updated in the field. All necessary personnel shall be familiar with practices involved in the prevention, stopping, containing, clean up, and reporting any potential pollutant.

Potential Pollutants -The following have been identified as potential pollutant-generating activities that may reasonably be expected to affect the quality of stormwater discharges from the construction activity, including any support activity:

The contact information for each responsible party can be found in Appendix 11.

Potential Pollutant	Fuels and Oils
Location	Refer to site plan
Responsible Party	Contractor

For diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals, the contractor shall comply with the following requirements:

If any chemical container has a storage capacity of less than 55 gallons:

- The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;
- If stored outside, use a spill containment pallet or similar device to capture small leaks or spills; and
- Have a spill kit available on site that is in good working condition (i.e., not damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill.

If any chemical container has a storage capacity of 55 gallons or more:

- The containers must be water-tight, and must be kept closed, sealed, and secured when not being actively used;
- Store containers a minimum of 50 feet from receiving waters, constructed or natural site drainage features, and storm drain inlets. If infeasible due to site constraints, store containers as far away from these features as the site permits. If site constraints prevent you from storing containers 50 feet away from receiving waters or the other features identified, you must document in your SWPPP the specific reasons why the 50-foot setback is infeasible, and how you will store containers as far away as the site permits;
- Provide either (1) cover (e.g., temporary roofs) to minimize the exposure of these containers to precipitation and to stormwater, or (2) secondary containment (e.g., curbing, spill berms, dikes, spill containment pallets, double-wall, above-ground storage tank); and
- Have a spill kit available on site that is in good working condition (i.e., not 2022 Construction General Permit (CGP) Page 20 damaged, expired, or used up) and ensure personnel are available to respond immediately in the event of a leak or spill. Additional secondary containment measures are listed at 40 CFR § 112.7(c)(1). Clean up spills immediately, using dry clean-up methods where possible, and dispose of used materials properly. You are prohibited from hosing the area down to clean surfaces or spills. Eliminate the source of the spill to prevent a discharge or a furtherance of an ongoing discharge.

Potential Pollutant	Soaps, solvents, detergents, and wash water from construction materials, including the clean-up of stucco, paint, form release oils, and curing compounds
Location	Refer to site plan
Responsible Party	Contractor

The Contractor shall:

- Direct wash water into a leak-proof container or leak-proof and lined pit designed so no overflows can occur due to inadequate sizing or precipitation;
- Handle washout or cleanout wastes as follows:
    - For liquid wastes:
        - Do not dump liquid wastes or allow them to enter constructed or natural site drainage features, storm inlets, or receiving waters;
        - Do not allow liquid wastes to be disposed of through infiltration or to otherwise be disposed of on the ground;
        - Comply with applicable State, Tribal, or local requirements for disposal
    - Remove and dispose of hardened concrete waste consistent with your handling of other construction wastes in Part 2.3.3e; and
- Locate any washout or cleanout activities as far away as possible from receiving waters, constructed or natural site drainage features, and storm drain inlets, and, to the extent

feasible, designate areas to be used for these activities and conduct such activities only in these areas.

Potential Pollutant	Sanitary Waste
Location	Refer to site plan
Responsible Party	Contractor

For construction and domestic wastes, including packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, Styrofoam, concrete, demolition debris; and other trash or discarded materials:

The contractor shall conduct the following:

- Provide waste containers (e.g., dumpster, trash receptacle) of sufficient size and number to contain construction and domestic wastes;
- For waste containers with lids, keep waste container lids closed when not in use, and close lids at the end of the business day and during storm events. For waste containers without lids, provide either (1) cover (e.g., a tarp, plastic sheeting, temporary roof) to minimize exposure of wastes to precipitation, or (2) a similarly effective means designed to minimize the discharge of pollutants (e.g., secondary containment);
- On business days, clean up and dispose of waste in designated waste 2022 Construction General Permit (CGP) Page 21 containers; and
- Clean up immediately if containers overflow, and if there is litter elsewhere on the site from escaped trash.
- Waste containers are not required for the waste remnant or unused portions of construction materials or final products that are covered by the exception in Part 2.2.3a provided that: (a) These wastes are stored separately from other construction or domestic wastes addressed by Part 2.3.3e.i (i.e., wastes not covered by the exception in Part 2.3.3a). If the wastes are mixed, they must be stored in waste containers as required in Part 2.3.3e.i; and (b) These wastes are stored in designated areas of the site, the wastes are described in the SWPPP (see Part 7.2.6b.ix), and identified in the site plan (see Part 7.2.4i).
- For sanitary waste, position portable toilets so they are secure and will not be tipped or knocked over, and are located away from receiving waters, storm drain inlets, and constructed or natural site drainage features.

Potential Pollutant	Equipment and vehicle washing
Location	Refer to site plan
Responsible Party	Contractor

Where water is used to wash vehicles (of dust and soil) and where detergents are not used, detention and/or filtering should be provided before allowing discharge from the Site. Proper controls will be utilized to ensure that any soaps, detergents, and/or solvents used will not be discharged through washing water nor stormwater.

Construction Site Dewatering: Turbidity Monitoring

In accordance with Part II B 8., SWPPP requirements for construction dewatering discharges applies to all surface waters within the City, given the entire City is within the Chesapeake Bay Watershed. Operator shall undertake one of the three options required for controlling and documenting construction dewatering discharges as described in Part II B 8 a. through part II B 8 d. (see attached) The operator's P2 Plan must be updated effective July 1, 2024, for the monitoring, testing of the sample(s), and corrective action requirements, if applicable. SWPPP inspections must document the results of the monitoring as applicable, with all turbidity monitoring and any necessary corrective actions recorded in the SWPPP.

Dewatering discharges of uncontaminated stormwater or groundwater from footers or foundations of a single-family detached residential structure, not part of a larger development or sale, are exempt from these requirements, provided that such discharges are not discharged directly to surface waters.

Turbidity Monitoring General Procedures:

Identify location of all construction dewatering discharges in the SWPPP

Select, install, implement, and maintain control measures at each dewatering location that minimize pollutants, including suspended solids, in construction dewatering discharges prior to discharging into a stormwater conveyance system or surface water.

Provide documentation in the SWPPP that satisfies each of the following:

Sample frequency: At least one grab sample be collected from each construction dewatering discharge when the first discharge at that location occurs, daily thereafter until the dewatering discharge stops, and after any installation of new controls or routine maintenance activity of existing controls.

Sample timing: Grab samples of the construction dewatering discharge shall be collected during the first 15 minutes of the construction dewatering discharge and daily thereafter until the dewatering discharge stops. Upstream grab samples of the receiving stream shall be collected within 15 minutes of the corresponding construction dewatering discharge sample.

Sample location: Grab samples shall be collected after the construction dewatering water has been filtered, settled, or similarly treated and prior to its discharge into a stormwater conveyance system or surface water.

Test methods: Grab samples shall be measured using a turbidity meter that reports results in NTUs or FTUs, and a turbidity meter calibration verification shall be conducted prior to each day's use, consistent with manufacturer recommendations.

Visual monitoring: All dewatering discharges shall be visually monitored for changes in the characterization of effluent. discharge.

Recordkeeping: Turbidity monitoring information (i.e., location, date, sample collection time, and turbidity measurement) and any necessary corrective actions taken shall be recorded in the SWPPP

Alternative Threshold Procedures:

To request approval of an alternate benchmark, the operator must submit the following to VADEQ:

1. The current turbidity water quality standard that applies to the receiving water; and

2. Information on the natural or background turbidity level to determine the specific standard for the receiving water, including available data that can be used to establish the natural turbidity levels of the receiving water.

VADEQ will notify the operator of its decision on whether to approve the requested alternate benchmark within 30 days. Until the department approves an alternate benchmark, the operator is required to use option 1, option 2, or option 3 turbidity benchmark and take any required corrective actions if an exceedance occurs.

Corrective Actions (Part II H 2):

When any turbidity measurement of the construction dewatering discharge exceeds the selected benchmark option or visual monitoring indicates a change in the characteristics of effluent discharge the operator shall:

1. Immediately cease the construction dewatering discharge at the location that exceeds the turbidity benchmark or where visual monitoring indicates a change in the characterization of effluent discharge.
2. Determine whether the construction dewatering controls are operating effectively or need routine maintenance or if an additional or alternate control measure is necessary.

3. Make any necessary adjustments, additions, repairs, or replacements to the construction dewatering controls.

Once these corrective action steps are completed and any necessary adjustments, additions, repairs, or replacements are made, the operator may resume its construction dewatering discharge and shall sample for turbidity within 15 minutes of the construction dewatering discharge commencing. No additional corrective action items are required beyond recording the results in the SWPPP.

Pollution Prevention and Awareness Training shall be provided by Operator(s)/Subcontractor(s).

7) Spill Prevention and Response

In accordance with Part III.G of the Permit, any operator who discharges or causes or allows a discharge of sewage, industrial waste, other wastes or any noxious or deleterious substance or a hazardous substance or oil in an amount equal to or in excess of a reportable quantity established under either 40 CFR Part 110, 40 CFR Part 117, 40 CFR Part 302, or § 62.1-44.34:19 of the Code of Virginia that occurs during a 24-hour period into or upon surface waters or who discharges or causes or allows a discharge that may reasonably be expected to enter surface waters, shall notify the Department of Environmental Quality of the discharge immediately upon discovery of the discharge, but in no case later than within 24 hours after said discovery. A written report of the unauthorized discharge shall be submitted to the department and the VSMP authority within five days of discovery of the discharge. The written report shall contain:

1. A description of the nature and location of the discharge;
2. The cause of the discharge;
3. The date on which the discharge occurred;
4. The length of time that the discharge continued;
5. The volume of the discharge;
6. If the discharge is continuing, how long it is expected to continue;
7. If the discharge is continuing, what the expected total volume of the discharge will be; and
8. Any steps planned or taken to reduce, eliminate and prevent a recurrence of the present discharge or any future discharges not authorized by this general permit.

DEQ Northern Regional Office
Phone: (703) 583-3800
For reports outside normal working hours, leave a message.

Virginia Department of Emergency Management
Emergency Operations Center (EOC)
Phone: 1-(800) 468-8892

All oil or other chemical spills shall be cleaned up immediately upon discovery. Spills large enough to reach the storm sewers shall be reported to the National Response Center at 1-800-424-8802.

In the event of a hazardous spill contact: City of Alexandria Fire Department
via 911 for all emergencies or (703)746-5200 for a non-emergency

In the event of a non-hazardous spill contact:
The City of Alexandria Transportation & Environmental Services
2900 Business Center Drive Phone:
(703) 746-6499

Equipment and vehicles are two of the most probable sources of pollution. The Contractor shall provide an effective means of eliminating the discharge of spilled or leaked chemicals due to the fueling and maintenance of equipment or vehicles. When necessary, this may include:

- Locating activities away from receiving waters, storm drain inlets and constructed or natural site drainage feature so that stormwater coming into contact with these activities cannot reach the stream or wetland areas.
- Providing secondary containment (e.g., spill berms, dikes, spill containment pallets) and cover where appropriate; and
- Having a spill kit available on site and ensuring personnel are available to respond expeditiously in the event of a leak or spill.

The contractor shall ensure adequate supplies are always available to handle spills, leaks, and disposal of used liquids. Drip pans and absorbents under or around leaky vehicles will be used when necessary. The contractor shall dispose of or recycle oil and oily waste in accordance with Federal, State or local requirements. Spills and contaminated surfaces will be cleaned up immediately using dry clean up measures and the source of the spill be eliminated to prevent a discharge or a continuation of an ongoing discharge,

Where water is used to wash vehicles (of dust and soil) and where detergents are not used, detention and/or filtering should be provided before allowing discharge from the Site. Proper controls will be utilized to ensure that any soaps, detergents, and/or solvents used will not be discharged through washing water nor stormwater.

III. TMDL Compliance

This project is located within the Chesapeake Bay, for which a TMDL wasteload allocation has been established. The Chesapeake Bay TMDL is a comprehensive “pollution diet” to restore the health of the Bay and its local streams, creeks and rivers. The Chesapeake Bay TMDL sets limits on the discharge of nitrogen, phosphorus and sediment to meet water quality standards in the Bay and its tidal rivers.

Discharges of stormwater from construction activities to surface waters identified as impaired in the 2012 § 305(b)/303(d) Water Quality Assessment Integrated Report or for which a TMDL wasteload allocation has been established and approved prior to the term of the general permit for sediment or a sediment-related parameter (i.e., total suspended solids or turbidity) or nutrients (i.e., nitrogen or phosphorus) are not eligible for coverage under the general permit unless the operator develops, implements, and maintains a SWPPP that minimizes the pollutants of concern and, when applicable, is consistent with the assumptions and requirements of the approved TMDL wasteload allocations.

In accordance with Part I.B.4 of the Permit, control measures shall be protective of water quality standards for impaired waters identified as having impairments for pollutants that may be discharged from the construction activity in the 2012 § 305(b)/303(d) Water Quality Assessment Integrated Report.

Stabilization requirements, inspection frequency, and application of nutrients for projects with impaired waters shall follow the guidelines set forth within Part I.B.4. Permanent or temporary soil stabilization shall be applied to denuded areas within seven days after final grade is reached on any portion of the site. Nutrients/fertilizers shall be applied in accordance with manufacturer's recommendations or an approved nutrient management plan and shall not be applied during rainfall events. Inspections must be conducted at least once every 4 business days or at least once every 5 business days and no later than 24 hours following a measurable storm event.

Within the study area, Taylor Run confluences with Cameron Run and eventually discharges into the Potomac River. Both are impaired recreational streams with approved bacterial TMDLs. For tidal portions of the Potomac River, there is an approved TMDL for PCBs.

No exceptional waters identified in 9VAC25-260-30 A 3 c are within the study area.

IV. Inspections and Corrective Actions

Regular inspections of the construction site shall be performed by qualified personnel. The Permit operator is responsible for ensuring that qualified personnel conduct the inspections. Inspections shall include the review of all disturbed areas, structural and non-structural control measures, material storage areas, and vehicular access points. Inspections shall identify any maintenance needs and evaluate the effectiveness of controls in minimizing sediment and pollutant discharge. Receiving waters shall be inspected to ascertain whether control measures are effective in preventing significant impacts. Inspections shall include all the requirements found Part II.G of the permit.

Inspections shall be conducted at a frequency of at least once every four business days or at least once every five business days and no later than 24 hours following a measurable storm event. In the event a measurable storm event occurs when there are more than 24 hours between business days, the inspection shall be conducted on the next business day.

Qualifying Precipitation Events

For a storm event that produces 0.25 inches or more of rain within a 24-hour period on the first day of the storm and continues to produce 0.25 inches or more of rain on subsequent days, or from a snow event producing 3.25 inches or more of snow within a 24-hour period, the operator is required to conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the last day of the storm that produces 0.25 inches or more of rain. For qualifying snowmelt events, the operator is required to conduct one inspection once the discharge of snowmelt occurs. Additional inspections are only required if, following the discharge from the first snowmelt, there is a discharge from a separate storm event.

Where areas have been temporarily stabilized or land-disturbing activities will be suspended due to continuous frozen ground conditions and stormwater discharges are unlikely, the inspection frequency may be reduced to once per month. If weather conditions (such as above freezing temperatures or rain or snow events) make discharges likely, the operator shall immediately resume the regular inspection frequency.

If adverse weather causes the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. If inspections are delayed due to adverse weather conditions, evidence of the adverse weather conditions shall be included in the SWPPP with the dates of occurrence.

All control measures must be properly maintained in effective operating condition in accordance with good engineering practices and, where applicable, manufacturer specifications. If a site inspection required by Part II.G identifies a control measure that is not operating effectively, corrective action(s) shall be completed as soon as practicable, but no later than seven days after discovery or a longer period as established by the City, to maintain the continued effectiveness of the control measures.

If control measures need to be modified to assure effectiveness or if additional measures are determined to be necessary, implementation shall be completed prior to the next anticipated measurable storm event or as soon as practicable, but no later than seven days after discovery or a longer period as established by the City.

A report summarizing the inspections and the subsequent maintenance activities shall be completed and maintained as part of the SWPPP. The inspection forms are included in Appendix 9. Records of corrective actions are found in Appendix 10. If an inspection does not identify any incidents of non-compliance, the report shall contain a certification that the construction activity is in compliance with the SWPPP and the permit. Corrective actions for construction dewatering activities shall be followed in accordance with Part II H 2 of 9VAC25-880.

The inspection report shall be included into the SWPPP no later than four business days after the inspection is complete. The report shall be signed in accordance with Part III K of the permit.

V. Qualified Personnel

Regular inspections must be performed by “Qualified Personnel”.

"Qualified personnel" means a person knowledgeable in the principles and practices of erosion and sediment and stormwater management controls who possesses the skills to assess conditions at the construction site for the operator that could impact stormwater quality and quantity and to assess the effectiveness of any sediment and erosion control measures or stormwater management facilities selected to control the quality and quantity of stormwater discharges from the construction activity. On or after July 1, 2025, "qualified personnel" shall hold an unexpired Dual Inspector certification issued by the department; an unexpired Inspector for Erosion and Sediment Control [certification] and an unexpired Inspector for Stormwater Management certification, both issued by the department; a Construction General Permit Qualified Personnel Certificate, issued by the department or the Virginia Department of Transportation; or an equivalent certification provided by EPA (currently titled Construction Inspection Training Course).

The name, phone number, and qualifications of the qualified personnel conducting inspections required by this general permit can be found in Contractor Certification Form found in Appendix 4.

VI. Signature Requirements and Delegation of Authority

All reports required by the general permit, including SWPPPs, and other information requested by City shall be signed by a person described in Part III.K.1 of the Permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a) The authorization is made in writing by a person described in Part III.K.1;
b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the operator. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and
c) The signed and dated written authorization is included in the SWPPP. A copy of the delegation of authority is found in Appendix 6.

If an authorization under Part III.K.2 of the Permit is no longer accurate because a different individual or position has responsibility for the overall operation of the construction activity, a new authorization satisfying the requirements of Part III.K.2 shall be submitted to the City prior to or together with any reports or information to be signed by an authorized representative.

Appendix 1-VPDES Construction General Permit

Appendix 2-Registration Statement

Appendix 3-Coverage Letter

Appendix 4-Contractor Certification Form for Qualified Personnel

Appendix 5- Notice of Termination

Appendix 6- Delegation of Authority

Appendix 7- Records of SWPPP Amendments, Modifications, and Updates

Appendix 8- Records of land disturbance

Appendix 9- Records of Inspections and Inspection Forms

Appendix 10- Records of Inspections and Inspection Forms

Appendix 11- Contractor and Subcontractor List

Appendix 12- ESC Sheets for Field Use

Appendix I Adverse Impact Verification Memorandum

AECOM
12420 Milestone Center Drive
Germantown, MD 20876
aecom.com

May 22, 2026

Alex Haptemariam, PE, CFM
Technical Senior Project Manager
City of Alexandria
Department of Project Implementation
301 King Street
Alexandria, VA 22314

RE: Off-Site Adverse Impact Verification for the Taylor Run Infrastructure Stabilization Project, Alexandria, Virginia

Dear Mr. Haptemariam:

The proposed project referenced in this Off-Site Adverse Impact Verification is related to the Taylor Run Infrastructure Stabilization Project, herein referenced to as the Project, for the City of Alexandria, Department of Public Works. The project has been divided into four distinct areas, each addressing specific infrastructure vulnerabilities:

1. Upstream Stormwater Outfall: Currently in disrepair, surrounding stream banks are actively eroding, and outfall discharges into an undersized plunge pool causing excessive bed scour.
2. Sanitary Sewer Crossing 1 and Stormwater Outfall: Sanitary sewer crossing is at-risk of structural damage, adjacent stormwater outfall in deteriorating, contributing to eroding stream bed and banks.
3. Exposed Sanitary Sewer Manhole: Exposed sanitary sewer manhole is exposed and vulnerable to damage from storm flows or debris.
4. Sanitary Sewer Crossing 2 and Retaining Wall: The roots of a large tulip poplar tree are exposed, putting the tree at risk of falling, stream bank and bed erosion has exposed an existing sanitary sewer crossing risking structural damage, and a nearby retaining wall is failing due to insufficient embedment depth.

Proposed stabilization measures include constructing gravity retaining walls to stabilize stream banks and protect the exposed sanitary infrastructure, replacement of deteriorated outfall headwalls, encasement of exposed sanitary sewer pipes, establishment of a plunge at the start of the project reach, and install boulder cascades to dissipate energy through the project areas supporting long term stability and reduced project grading extents.

The proposed project area is within the Taylor Run effective 1-percent-annual-chance (100-year) floodplain and floodway. The purpose of this memo is to document the results of the flood study for the project area along Taylor Run.

A previously completed one-dimensional Hydrologic Engineering Center River Analysis System (HEC-RAS) model from Task Order No 22 was reviewed and updated with recent survey data. The existing conditions hydraulic analysis was performed to analyze changes in water surface elevations and shear stresses for the 2-, 10-, and 100-year storms using HEC River Analysis System (RAS) version 6.5. One-dimensional steady-state models were developed. The existing conditions model was run with a subcritical flow regime.

The terrain for the proposed conditions hydraulic model was developed using a topographic surface which combined the proposed design surface with the 2019 survey, 2025 survey, and available LiDAR data. Similar Manning's n values were used for the proposed conditions model, with 0.1 applied for overbank areas, 0.04 applied for the existing channel, and 0.051 applied for placed riprap within the channel.

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Computational parameters and cross section locations were selected similarly to existing conditions parameters, with additional cross sections being placed at areas of instability or abrupt grade change. The proposed conditions model was run using a mixed flow regime.

A water surface elevation rise is noted at all storm events, with an average rise of 0.59 feet across the project reach during the 100-year storm. A maximum rise of 2.85 feet was noted at proposed cross section 1073, located directly upstream of design area 4, due to backwater conditions. This rise is located entirely on City of Alexandria property and does not affect adjoining properties. Hydraulic conditions downstream of the project area remain the same in the existing and proposed conditions.

The modeled water surface elevation increase is confined to City-owned property and does not extend to private parcels, buildings, or third-party infrastructure. Therefore, the project does not create an off-site adverse impact to another property owner. However, because FEMA/NFIP compliance is based on the mapped floodplain/floodway standard rather than ownership alone, the City should retain the supporting H&H documentation and obtain Floodplain Administrator concurrence regarding whether the modeled change is considered no-rise, within accepted model tolerance, or requires a CLOMR/LOMR.

Further discussion of model development and results comparison can be found in the enclosed HEC-RAS report.

Yours sincerely,

Sean Bernheisel, PE
Civil Engineer
AECOM
E: sean.bernheisel@aecom.com

Enclosures:

HEC-RAS Report

Hydrologic and Hydraulics Report
Taylor Run Stream Stabilization Design

City of Alexandria, Virginia

Client Project Reference: Task Order #07
Description: 60% Design
AECOM Project Number: 60742359

May 2026

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Attachments

Attachment A: HEC-HMS Excess Precipitation Graphs

1 Executive Summary

The City of Alexandria (City) has tasked AECOM to use “minimal stabilization” approach to provide stream stabilization in four areas on Taylor Run. The objective of the Hydrology and Hydraulics (H&H) tasks were to update the previously completed one-dimensional HEC-RAS model to model existing hydraulics using the updated topographic survey data and to develop a proposed conditions model concurrently with the 60% design submission. The existing and proposed conditions models were run for the 10-, 50-, and 100 -year, 24-hour storm events.

The Hydrologic Engineering Center – River Analysis System (HEC-RAS) existing and proposed conditions models were run for the 10-, 50-, and 100 -year, 24-hour storm events. Comparison between existing and proposed conditions results in an average reduction in velocity across the project reach for all storm events. A water surface elevation rise is noted at all storm events, with an average rise of 0.7 feet across the project reach during the 100-year storm. This rise is located entirely on City of Alexandria property and does not affect adjoining properties. Hydraulic conditions downstream of the project area remain the same in the existing and proposed conditions.

2 Introduction

The City of Alexandria (City) has tasked AECOM to use “minimal stabilization” approach to provide stream stabilization in four areas on Taylor Run. The objective of the Hydrology and Hydraulics (H&H) tasks were to update the previously completed one-dimensional HEC-RAS model to model existing hydraulics using the updated topographic survey data and to develop a proposed conditions model concurrently with the 60% design submission. The existing and proposed conditions models were run for the 2-, 10-, and 100-, -year, 24-hour storm events.

2.1 Project Location

Taylor Run begins at a 72-inch outfall to the east of Chinquapin Park Recreation Cetner and Aquatics Facility in the City. The stream runs parallel to Kings Street for approximately 700 linear feet before turning south and flowing onto the First Baptist Church of Alexandria property. The extent of the study limits is shown in Figure 1.

Taylor Run is within the Mid Atlantic Region within the Middle Potomac-Anacostia-Occoquan (HUC8:02070010), Cameron Run-Potomac River (HUC10:0207001003), and Cameron Run (HUC12:020700100302) watersheds. The Taylor Run watershed consists of approximately 333 acres of densely developed urban land. The total watershed imperviousness is estimated to be approximately 38%.

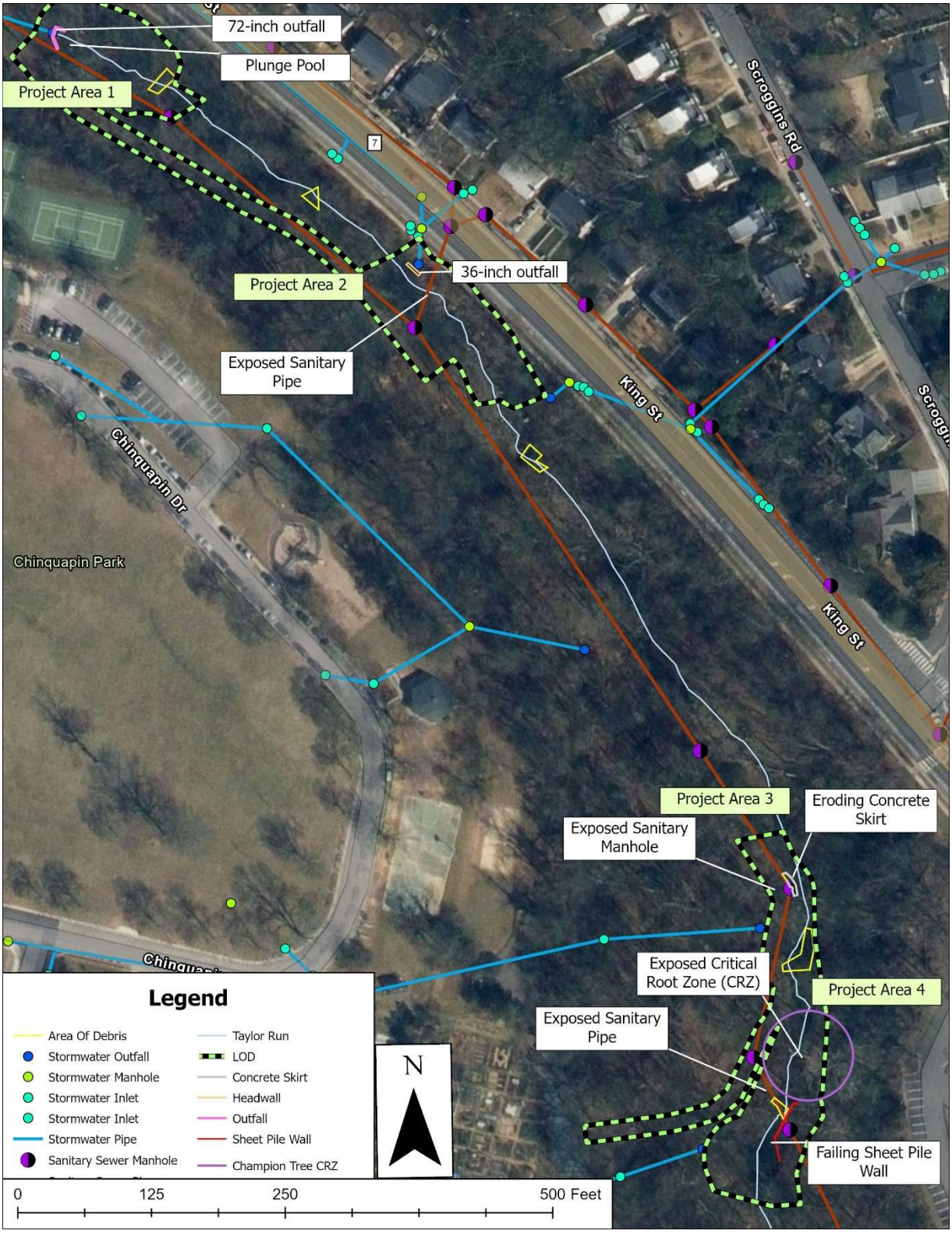


Figure 1: Taylor Run Infrastructure Stablization Project Location Map

2.2 FEMA Effective Data

Taylor Run is a regulatory Zone AE stream and was originally studied as part of the Cameron Run watershed analysis (USACE 2007). The most recent Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) was published January 11, 2024. The hydrologic assessment was completed using HEC-HM 3.1.1 and the hydraulic analysis was completed using HEC-RAS 3.1.1. Flood hazards were re-delineated in 2020 as part of the revised 2024 FIS. The effective Flood Insurance Risk Map with the Taylor Run floodplain is shown in Figure 2.

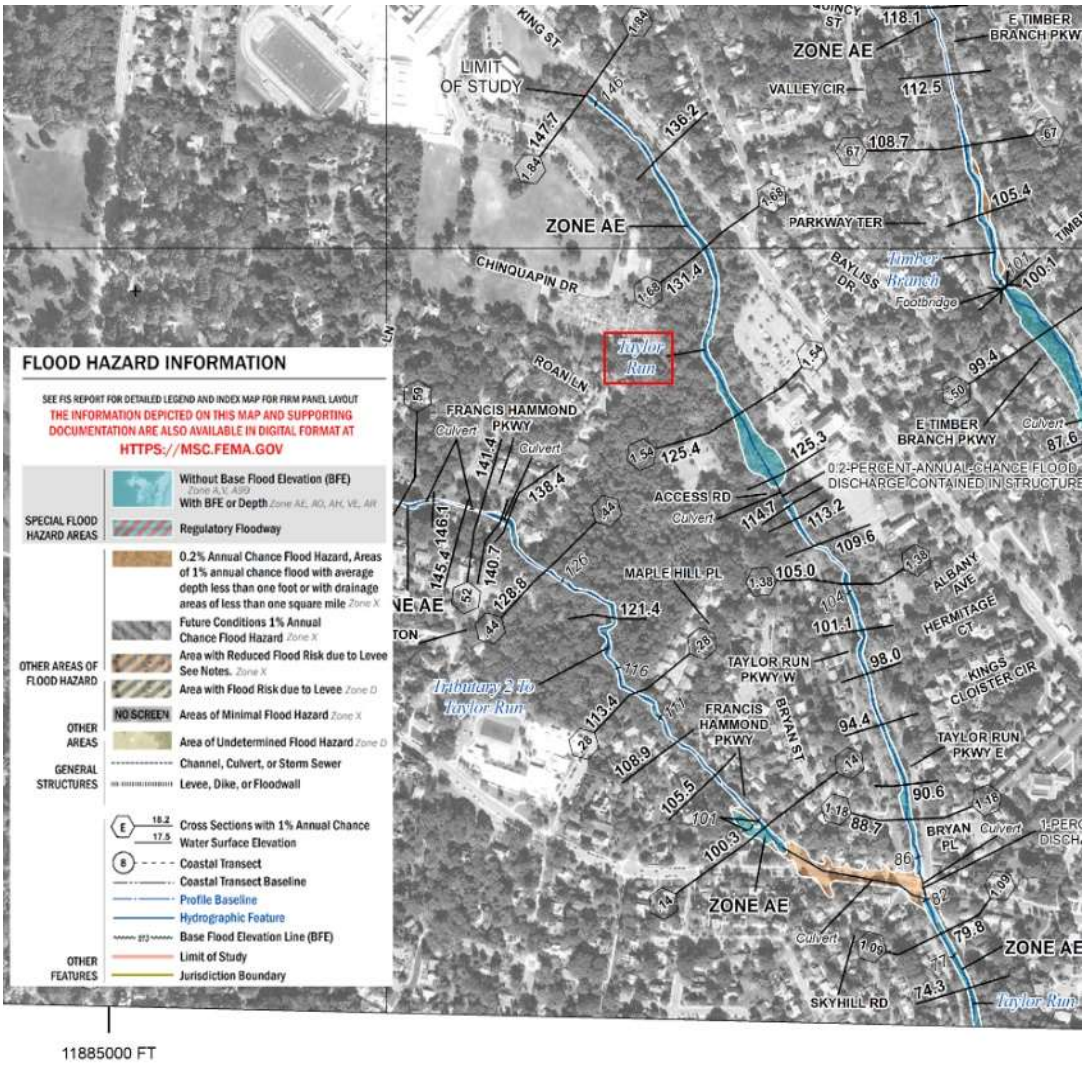


Figure 2: Taylor Run Effective FIRM

3 Hydrology

AECOM was originally scoped to perform a hydrologic assessment of Taylor Run using a runoff model such as HEC-HMS or equvialent. On September 23, 2025, during a bi-weekly meeting, AECOM and the City agreed that the FEMA effictive flows at Janneys Lane would be utilized.

Flows to be applied are provided in Table 1.

Table 1: Existing Conditions Peak Discharge at Outlet Point of Project Area

Scenario	Peak Discharge (cfs)
10-year	343
50-year	538
100-year	672

4 Hydraulics

A hydraulic analysis was conducted using HEC River Analysis System (RAS) version 6.5 to evaluate changes in water surface elevations, lateral floodplain boundaries, and shear stresses between existing and proposed conditions for the 2-, 10-, and 100-year storms. One-dimensional steady-state models were developed to compare water surface elevations along each stream channel.

Taylor Run has a FEMA designated Zone AE floodplain, necessitating that proposed solutions do not result in adverse impacts, such as increases downstream water surface elevations.

4.1 Existing Conditions

A previously completed one-dimensional Hydrologic Engineering Center River Analysis System (HEC-RAS) model from Task Order No 22 was reviewed and updated with recent survey data. The existing conditions hydraulic analysis was performed to analyze changes in water surface elevations and shear stresses for the 2-, 10-, and 100-year storms using HEC River Analysis System (RAS) version 6.5. One-dimensional steady-state models were developed. The existing conditions model was run with using a subcritical flow regime.

The HEC-RAS model includes areas outside of our Project. Stations 2304-1805 encompass the upstream portion of study (Project Area 1 and Project Area 2) and stations 1209-925 encompass the downstream protion of our study (Project Area 3 and Project Area 4. Observed shear stresses were taken into consideration for substrate design, but limitations of the model were also factored in. Detailed outputs from the existing conditions HEC-RAS simulation for the 2-, 10-, and 100-year storms can be found in Appendix B.

4.2 Proposed Conditions

The terrain for the proposed conditions hydraulic model was developed using a topographic surface which combined the proposed design surface with the 2019 survey, 2025 survey, and available LiDAR data. Similar Manning's n values were used for the proposed conditions model, with 0.1 applied for overbank areas, 0.04 applied for the existing channel, and 0.051 applied for placed riprap within the channel. Computational parameters and cross section locations were selected similarly to existing

conditions parameters, with additional cross sections being placed at areas of instability or abrupt grade change. The proposed conditions model was run using a mixed flow regime.

4.3 Results

The comparison of water surface elevations and shear stresses for existing and proposed conditions informed design parameters and provided a general understanding of the Project impact. Comparison between existing and proposed conditions results in an average reduction in velocity across the project reach for all storm events. Localized increases can be noted in the proposed boulder cascades. A water surface elevation rise is noted at all storm events, with an average rise of 0.7 feet across the project reach during the 100-year storm. A maximum rise of 2.85 feet was noted at proposed cross section 1073, located directly upstream of design area 4, due to backwater conditions. This rise is located entirely on City of Alexandria property and does not affect adjoining properties. Hydraulic conditions downstream of the project area remain the same in the existing and proposed conditions.

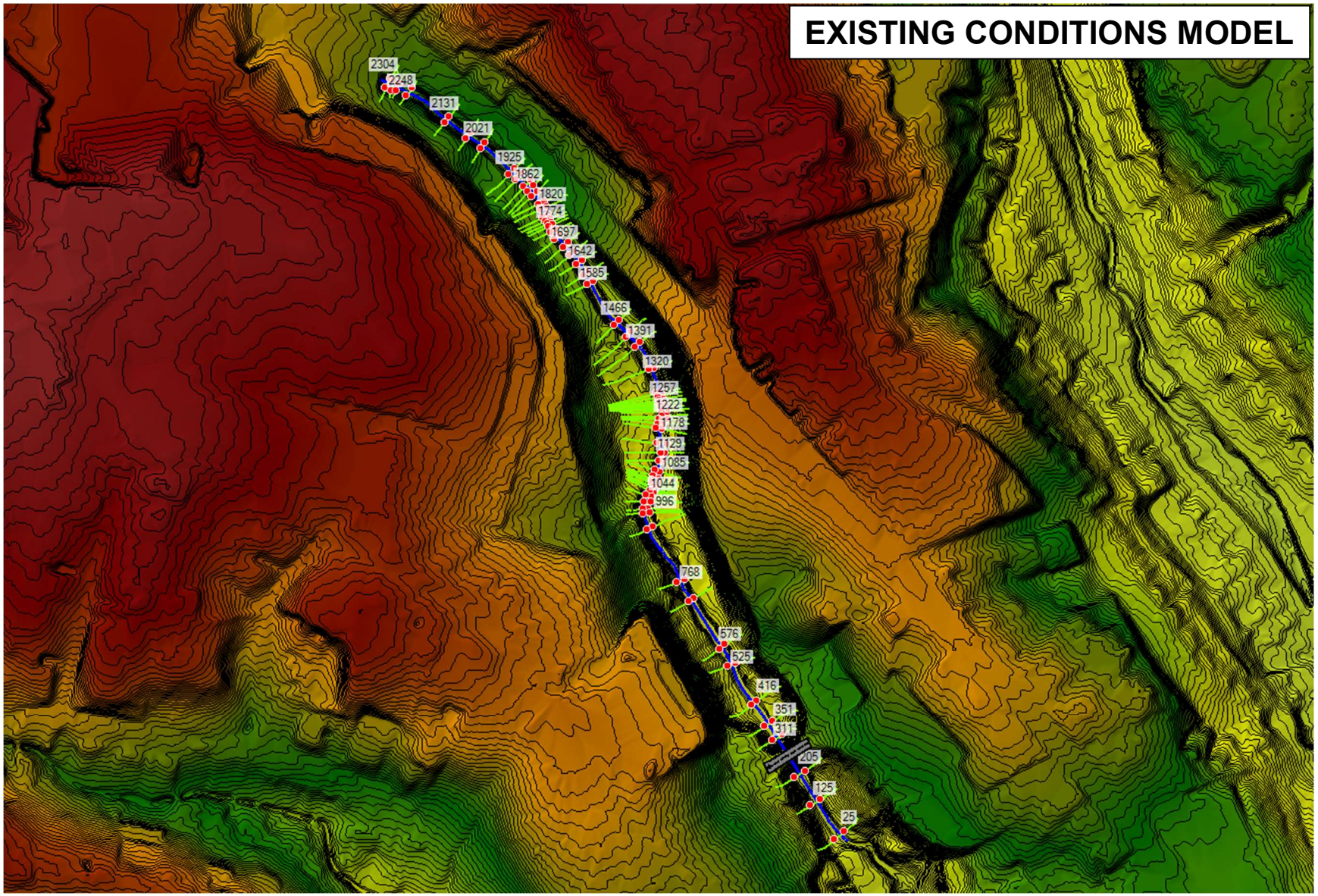
5 References

City of Alexandria, Virginia. Open Data. Accessed at: City of Alexandria Open Data (https://www.alexandriava.gov/gis/open-data).

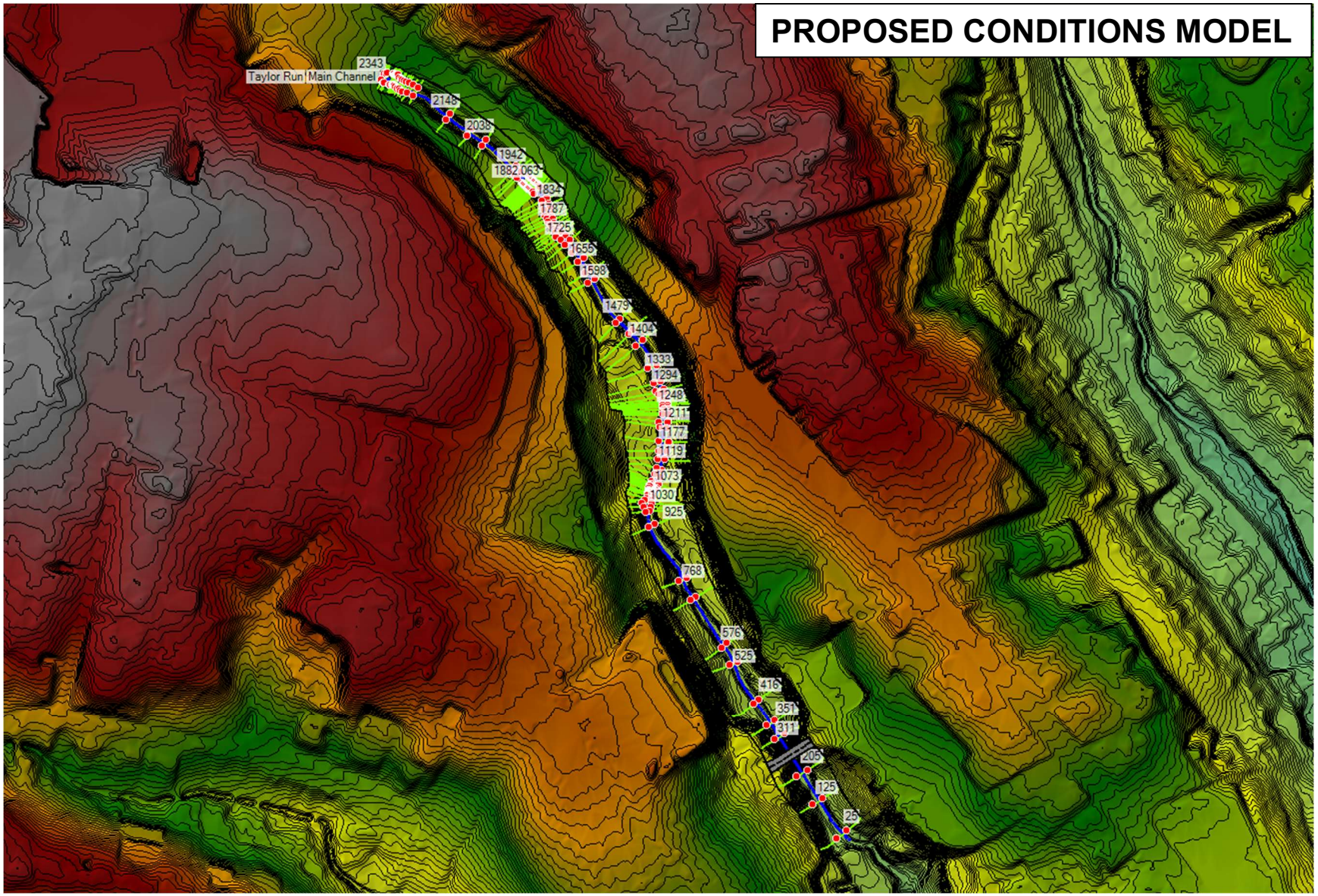
Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains, United States Geological Survey Water-Supply Paper 2339. Accessed at: https://pubs.usgs.gov/wsp/2339/report.pdf

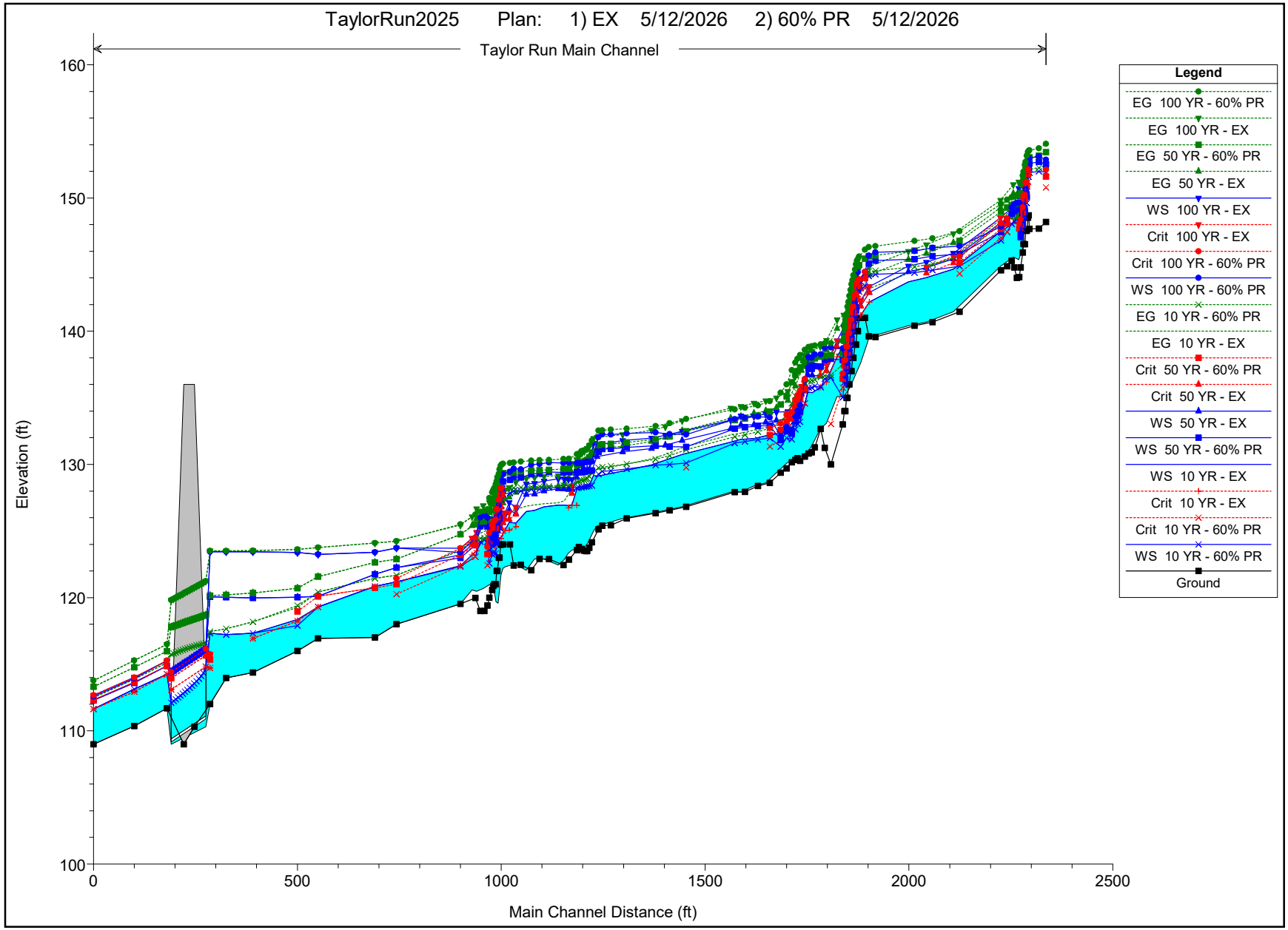
Appendix A: HEC-RAS Results

EXISTING CONDITIONS MODEL



PROPOSED CONDITIONS MODEL




TaylorRun2025 Plan: 1) EX 5/12/2026 2) 60% PR 5/12/2026
Taylor Run Main Channel
Elevation (ft)
160
150
140
130
120
110
100
0
500
1000
1500
2000
2500
Main Channel Distance (ft)
Legend
EG 100 YR - 60% PR
EG 100 YR - EX
EG 50 YR - 60% PR
EG 50 YR - EX
WS 100 YR - EX
Crit 100 YR - EX
Crit 100 YR - 60% PR
WS 100 YR - 60% PR
EG 10 YR - 60% PR
EG 10 YR - EX
Crit 50 YR - 60% PR
Crit 50 YR - EX
WS 50 YR - EX
WS 50 YR - 60% PR
WS 10 YR - EX
Crit 10 YR - EX
Crit 10 YR - 60% PR
WS 10 YR - 60% PR
Ground

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Total (lb/sq ft)	Shear Chan (lb/sq ft)
Main Channel	2343	10 YR	60% PR	343	148.2	151.93	150.79	152.44	0.00771	5.79	63.18	20.59	0.55	1.28	1.64
Main Channel	2343	50 YR	60% PR	538	148.2	152.54	151.61	153.44	0.010948	7.69	76.1	21.78	0.67	2.04	2.74
Main Channel	2343	100 YR	60% PR	672	148.2	152.87	152.11	154.06	0.013103	8.86	83.38	22.37	0.74	2.58	3.54
Main Channel	2333.581 10+27.24	10 YR	60% PR	343	147.7	151.99		152.27	0.00411	4.24	83.45	25.15	0.4	0.73	0.88
Main Channel	2333.581 10+27.24	50 YR	60% PR	538	147.7	152.71		153.18	0.005403	5.51	101.58	25.54	0.47	1.11	1.39
Main Channel	2333.581 10+27.24	100 YR	60% PR	672	147.7	153.13		153.73	0.006127	6.25	112.32	25.77	0.51	1.35	1.74
Main Channel	2331.964	10 YR	60% PR	343	147.69	151.9		152.17	0.004421	4.24	83.76	26.61	0.41	0.76	0.89
Main Channel	2331.964	50 YR	60% PR	538	147.69	152.58		153.05	0.00578	5.5	102.17	27.03	0.49	1.16	1.41
Main Channel	2331.964	100 YR	60% PR	672	147.69	152.99		153.58	0.006532	6.23	113.1	27.23	0.52	1.41	1.76
Main Channel	2316.598	10 YR	60% PR	343	148.7	151.59		152.13	0.016757	5.9	58.59	29.98	0.74	1.89	2.05
Main Channel	2316.598	50 YR	60% PR	538	148.7	152.26		153	0.015644	6.92	78.69	30.27	0.75	2.27	2.56
Main Channel	2316.598	100 YR	60% PR	672	148.7	152.67		153.54	0.015144	7.49	91.05	30.44	0.76	2.48	2.86
Main Channel	2313.904	10 YR	60% PR	343	148.52	151.22	151.22	152.06	0.033136	7.33	47.11	29.29	1.01	3.18	3.36
Main Channel	2313.904	50 YR	60% PR	538	148.52	151.8	151.8	152.92	0.029991	8.52	64.05	29.69	1.01	3.76	4.11
Main Channel	2313.904	100 YR	60% PR	672	148.52	152.15	152.15	153.45	0.028552	9.17	74.57	29.85	1.01	4.07	4.53
Main Channel	2313.068	10 YR	60% PR	343	147.55	149.62	150.25	151.77	0.14551	11.77	29.3	28.04	1.98	9.35	9.9
Main Channel	2313.068	50 YR	60% PR	538	147.55	150.09	150.83	152.65	0.108746	12.88	43	29.89	1.81	9.5	10.53
Main Channel	2313.068	100 YR	60% PR	672	147.55	150.38	151.19	153.18	0.095392	13.51	51.72	30.07	1.75	9.83	10.95
Main Channel	2309.556	10 YR	60% PR	343	147.55	149.93	150.25	151.22	0.061981	9.12	38.69	30.39	1.35	4.8	5.45
Main Channel	2309.556	50 YR	60% PR	538	147.55	150.38	150.83	152.16	0.060406	10.79	52.28	30.64	1.39	6.13	6.97
Main Channel	2309.556	100 YR	60% PR	672	147.55	150.67	151.2	152.72	0.057625	11.6	61.2	30.76	1.39	6.72	7.68
Main Channel	2307.988	10 YR	60% PR	343	146.53	148.57	149.26	150.96	0.172113	12.41	27.68	26.79	2.13	10.89	11.18
Main Channel	2307.988	50 YR	60% PR	538	146.53	149.01	149.87	151.92	0.131733	13.7	39.73	28	1.98	11.28	12.13
Main Channel	2307.988	100 YR	60% PR	672	146.53	149.29	150.24	152.49	0.115417	14.38	47.68	28.88	1.9	11.4	12.62
Main Channel	2304.475	10 YR	60% PR	343	146.55	148.84	149.24	150.3	0.082453	9.7	35.73	30.14	1.52	5.99	6.43
Main Channel	2304.475	50 YR	60% PR	538	146.55	149.21	149.83	151.33	0.085269	11.72	46.97	30.44	1.62	7.93	8.6
Main Channel	2304.475	100 YR	60% PR	672	146.55	149.44	150.16	151.96	0.085015	12.78	54.07	30.61	1.65	8.96	9.8
Main Channel	2304 10+27.24	10 YR	EX	343	146.45	149.3	149.3	150.18	0.019567	7.52	46.63	29.3	0.99	1.88	2.13
Main Channel	2304 10+27.24	50 YR	EX	538	146.45	149.92	149.92	151.08	0.017662	8.71	65.16	30.99	0.99	2.22	2.58
Main Channel	2304 10+27.24	100 YR	EX	672	146.45	150.44	150.31	151.64	0.014111	8.87	81.75	32.6	0.91	2.1	2.51
Main Channel	2292.245	10 YR	60% PR	343	145.91	147.62	148.32	150	0.141409	12.38	28.45	27.65	1.98	8.98	10.61
Main Channel	2292.245	50 YR	60% PR	538	145.91	148.06	148.93	151.04	0.1197	14	41.47	30.54	1.92	9.93	12.23
Main Channel	2292.245	100 YR	60% PR	672	145.91	148.32	149.31	151.68	0.11214	14.93	49.44	30.75	1.9	10.89	13.26
Main Channel	2292	10 YR	EX	343	145.38	149.04		149.36	0.003691	4.55	77.65	27.91	0.46	0.59	0.68
Main Channel	2292	50 YR	EX	538	145.38	150.08		150.51	0.00332	5.27	107.81	29.98	0.46	0.67	0.82
Main Channel	2292	100 YR	EX	672	145.38	150.72		151.21	0.003168	5.67	127.2	31.46	0.46	0.72	0.91
Main Channel	2290	10 YR	60% PR	343	144.79	148.36	147.39	148.72	0.007254	4.89	74.81	30.2	0.52	1.04	1.25
Main Channel	2290	50 YR	60% PR	538	144.79	147.07	148.03	150.35	0.147293	14.56	37.39	26.43	2.09	12.63	13.66
Main Channel	2290	100 YR	60% PR	672	144.79	147.32	148.4	151.03	0.135106	15.49	44.31	27.47	2.06	13.1	14.67
Main Channel	2288	10 YR	60% PR	343	144.05	148.39		148.68	0.004904	4.4	84.27	30.17	0.43	0.78	0.97
Main Channel	2288	50 YR	60% PR	538	144.05	149.17	147.7	149.62	0.005714	5.49	108.01	30.57	0.48	1.12	1.4
Main Channel	2288	100 YR	60% PR	672	144.05	149.64	148.1	150.19	0.00609	6.1	122.46	30.81	0.51	1.31	1.67
Main Channel	2286.217	10 YR	60% PR	343	144	148.38		148.65	0.004206	4.2	87.46	29.58	0.4	0.72	0.87
Main Channel	2286.217	50 YR	60% PR	538	144	149.16		149.58	0.00511	5.31	110.6	30	0.46	1.05	1.3
Main Channel	2286.217	100 YR	60% PR	672	144	149.62		150.15	0.005548	5.94	124.7	30.28	0.49	1.25	1.57
Main Channel	2280	10 YR	60% PR	343	144.78	148.28		148.61	0.006304	4.64	77.32	29.72	0.48	0.96	1.12
Main Channel	2280	50 YR	60% PR	538	144.78	149.04		149.54	0.007006	5.71	100.09	30.17	0.53	1.32	1.57
Main Channel	2280	100 YR	60% PR	672	144.78	149.5		150.1	0.007296	6.31	114.07	30.45	0.55	1.52	1.84
Main Channel	2279	10 YR	EX	343	145.56	148.09	148.09	149.19	0.019094	8.48	42.87	21.39	0.99	2.24	2.66
Main Channel	2279	50 YR	EX	538	145.56	148.87	148.87	150.32	0.017145	9.78	60.35	23.26	0.99	2.55	3.21
Main Channel	2279	100 YR	EX	672	145.56	149.36	149.36	151.01	0.01612	10.47	71.96	24.41	0.98	2.7	3.5
Main Channel	2275	10 YR	60% PR	343	145.28	148.06		148.55	0.008507	5.63	61.82	30.04	0.67	1.02	1.12
Main Channel	2275	50 YR	60% PR	538	145.28	148.81		149.47	0.007721	6.53	85	30.93	0.67	1.21	1.37
Main Channel	2275	100 YR	60% PR	672	145.28	149.28		150.04	0.007348	7.03	99.58	31.31	0.67	1.31	1.51
Main Channel	2264.664	10 YR	60% PR	343	144.88	147.46	147.46	148.36	0.019172	7.68	47.45	28.57	0.99	1.91	2.18
Main Channel	2264.664	50 YR	60% PR	538	144.88	148.09	148.09	149.29	0.01751	8.91	65.75	29.78	1	2.28	2.67
Main Channel	2264.664	100 YR	60% PR	672	144.88	148.47	148.47	149.86	0.016674	9.58	77.43	30.51	1	2.47	2.94
Main Channel	2249.758	10 YR	60% PR	343	144.58	146.82	147.02	148	0.027688	8.74	40.54	25.84	1.18	2.61	2.91
Main Channel	2249.758	50 YR	60% PR	538	144.58	147.46	147.68	148.96	0.023334	9.91	57.64	27.76	1.14	2.88	3.36

Main Channel			2249.758	100 YR	60% PR	672	144.58	147.85	148.1	149.55	0.021547	10.56	68.76	28.94	1.12	3.03	3.62
Main Channel			2248	10 YR	EX	343	144.88	147.49	147.49	148.38	0.020392	7.65	48.38	30.85	0.99	1.93	2.34
Main Channel			2248	50 YR	EX	538	144.88	148.14	148.14	149.29	0.017963	8.75	69.76	34.94	0.97	2.16	2.78
Main Channel			2248	100 YR	EX	672	144.88	148.52	148.52	149.83	0.017093	9.38	83.45	36.59	0.97	2.34	3.05
Main Channel	2148	11+94.00		10 YR	60% PR	343	141.46	144.88	144.33	145.6	0.009309	6.82	51.48	20.37	0.72	1.34	1.53
Main Channel	2148	11+94.00		50 YR	60% PR	538	141.46	145.81	145.13	146.78	0.008609	7.96	71.42	22.51	0.73	1.53	1.88
Main Channel	2148	11+94.00		100 YR	60% PR	672	141.46	146.38	145.61	147.5	0.00823	8.56	84.7	23.8	0.73	1.62	2.08
Main Channel	2131	11+94.00		10 YR	EX	343	141.46	144.67		145.51	0.011668	7.41	47.32	19.96	0.81	1.59	1.83
Main Channel	2131	11+94.00		50 YR	EX	538	141.46	145.42	145.13	146.64	0.012131	8.94	62.88	21.59	0.86	1.99	2.45
Main Channel	2131	11+94.00		100 YR	EX	672	141.46	145.86	145.62	147.32	0.01247	9.83	72.51	22.62	0.89	2.23	2.84
Main Channel	2082	12+60.00		10 YR	60% PR	343	140.68	144.59		145.05	0.005504	5.46	63.66	23.05	0.56	0.86	0.96
Main Channel	2082	12+60.00		50 YR	60% PR	538	140.68	145.63		146.25	0.004953	6.32	89.09	25.61	0.55	0.96	1.16
Main Channel	2082	12+60.00		100 YR	60% PR	672	140.68	146.27		146.98	0.004727	6.8	105.84	27.78	0.55	1	1.28
Main Channel	2065	12+60.00		10 YR	EX	343	140.68	144.02		144.77	0.010168	6.95	50.89	21.62	0.75	1.37	1.6
Main Channel	2065	12+60.00		50 YR	EX	538	140.68	144.76	144.37	145.84	0.010781	8.43	67.51	23.44	0.81	1.75	2.17
Main Channel	2065	12+60.00		100 YR	EX	672	140.68	145.18	144.82	146.49	0.011253	9.31	77.57	24.48	0.84	2	2.55
Main Channel	2038	13+04.00		10 YR	60% PR	343	140.42	144.4		144.84	0.003973	5.43	71.46	24.6	0.5	0.66	0.88
Main Channel	2038	13+04.00		50 YR	60% PR	538	140.42	145.41		146.05	0.00419	6.56	98.1	28.31	0.54	0.83	1.18
Main Channel	2038	13+04.00		100 YR	60% PR	672	140.42	146.01		146.77	0.00426	7.18	116.02	31	0.55	0.91	1.35
Main Channel	2021	13+04.00		10 YR	EX	343	140.42	143.71		144.34	0.007778	6.46	55.22	22.49	0.67	1.11	1.35
Main Channel	2021	13+04.00		50 YR	EX	538	140.42	144.46		145.38	0.008387	7.83	73.04	24.79	0.72	1.42	1.83
Main Channel	2021	13+04.00		100 YR	EX	672	140.42	144.9		145.99	0.008706	8.61	84.25	26.28	0.75	1.59	2.13
Main Channel	1942	14+00.00		10 YR	60% PR	343	139.56	144.27		144.53	0.001939	4.19	96.85	29	0.36	0.37	0.5
Main Channel	1942	14+00.00		50 YR	60% PR	538	139.56	145.29		145.69	0.002235	5.2	133.66	39.83	0.4	0.43	0.71
Main Channel	1942	14+00.00		100 YR	60% PR	672	139.56	145.93		146.39	0.0023	5.69	160.31	44.99	0.41	0.48	0.82
Main Channel			1925.537	10 YR	60% PR	343	139.62	144.14		144.48	0.004092	4.73	82.1	24.21	0.41	0.74	1.03
Main Channel			1925.537	50 YR	60% PR	538	139.62	145.1		145.62	0.004957	5.97	107.62	30.17	0.46	0.95	1.54
Main Channel			1925.537	100 YR	60% PR	672	139.62	145.68		146.32	0.005292	6.62	126.66	35.8	0.49	1.01	1.83
Main Channel	1925	14+00.00		10 YR	EX	343	139.56	142.2	142.2	143.2	0.018696	8.06	43.42	22.96	0.99	2.08	2.33
Main Channel	1925	14+00.00		50 YR	EX	538	139.56	142.91	142.91	144.23	0.016779	9.3	60.37	24.83	0.98	2.37	2.81
Main Channel	1925	14+00.00		100 YR	EX	672	139.56	143.35	143.35	144.85	0.015709	9.94	71.7	26.06	0.98	2.49	3.06
Main Channel			1916.562	10 YR	60% PR	343	141	143.41	143.24	144.34	0.024226	7.8	46.19	21.47	0.89	2.88	3.41
Main Channel			1916.562	50 YR	60% PR	538	141	144.01	144.01	145.44	0.027867	9.71	59.41	22.7	0.99	3.95	4.91
Main Channel			1916.562	100 YR	60% PR	672	141	144.45	144.45	146.12	0.027242	10.52	69.64	23.95	1	4.26	5.5
Main Channel			1904	10 YR	EX	343	137.65	141.2	141.2	142.17	0.025181	7.9	43.51	23.12	1	2.71	2.82
Main Channel			1904	50 YR	EX	538	137.65	141.89	141.89	143.18	0.022414	9.13	60.03	24.87	0.99	3.06	3.4
Main Channel			1904	100 YR	EX	672	137.65	142.29	142.29	143.79	0.021586	9.86	70.31	25.92	1	3.29	3.78
Main Channel			1901.692	10 YR	60% PR	343	141	142.97	142.97	143.93	0.032122	7.9	44.71	24.42	0.99	3.33	3.73
Main Channel			1901.692	50 YR	60% PR	538	141	143.44	143.65	144.96	0.038302	9.95	56.35	25.24	1.13	4.76	5.51
Main Channel			1901.692	100 YR	60% PR	672	141	143.71	143.9	145.61	0.041519	11.13	63.37	25.72	1.19	5.63	6.65
Main Channel			1899.055	10 YR	60% PR	343	140	143.08	142.76	143.78	0.018913	6.76	52.89	25.61	0.79	2.25	2.59
Main Channel			1899.055	50 YR	60% PR	538	140	143.06	143.44	144.82	0.048022	10.71	52.35	25.57	1.26	5.67	6.51
Main Channel			1899.055	100 YR	60% PR	672	140	144.43	143.81	145.41	0.014547	8.1	96.93	43.45	0.75	1.87	3.18
Main Channel			1896.671	10 YR	60% PR	343	140	142.76	142.76	143.7	0.030948	7.83	45.65	26.11	0.99	3.18	3.65
Main Channel			1896.671	50 YR	60% PR	538	140	143.13	143.4	144.73	0.041898	10.24	55.47	26.95	1.19	5	5.88
Main Channel			1896.671	100 YR	60% PR	672	140	143.62	143.62	145.29	0.03385	10.47	69.26	29.64	1.1	4.54	5.77
Main Channel			1894.245	10 YR	60% PR	343	139	141.06	141.75	143.42	0.148019	12.31	27.87	23.67	2	10.5	10.64
Main Channel			1894.245	50 YR	60% PR	538	139	141.55	142.41	144.44	0.114997	13.65	39.67	24.8	1.87	10.87	11.66
Main Channel			1894.245	100 YR	60% PR	672	139	141.88	142.82	145.01	0.098055	14.21	47.94	25.55	1.78	10.75	11.9
Main Channel			1891.769	10 YR	60% PR	343	139	141.29	141.76	142.95	0.079379	10.36	33.81	25.41	1.51	6.35	7.02
Main Channel			1891.769	50 YR	60% PR	538	139	141.77	142.42	144.03	0.074134	12.11	46.28	26.45	1.53	7.65	8.73
Main Channel			1891.769	100 YR	60% PR	672	139	142.1	142.75	144.63	0.067843	12.86	55.07	27.15	1.51	8.02	9.34
Main Channel	1888.732	14+54.00		10 YR	60% PR	343	138	140.05	140.76	142.45	0.145919	12.43	27.7	23.67	1.99	10.31	10.75
Main Channel	1888.732	14+54.00		50 YR	60% PR	538	138	140.52	141.43	143.56	0.119427	14	39.09	24.84	1.9	11.14	12.22
Main Channel	1888.732	14+54.00		100 YR	60% PR	672	138	140.83	141.84	144.19	0.106696	14.77	46.71	25.59	1.85	11.42	12.88
Main Channel			1886.455	10 YR	60% PR	343	138	140.25	140.74	141.99	0.092798	10.59	32.5	24.64	1.6	7.33	7.55
Main Channel			1886.455	50 YR	60% PR	538	138	140.66	141.41	143.16	0.093559	12.7	42.91	25.67	1.68	9.22	9.94
Main Channel			1886.455	100 YR	60% PR	672	138	140.94	141.79	143.83	0.089026	13.66	50.2	26.37	1.68	9.89	10.95
Main Channel			1884.334	10 YR	60% PR	343	137	139	139.76	141.63	0.168162	13.02	26.41	23.16	2.13	11.62	11.94
Main Channel			1884.334	50 YR	60% PR	538	137	139.45	140.43	142.83	0.140707	14.76	36.82	23.79	2.05	12.9	13.79

Main Channel			1884.334	100 YR	60% PR	672	137	139.73	140.86	143.52	0.126903	15.63	43.68	24.2	2	13.38	14.65
Main Channel			1882.063	10 YR	60% PR	343	137	139.19	139.75	141.12	0.103657	11.17	30.86	24.03	1.71	8	8.41
Main Channel			1882.063	50 YR	60% PR	538	137	139.59	140.41	142.37	0.104515	13.39	40.72	24.62	1.79	10.19	11.06
Main Channel			1882.063	100 YR	60% PR	672	137	139.86	140.83	143.1	0.101022	14.48	47.31	25.01	1.81	11.13	12.33
Main Channel			1878.929	10 YR	60% PR	343	136	138	138.75	140.64	0.172328	13.05	26.29	23.03	2.15	11.88	12.06
Main Channel			1878.929	50 YR	60% PR	538	136	138.42	139.43	141.91	0.150163	15	36.01	23.42	2.11	13.61	14.35
Main Channel			1878.929	100 YR	60% PR	672	136	138.68	139.85	142.66	0.138934	16.01	42.27	23.77	2.08	14.38	15.52
Main Channel			1877	10 YR	EX	343	135.75	139.56	139.56	140.47	0.07327	7.66	44.84	25.36	1	7.47	7.66
Main Channel			1877	50 YR	EX	538	135.75	140.21	140.21	141.41	0.064033	8.79	62.03	27.16	0.99	8.34	9.11
Main Channel			1877	100 YR	EX	672	135.75	140.59	140.59	141.98	0.061767	9.49	72.45	28.25	0.99	8.98	10.13
Main Channel			1876.626	10 YR	60% PR	343	136	138.18	138.76	140.14	0.104599	11.21	30.61	23.06	1.71	8.25	8.48
Main Channel			1876.626	50 YR	60% PR	538	136	138.59	139.43	141.42	0.107038	13.52	40.02	23.88	1.81	10.48	11.28
Main Channel			1876.626	100 YR	60% PR	672	136	138.84	139.85	142.19	0.105462	14.7	46.2	24.46	1.84	11.53	12.75
Main Channel			1874.49	10 YR	60% PR	343	135	136.97	137.75	139.76	0.189521	13.42	25.57	22.98	2.24	12.72	12.88
Main Channel			1874.49	50 YR	60% PR	538	135	137.37	138.42	141.06	0.164714	15.4	35.02	23.23	2.2	14.6	15.29
Main Channel			1874.49	100 YR	60% PR	672	135	137.63	138.85	141.84	0.152757	16.46	41.02	23.39	2.17	15.5	16.57
Main Channel			1871.866	10 YR	60% PR	343	135	137.17	137.75	139.17	0.107919	11.33	30.31	23.07	1.74	8.43	8.68
Main Channel			1871.866	50 YR	60% PR	538	135	137.56	138.42	140.48	0.112133	13.72	39.35	23.33	1.85	10.98	11.67
Main Channel			1871.866	100 YR	60% PR	672	135	137.81	138.85	141.28	0.111168	14.95	45.18	23.51	1.88	12.23	13.26
Main Channel			1869.26	10 YR	60% PR	343	134	135.97	136.75	138.72	0.183724	13.3	25.79	22.94	2.21	12.46	12.61
Main Channel			1869.26	50 YR	60% PR	538	134	136.37	137.42	140.06	0.164013	15.39	34.99	23.07	2.2	14.6	15.26
Main Channel			1869.26	100 YR	60% PR	672	134	136.63	137.84	140.86	0.154188	16.52	40.78	23.16	2.18	15.66	16.7
Main Channel			1866.814	10 YR	60% PR	343	134	136.17	136.74	138.15	0.110903	11.29	30.37	23.03	1.73	8.67	8.69
Main Channel			1866.814	50 YR	60% PR	538	134	136.55	137.42	139.5	0.12108	13.8	39.06	23.33	1.87	11.76	12
Main Channel			1866.814	100 YR	60% PR	672	134	136.79	137.83	140.32	0.122832	15.08	44.7	23.52	1.91	13.36	13.77
Main Channel			1862.54	10 YR	60% PR	343	133	135.03	135.76	137.53	0.161585	12.68	27.05	23	2.06	11.36	11.36
Main Channel			1862.54	50 YR	60% PR	538	133	137.83	136.42	138.36	0.007645	5.85	94.2	25.87	0.52	1.45	1.66
Main Channel			1862.54	100 YR	60% PR	672	133	138.72	136.82	139.26	0.006033	5.94	117.95	27.69	0.48	1.31	1.6
Main Channel			1862	10 YR	EX	343	135.07	138.97		139.49	0.010958	5.78	60.34	21.93	0.58	1.69	1.91
Main Channel			1862	50 YR	EX	538	135.07	139.8		140.57	0.011875	7.07	79.59	24.2	0.63	2.16	2.64
Main Channel			1862	100 YR	EX	672	135.07	140.29		141.22	0.01234	7.8	91.77	25.69	0.66	2.43	3.08
Main Channel			1846	10 YR	EX	343	135.1	138.08	138.08	139.13	0.037802	8.22	41.92	21.17	1	4.37	4.63
Main Channel			1846	50 YR	EX	538	135.1	138.83	138.83	140.21	0.033201	9.45	58.52	23.32	0.99	4.79	5.53
Main Channel			1846	100 YR	EX	672	135.1	139.28	139.28	140.86	0.031164	10.11	69.45	24.64	0.98	5.01	6.02
Main Channel			1834	10 YR	60% PR	343	130	136.53	133.04	136.7	0.001374	3.52	130.08	26.35	0.25	0.34	0.5
Main Channel			1834	50 YR	60% PR	538	130	137.93		138.19	0.001641	4.42	168.21	28.18	0.29	0.47	0.74
Main Channel			1834	100 YR	60% PR	672	130	138.79		139.11	0.001746	4.9	192.81	29.01	0.3	0.54	0.88
Main Channel			1820	10 YR	EX	343	133.09	136.31	136.18	137.38	0.023733	8.31	42.92	19.24	0.91	3.06	3.63
Main Channel			1820	50 YR	EX	538	133.09	137.04	137.04	138.58	0.024942	10.06	57.59	21.17	0.98	3.86	4.89
Main Channel			1820	100 YR	EX	672	133.09	137.56	137.56	139.31	0.023274	10.73	69.15	22.57	0.97	4.02	5.3
Main Channel	1818	15+20.00		10 YR	60% PR	343	131.25	136.44		136.67	0.002313	3.82	96.67	25.47	0.31	0.47	0.65
Main Channel	1818	15+20.00		50 YR	60% PR	538	131.25	137.86		138.16	0.002062	4.31	133.86	26.83	0.31	0.52	0.76
Main Channel	1818	15+20.00		100 YR	60% PR	672	131.25	138.74		139.08	0.001926	4.56	157.8	27.63	0.31	0.54	0.81
Main Channel			1808.69	10 YR	60% PR	343	132.66	135.79		136.56	0.016511	7.25	54.93	23	0.77	2.19	2.78
Main Channel			1808.69	50 YR	60% PR	538	132.66	137.36		138.08	0.008606	7.08	92.75	25.16	0.6	1.66	2.28
Main Channel			1808.69	100 YR	60% PR	672	132.66	138.26		139	0.006991	7.24	115.82	26.14	0.56	1.57	2.23
Main Channel	1805	15+20.00		10 YR	EX	343	132.66	135.78	135.78	136.94	0.037167	8.65	40.39	18.72	0.99	4.62	5.21
Main Channel	1805	15+20.00		50 YR	EX	538	132.66	136.62	136.62	138.13	0.032739	9.92	57.05	20.88	0.97	5.07	6.21
Main Channel	1805	15+20.00		100 YR	EX	672	132.66	137.32	137.12	138.86	0.02607	10.09	72.17	22.59	0.9	4.65	6.01
Main Channel			1795	10 YR	60% PR	343	131.28	135.89		136.37	0.004347	5.58	64.15	19.66	0.51	0.77	0.93
Main Channel			1795	50 YR	60% PR	538	131.28	137.38		137.97	0.003438	6.19	95.79	22.66	0.48	0.76	1.03
Main Channel			1795	100 YR	60% PR	672	131.28	138.26		138.91	0.003156	6.57	116.49	24.5	0.47	0.78	1.1
Main Channel			1787	10 YR	60% PR	343	130.9	135.77		136.33	0.004145	6.03	63.27	18.02	0.51	0.75	1.04
Main Channel			1787	50 YR	60% PR	538	130.9	137.18		137.92	0.003845	7.01	90.46	20.55	0.52	0.85	1.28
Main Channel			1787	100 YR	60% PR	672	130.9	138.01		138.87	0.00375	7.58	108.18	22.24	0.52	0.91	1.42
Main Channel			1785	10 YR	EX	343	131.45	135.38		136.18	0.009913	7.17	48.84	18.38	0.74	1.46	1.67
Main Channel			1785	50 YR	EX	538	131.45	136.7		137.61	0.006969	7.69	75.03	21.26	0.66	1.33	1.7
Main Channel			1785	100 YR	EX	672	131.45	137.48		138.47	0.006112	8.06	92.33	22.97	0.63	1.31	1.76
Main Channel	1779	15+59.00		10 YR	60% PR	343	130.81	135.76		136.29	0.004527	5.87	62.17	18.68	0.52	0.8	1.02
Main Channel	1779	15+59.00		50 YR	60% PR	538	130.81	137.2		137.87	0.003879	6.66	91.36	21.72	0.5	0.85	1.18

Main Channel	1779	15+59.00		100 YR	60% PR	672	130.81	138.05		138.81	0.003667	7.13	110.58	23.71	0.5	0.88	1.29
Main Channel			1774	10 YR	EX	343	130.96	135.44		136.04	0.005223	6.22	58.58	17.72	0.56	0.9	1.15
Main Channel			1774	50 YR	EX	538	130.96	136.71		137.52	0.004912	7.27	82.39	19.89	0.56	1.03	1.43
Main Channel			1774	100 YR	EX	672	130.96	137.46		138.4	0.004791	7.87	97.88	21.22	0.57	1.1	1.6
Main Channel			1770	10 YR	60% PR	343	130.59	134.58	134.58	136.12	0.015375	10.56	45.49	17.33	0.98	2.23	3.33
Main Channel			1770	50 YR	60% PR	538	130.59	135.7	135.7	137.68	0.014228	12.18	66.38	19.96	0.99	2.56	4.05
Main Channel			1770	100 YR	60% PR	672	130.59	136.4	136.4	138.61	0.013459	12.99	80.86	21.64	0.99	2.69	4.4
Main Channel	1766	15+59.00		10 YR	EX	343	130.81	134.44	134.44	135.88	0.020669	9.76	39.36	15.85	0.98	2.81	3.78
Main Channel	1766	15+59.00		50 YR	EX	538	130.81	135.5	135.5	137.34	0.018221	11.16	57.37	18.14	0.97	3.08	4.48
Main Channel	1766	15+59.00		100 YR	EX	672	130.81	136.11	136.11	138.21	0.017524	11.99	68.86	19.42	0.97	3.28	4.94
Main Channel			1759	10 YR	EX	343	130.6	134.27	134.27	135.65	0.01738	9.48	39.01	16.44	0.98	2.29	2.92
Main Channel			1759	50 YR	EX	538	130.6	135.28	135.28	137.06	0.015254	10.85	56.75	18.77	0.97	2.51	3.46
Main Channel			1759	100 YR	EX	672	130.6	135.86	135.86	137.9	0.014644	11.66	68.09	20.1	0.97	2.67	3.82
Main Channel			1758	10 YR	60% PR	343	130.27	133.2	133.92	135.74	0.039691	13.38	33.39	17.98	1.5	4.31	6.02
Main Channel			1758	50 YR	60% PR	538	130.27	133.96	134.94	137.29	0.037499	15.55	47.68	19.51	1.52	5.22	7.44
Main Channel			1758	100 YR	60% PR	672	130.27	134.44	135.52	138.21	0.03592	16.67	57.19	20.46	1.52	5.63	8.17
Main Channel			1751	10 YR	60% PR	343	130.46	133.04	133.72	135.4	0.04155	12.89	34.53	20.19	1.52	4.22	5.76
Main Channel			1751	50 YR	60% PR	538	130.46	133.62	134.62	137.01	0.044981	15.64	46.59	21.41	1.64	5.71	7.85
Main Channel			1751	100 YR	60% PR	672	130.46	134.01	135.19	137.92	0.044337	16.92	55.06	22.19	1.66	6.34	8.8
Main Channel			1746	10 YR	60% PR	343	130.34	132.64	133.37	135.14	0.049283	13.32	33.17	20.03	1.63	4.86	6.32
Main Channel			1746	50 YR	60% PR	538	130.34	133.22	134.27	136.74	0.050898	15.96	45.13	21.25	1.73	6.32	8.35
Main Channel			1746	100 YR	60% PR	672	130.34	133.6	134.8	137.65	0.049297	17.2	53.46	22	1.74	6.92	9.27
Main Channel			1744	10 YR	EX	343	130.36	133.5	133.5	134.67	0.017611	8.72	41.42	19.39	0.99	2.18	2.58
Main Channel			1744	50 YR	EX	538	130.36	134.34	134.34	135.89	0.015882	10.08	58.3	21.01	0.98	2.49	3.13
Main Channel			1744	100 YR	EX	672	130.36	134.84	134.84	136.63	0.015283	10.86	68.98	22	0.99	2.67	3.47
Main Channel	1738	16+00.00		10 YR	60% PR	343	130.16	131.89	132.68	134.59	0.084217	13.2	26.22	19.77	1.98	6.71	7.12
Main Channel	1738	16+00.00		50 YR	60% PR	538	130.16	132.32	133.44	136.16	0.083516	15.75	34.91	20.62	2.06	8.36	9.26
Main Channel	1738	16+00.00		100 YR	60% PR	672	130.16	132.6	133.92	137.08	0.080828	17.03	40.69	21.17	2.08	9.1	10.34
Main Channel	1725	16+00.00		10 YR	EX	343	130.16	132.67	132.67	133.72	0.026993	8.24	42.21	21.31	1	3.12	3.43
Main Channel	1725	16+00.00		10 YR	60% PR	343	129.69	132	132.37	133.67	0.031081	10.49	35.37	19.22	1.29	3.31	3.93
Main Channel	1725	16+00.00		50 YR	EX	538	130.16	133.41	133.41	134.81	0.024118	9.52	58.54	22.8	0.99	3.54	4.14
Main Channel	1725	16+00.00		50 YR	60% PR	538	129.69	132.49	133.2	135.12	0.036701	13.17	45.08	19.95	1.46	4.7	5.77
Main Channel	1725	16+00.00		100 YR	EX	672	130.16	133.96	133.86	135.47	0.02071	9.92	71.37	23.9	0.95	3.48	4.24
Main Channel	1725	16+00.00		100 YR	60% PR	672	129.69	132.82	133.71	136.01	0.03818	14.54	51.6	20.4	1.51	5.4	6.76
Main Channel			1710	10 YR	60% PR	343	129.37	131.33	131.8	133.12	0.044159	10.75	31.93	18.43	1.43	4.4	4.45
Main Channel			1710	50 YR	60% PR	538	129.37	131.82	132.58	134.5	0.047229	13.13	41.26	19.3	1.55	5.71	6.11
Main Channel			1710	100 YR	60% PR	672	129.37	132.11	133.06	135.38	0.049156	14.51	46.89	19.8	1.61	6.51	7.18
Main Channel			1697	10 YR	EX	343	129.38	132.29		133.03	0.010159	6.9	50.55	20.15	0.74	1.42	1.59
Main Channel			1697	50 YR	EX	538	129.38	133.3		134.25	0.008648	7.85	71.66	21.95	0.72	1.53	1.85
Main Channel			1697	100 YR	EX	672	129.38	133.92		135	0.007953	8.36	85.77	23.08	0.71	1.58	1.99
Main Channel			1684	10 YR	60% PR	343	128.62	131.97	131.34	132.73	0.008472	7.02	52.42	19.76	0.7	1.25	1.56
Main Channel			1684	50 YR	60% PR	538	128.62	132.9	132.2	133.97	0.00852	8.39	71.58	21.51	0.74	1.53	2.03
Main Channel			1684	100 YR	60% PR	672	128.62	133.52	132.72	134.74	0.008106	9	85.38	22.7	0.74	1.63	2.24
Main Channel			1671	10 YR	EX	343	128.62	132.16		132.78	0.006911	6.33	56.25	20.08	0.63	1.07	1.27
Main Channel			1671	50 YR	EX	538	128.62	133.17		134.02	0.006673	7.48	77.44	22	0.65	1.26	1.61
Main Channel			1671	100 YR	EX	672	128.62	133.79		134.79	0.006471	8.08	91.56	23.2	0.65	1.35	1.8
Main Channel	1655	16+83.00		10 YR	60% PR	343	128.38	131.87		132.45	0.007246	6.1	57.09	21.39	0.63	1.09	1.21
Main Channel	1655	16+83.00		50 YR	60% PR	538	128.38	132.9		133.66	0.006357	7.01	80.27	23.47	0.62	1.19	1.44
Main Channel	1655	16+83.00		100 YR	60% PR	672	128.38	133.59		134.43	0.005732	7.41	96.89	24.89	0.61	1.21	1.53
Main Channel	1642	16+83.00		10 YR	EX	343	128.38	131.94		132.58	0.00669	6.49	58.56	21.53	0.64	1.02	1.3
Main Channel	1642	16+83.00		50 YR	EX	538	128.38	132.97		133.84	0.006277	7.59	81.91	23.61	0.65	1.19	1.62
Main Channel	1642	16+83.00		100 YR	EX	672	128.38	133.61		134.6	0.006022	8.17	97.43	24.94	0.65	1.28	1.79
Main Channel			1623	10 YR	60% PR	343	127.94	131.73		132.22	0.005416	5.69	63.9	22.86	0.56	0.84	1.01
Main Channel			1623	50 YR	60% PR	538	127.94	132.79		133.45	0.004981	6.61	89.23	24.91	0.57	0.97	1.25
Main Channel			1623	100 YR	60% PR	672	127.94	133.49		134.24	0.004581	7.03	107.35	26.43	0.56	1	1.34
Main Channel			1610	10 YR	EX	343	127.94	131.89		132.35	0.004585	5.46	67.65	23.14	0.53	0.74	0.91
Main Channel			1610	50 YR	EX	538	127.94	132.98		133.6	0.004328	6.4	93.91	25.34	0.54	0.87	1.14
Main Channel			1610	100 YR	EX	672	127.94	133.65		134.36	0.004168	6.9	111.36	26.81	0.54	0.93	1.27
Main Channel	1598	17+40.00		10 YR	60% PR	343	127.92	131.6		132.08	0.005705	5.59	62.04	21.5	0.56	0.91	1
Main Channel	1598	17+40.00		50 YR	60% PR	538	127.92	132.68		133.32	0.00511	6.46	86.36	23.54	0.56	1.01	1.21
Main Channel	1598	17+40.00		100 YR	60% PR	672	127.92	133.4		134.12	0.004644	6.85	103.85	25.02	0.55	1.03	1.29

Main Channel	1585	17+40.00		10 YR	EX	343	127.92	131.67		132.22	0.005185	6.01	63.66	21.64	0.57	0.84	1.1
Main Channel	1585	17+40.00		50 YR	EX	538	127.92	132.69		133.46	0.005234	7.19	86.71	23.57	0.6	1.04	1.43
Main Channel	1585	17+40.00		100 YR	EX	672	127.92	133.32		134.23	0.005173	7.81	102	24.87	0.61	1.13	1.62
Main Channel	1479	18+59.00		10 YR	60% PR	343	126.81	130.11	129.77	131.1	0.011291	8.13	48.29	19.54	0.82	1.58	2.08
Main Channel	1479	18+59.00		50 YR	60% PR	538	126.81	131.32		132.49	0.008692	8.92	73.84	22.66	0.76	1.57	2.24
Main Channel	1479	18+59.00		100 YR	60% PR	672	126.81	132.23		133.41	0.006845	9.01	95.69	25.09	0.7	1.43	2.15
Main Channel	1466	18+59.00		10 YR	EX	343	126.81	130.74		131.27	0.013458	5.88	61.07	21.16	0.56	2.18	2.66
Main Channel	1466	18+59.00		50 YR	EX	538	126.81	131.8		132.52	0.01294	6.9	84.9	23.96	0.58	2.53	3.35
Main Channel	1466	18+59.00		100 YR	EX	672	126.81	132.49		133.3	0.01213	7.36	102.11	25.72	0.57	2.64	3.63
Main Channel	1438	19+00.00		10 YR	60% PR	343	126.56	129.99		130.65	0.006711	6.6	58.25	21.29	0.65	1.03	1.34
Main Channel	1438	19+00.00		50 YR	60% PR	538	126.56	131.33		132.1	0.005034	7.19	88.69	24.13	0.59	1.01	1.42
Main Channel	1438	19+00.00		100 YR	60% PR	672	126.56	132.27		133.08	0.004155	7.4	113.39	29.94	0.56	0.86	1.41
Main Channel	1425	19+00.00		10 YR	EX	343	126.56	130.31		130.76	0.010595	5.34	65.18	21.96	0.52	1.75	1.96
Main Channel	1425	19+00.00		50 YR	EX	538	126.56	131.44		132.02	0.009462	6.16	91.32	24.41	0.52	1.92	2.36
Main Channel	1425	19+00.00		100 YR	EX	672	126.56	132.18		132.83	0.008668	6.54	110.57	29.17	0.51	1.8	2.52
Main Channel	1404	19+34.13		10 YR	60% PR	343	126.34	129.95		130.39	0.005023	5.32	67.49	25.57	0.54	0.76	0.9
Main Channel	1404	19+34.13		50 YR	60% PR	538	126.34	131.4		131.88	0.003283	5.57	108.58	31.93	0.46	0.64	0.87
Main Channel	1404	19+34.13		100 YR	60% PR	672	126.34	132.41		132.87	0.002533	5.59	144.14	37.76	0.42	0.55	0.82
Main Channel	1391	19+34.13		10 YR	EX	343	126.34	129.97		130.42	0.009103	5.46	67.95	25.63	0.53	1.39	1.75
Main Channel	1391	19+34.13		50 YR	EX	538	126.34	131.18		131.73	0.007398	6.07	101.72	30.23	0.51	1.42	1.95
Main Channel	1391	19+34.13		100 YR	EX	672	126.34	131.97		132.56	0.006484	6.33	128.18	36.18	0.49	1.32	2.01
Main Channel	1333	20+05.00		10 YR	60% PR	343	125.94	129.66		130.03	0.004464	4.94	71.45	27.05	0.51	0.69	0.78
Main Channel	1333	20+05.00		50 YR	60% PR	538	125.94	131.27		131.64	0.002475	4.93	119.39	33.62	0.41	0.51	0.67
Main Channel	1333	20+05.00		100 YR	60% PR	672	125.94	132.32		132.69	0.001876	4.93	159.01	41.28	0.37	0.42	0.63
Main Channel	1320	20+05.00		10 YR	EX	343	125.94	129.51		129.96	0.004857	5.91	67.55	26.67	0.56	0.72	1.05
Main Channel	1320	20+05.00		50 YR	EX	538	125.94	130.94		131.37	0.003088	5.93	108.49	31.46	0.47	0.61	0.94
Main Channel	1320	20+05.00		100 YR	EX	672	125.94	131.8		132.24	0.002571	6.02	138.27	37.92	0.44	0.54	0.92
Main Channel			1294	10 YR	60% PR	343	125.44	129.52		129.88	0.0033	4.8	77.17	26.54	0.45	0.56	0.69
Main Channel			1294	50 YR	60% PR	538	125.44	131.18		131.55	0.002123	4.99	126.21	32.85	0.39	0.47	0.66
Main Channel			1294	100 YR	60% PR	672	125.44	132.24		132.62	0.00169	5.05	176.81	76.58	0.36	0.23	0.63
Main Channel			1273	10 YR	60% PR	343	125.39	129.48		129.8	0.002989	4.58	79.7	27.04	0.43	0.5	0.63
Main Channel			1273	50 YR	60% PR	538	125.39	131.16		131.5	0.001899	4.74	132.42	45.13	0.37	0.32	0.59
Main Channel			1273	100 YR	60% PR	672	125.39	132.25		132.57	0.00144	4.69	208.32	93.68	0.33	0.19	0.55
Main Channel			1264	10 YR	60% PR	343	125.13	129.28		129.75	0.004066	5.61	67.76	22.01	0.51	0.67	0.92
Main Channel			1264	50 YR	60% PR	538	125.13	130.94		131.46	0.0028	5.95	109.99	29.43	0.45	0.55	0.92
Main Channel			1264	100 YR	60% PR	672	125.13	132.05		132.54	0.002116	5.86	180.71	88.99	0.41	0.25	0.84
Main Channel			1257	10 YR	EX	343	125.38	129.1		129.63	0.005282	6.16	74.47	28.43	0.58	0.82	1.14
Main Channel			1257	50 YR	EX	538	125.38	130.59		131.15	0.003638	6.48	121.91	35.58	0.51	0.73	1.12
Main Channel			1257	100 YR	EX	672	125.38	131.45		132.04	0.003151	6.71	155.14	40.7	0.49	0.7	1.14
Main Channel			1249	10 YR	EX	343	125.01	129.18		129.55	0.003467	5.42	76.25	27.69	0.48	0.56	0.84
Main Channel			1249	50 YR	EX	538	125.01	130.7		131.06	0.00242	5.63	124.04	36	0.43	0.49	0.82
Main Channel			1249	100 YR	EX	672	125.01	131.58		131.96	0.002126	5.83	158.62	44.71	0.41	0.44	0.83
Main Channel			1248	10 YR	60% PR	343	124.15	128.43		129.37	0.013089	7.9	47.91	14.4	0.7	2.05	2.98
Main Channel			1248	50 YR	60% PR	538	124.15	129.54		130.89	0.01362	9.51	64.75	15.76	0.74	2.51	3.98
Main Channel			1248	100 YR	60% PR	672	124.15	130.21		131.8	0.013789	10.39	75.6	16.65	0.76	2.75	4.56
Main Channel			1241	10 YR	60% PR	343	123.75	128.4		129.09	0.010205	6.72	53.79	15.55	0.59	1.67	2.2
Main Channel			1241	50 YR	60% PR	538	123.75	129.53		130.53	0.010745	8.13	72.3	17.2	0.63	2.06	2.96
Main Channel			1241	100 YR	60% PR	672	123.75	130.21		131.42	0.011037	8.94	84.45	20.2	0.65	2.13	3.44
Main Channel			1240	10 YR	EX	343	124.37	128.45		129.24	0.006932	7.42	59.75	22.26	0.67	1.06	1.61
Main Channel			1240	50 YR	EX	538	124.37	129.59		130.62	0.006581	8.62	86.63	24.91	0.69	1.28	1.99
Main Channel			1240	100 YR	EX	672	124.37	130.2		131.42	0.006711	9.41	102.29	26.28	0.71	1.44	2.28
Main Channel			1236	10 YR	60% PR	343	123.49	128.37		128.95	0.010259	6.48	63.47	17.86	0.55	1.8	2.08
Main Channel			1236	50 YR	60% PR	538	123.49	129.51		130.34	0.012014	7.8	84.74	19.57	0.59	2.48	2.86
Main Channel			1236	100 YR	60% PR	672	123.49	130.19		131.17	0.012952	8.52	99.02	21.61	0.61	2.81	3.33
Main Channel			1235	10 YR	EX	343	124.02	128.45		129.05	0.004808	6.39	62.42	20.67	0.56	0.79	1.17
Main Channel			1235	50 YR	EX	538	124.02	129.59		130.42	0.004864	7.6	87.59	23.41	0.59	0.98	1.53
Main Channel			1235	100 YR	EX	672	124.02	130.21		131.2	0.005079	8.37	102.44	25.04	0.62	1.11	1.78
Main Channel			1233	10 YR	60% PR	343	123.49	128.34		128.9	0.009481	6.23	64.16	18.55	0.54	1.65	1.93
Main Channel			1233	50 YR	60% PR	538	123.49	129.48		130.26	0.010666	7.47	86.27	20.23	0.57	2.2	2.61
Main Channel			1233	100 YR	60% PR	672	123.49	130.16		131.08	0.010783	8.15	100.41	21.04	0.59	2.43	2.98

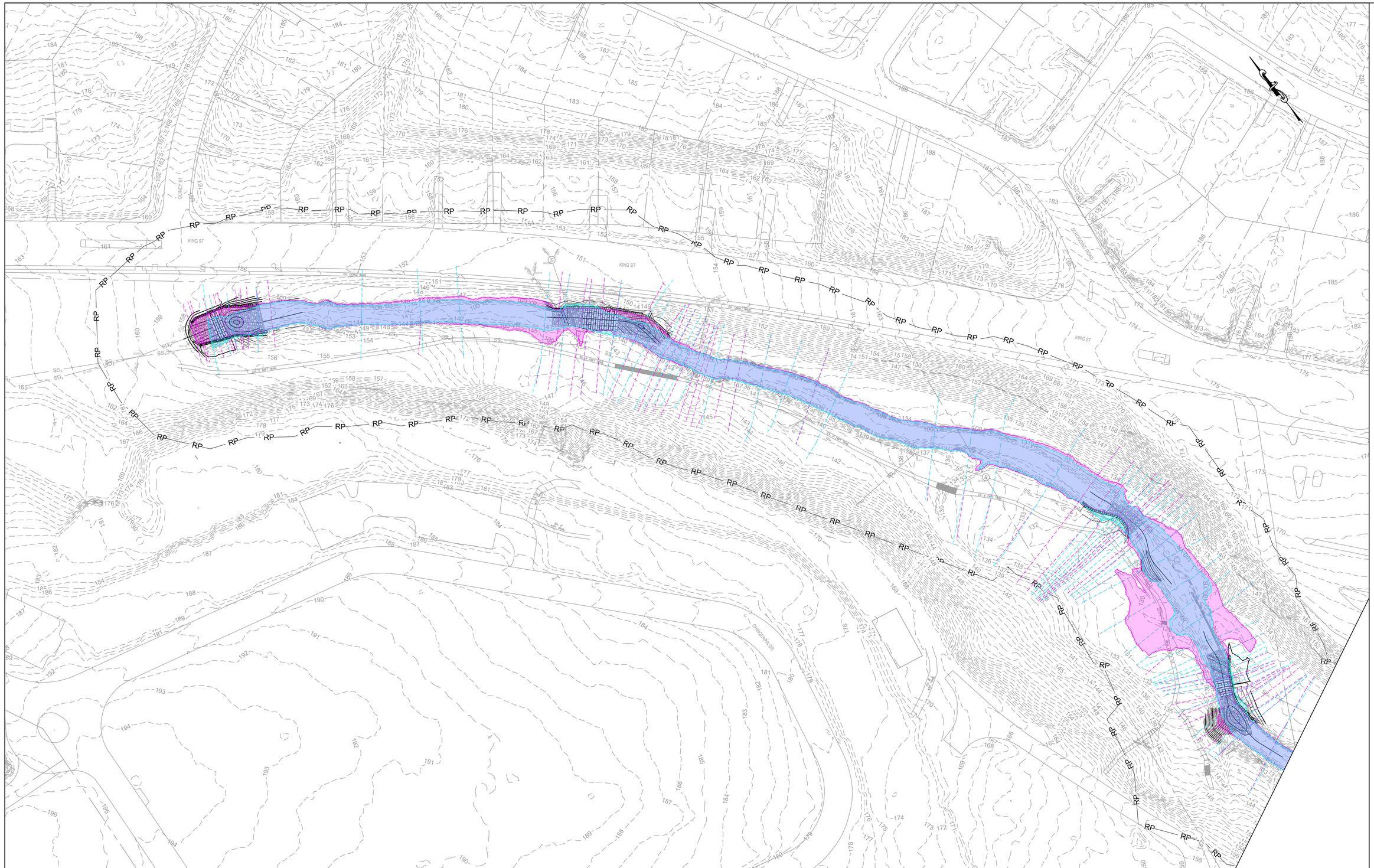
Main Channel			1228	10 YR	EX	343	123.74	128.46		128.89	0.003414	5.45	69.92	21.4	0.48	0.61	0.85
Main Channel			1228	10 YR	60% PR	343	123.53	128.31		128.85	0.006763	6.07	65.01	19.22	0.53	1.16	1.7
Main Channel			1228	50 YR	EX	538	123.74	129.61		130.22	0.00352	6.53	96.3	24.39	0.5	0.75	1.12
Main Channel			1228	50 YR	60% PR	538	123.53	129.44		130.22	0.007142	7.33	87.77	20.92	0.56	1.46	2.29
Main Channel			1228	100 YR	EX	672	123.74	130.23		130.98	0.00372	7.24	112.2	28.32	0.53	0.8	1.33
Main Channel			1228	100 YR	60% PR	672	123.53	130.12		131.04	0.007255	8.01	102.84	26.13	0.58	1.42	2.63
Main Channel			1222	10 YR	EX	343	123.47	128.33		128.83	0.003827	5.99	76.85	23.93	0.51	0.69	1
Main Channel			1222	10 YR	60% PR	343	123.65	128.28		128.82	0.00434	6.17	73.34	23.91	0.53	0.74	1.08
Main Channel			1222	50 YR	EX	538	123.47	129.37		130.12	0.004344	7.37	103.22	26.66	0.56	0.93	1.42
Main Channel			1222	50 YR	60% PR	538	123.65	129.41		130.17	0.004503	7.38	102.34	26.7	0.57	0.94	1.43
Main Channel			1222	100 YR	EX	672	123.47	129.92		130.85	0.004752	8.24	118.48	28.17	0.6	1.1	1.71
Main Channel			1222	100 YR	60% PR	672	123.65	130.09		131	0.004641	8.13	121.16	31.1	0.59	0.98	1.67
Main Channel			1215	10 YR	60% PR	343	123.8	128.26		128.74	0.004217	5.67	73.57	28.47	0.51	0.63	0.95
Main Channel			1215	50 YR	60% PR	538	123.8	129.41		130.02	0.004008	6.57	111.3	35.98	0.51	0.72	1.17
Main Channel			1215	100 YR	60% PR	672	123.8	130.11		130.79	0.003872	7.03	138.04	41.13	0.52	0.76	1.28
Main Channel			1214	10 YR	EX	343	123.53	128.33		128.69	0.00302	5.22	75.55	24.5	0.45	0.53	0.77
Main Channel			1214	50 YR	EX	538	123.53	129.39		129.89	0.003188	6.24	103.25	27.54	0.48	0.67	1.02
Main Channel			1214	100 YR	EX	672	123.53	129.96		130.56	0.003386	6.88	119.35	29.01	0.5	0.78	1.2
Main Channel			1211	10 YR	60% PR	343	123.57	128.25		128.71	0.003865	5.63	77.38	30.74	0.49	0.57	0.92
Main Channel			1211	50 YR	60% PR	538	123.57	129.4		129.99	0.003736	6.53	117.45	37.92	0.5	0.68	1.14
Main Channel			1211	100 YR	60% PR	672	123.57	130.1		130.76	0.003631	7	145.47	42.85	0.51	0.72	1.25
Main Channel	1209	21+16.00		10 YR	EX	343	123.65	128.12	126.93	128.6	0.004296	6.01	70.34	24.77	0.53	0.7	1.04
Main Channel	1209	21+16.00		50 YR	EX	538	123.65	129.04		129.74	0.004927	7.39	94.94	28.41	0.59	0.94	1.47
Main Channel	1209	21+16.00		100 YR	EX	672	123.65	129.48		130.36	0.005601	8.34	107.64	29.68	0.63	1.15	1.82
Main Channel			1198	10 YR	EX	343	123.57	126.97	126.91	128.12	0.013816	8.91	44.35	22.06	0.9	1.62	2.52
Main Channel			1198	50 YR	EX	538	123.57	128.12	127.82	129.35	0.01032	9.52	73.45	29.38	0.82	1.51	2.58
Main Channel			1198	100 YR	EX	672	123.57	128.86	128.39	130.08	0.00861	9.69	97.45	35.05	0.77	1.4	2.53
Main Channel			1191	10 YR	60% PR	343	122.86	128.27		128.44	0.001032	3.36	124.62	37.35	0.27	0.2	0.3
Main Channel			1191	50 YR	60% PR	538	122.86	129.43		129.68	0.001175	4.14	171.89	43.91	0.3	0.26	0.43
Main Channel			1191	100 YR	60% PR	672	122.86	130.13		130.43	0.001239	4.57	205.19	57.68	0.31	0.28	0.51
Main Channel			1189	10 YR	EX	343	123.36	126.91	126.75	127.75	0.015939	7.38	46.58	22.98	0.9	1.88	1.96
Main Channel			1189	50 YR	EX	538	123.36	128.12		128.93	0.008418	7.27	79.3	31.91	0.7	1.23	1.64
Main Channel			1189	100 YR	EX	672	123.36	128.88		129.68	0.006419	7.27	105.68	37.74	0.63	1.06	1.53
Main Channel			1178	10 YR	EX	343	122.85	126.95		127.26	0.002967	4.88	81.66	27.24	0.44	0.5	0.69
Main Channel			1178	50 YR	EX	538	122.85	128.16		128.54	0.002688	5.59	120.17	36.54	0.44	0.5	0.83
Main Channel			1178	100 YR	EX	672	122.85	128.91		129.32	0.002484	5.89	149.5	41.19	0.43	0.51	0.88
Main Channel	1177	21+61.00		10 YR	60% PR	343	122.44	128.24		128.42	0.001073	3.54	125.99	41.56	0.28	0.19	0.33
Main Channel	1177	21+61.00		50 YR	60% PR	538	122.44	129.39		129.66	0.001226	4.34	179.62	52.03	0.31	0.25	0.47
Main Channel	1177	21+61.00		100 YR	60% PR	672	122.44	130.11		130.41	0.001254	4.72	217.97	78.64	0.32	0.29	0.53
Main Channel	1164	21+61.00		10 YR	EX	343	122.44	126.95		127.12	0.001426	3.64	106.09	31.92	0.31	0.27	0.37
Main Channel	1164	21+61.00		50 YR	EX	538	122.44	128.16		128.39	0.001377	4.23	149.16	43.2	0.32	0.27	0.46
Main Channel	1164	21+61.00		100 YR	EX	672	122.44	128.92		129.16	0.001312	4.51	183.53	48.1	0.32	0.29	0.5
Main Channel			1142	10 YR	60% PR	343	122.89	128.25		128.37	0.000712	2.82	144.56	46.59	0.23	0.13	0.21
Main Channel			1142	50 YR	60% PR	538	122.89	129.42		129.6	0.000798	3.45	203.48	72.74	0.25	0.17	0.3
Main Channel			1142	100 YR	60% PR	672	122.89	130.14		130.34	0.000814	3.75	242.91	105.27	0.26	0.21	0.34
Main Channel			1129	10 YR	EX	343	122.89	126.81		127.05	0.002296	4.01	90.37	30.1	0.38	0.4	0.48
Main Channel			1129	50 YR	EX	538	122.89	128.01		128.32	0.00199	4.56	133.45	44.69	0.37	0.35	0.57
Main Channel			1129	100 YR	EX	672	122.89	128.76		129.1	0.001802	4.8	168.3	47.92	0.37	0.37	0.6
Main Channel	1119	22+19.00		10 YR	60% PR	343	122.9	128.16		128.34	0.001184	3.52	121.07	48.39	0.29	0.18	0.34
Main Channel	1119	22+19.00		50 YR	60% PR	538	122.9	129.32		129.57	0.001253	4.2	179.82	86.07	0.31	0.25	0.45
Main Channel	1119	22+19.00		100 YR	60% PR	672	122.9	130.03		130.31	0.001243	4.52	218.14	110.32	0.31	0.29	0.5
Main Channel	1106	22+19.00		10 YR	EX	343	122.9	126.55		126.96	0.004933	5.66	69.42	26.38	0.55	0.74	0.98
Main Channel	1106	22+19.00		50 YR	EX	538	122.9	127.78		128.24	0.003777	6.12	105.49	34.63	0.51	0.66	1.04
Main Channel	1106	22+19.00		100 YR	EX	672	122.9	128.57		129.03	0.00327	6.34	142.72	60.05	0.49	0.46	1.05
Main Channel			1099	10 YR	60% PR	343	122.05	128.14		128.32	0.001175	3.6	130.19	41.32	0.28	0.23	0.35
Main Channel			1099	50 YR	60% PR	538	122.05	129.27		129.54	0.00135	4.42	174.11	66.87	0.31	0.34	0.49
Main Channel			1099	100 YR	60% PR	672	122.05	129.97		130.28	0.00141	4.85	201.48	98.16	0.33	0.41	0.57
Main Channel			1085	10 YR	EX	343	122.05	126.46		126.87	0.00436	5.69	71.3	31.59	0.51	0.56	0.96
Main Channel			1085	50 YR	EX	538	122.05	127.74		128.16	0.003228	5.94	115.44	37.68	0.46	0.56	0.95
Main Channel			1085	100 YR	EX	672	122.05	128.54		128.95	0.002783	6.08	148.52	45.38	0.44	0.52	0.95
Main Channel	1073	22+65.00		10 YR	60% PR	343	122.47	128		128.28	0.001524	4.42	106.5	27.7	0.33	0.32	0.51

Main Channel	1073	22+65.00		50 YR	60% PR	538	122.47	129.03		129.48	0.00201	5.7	136.77	41.84	0.4	0.48	0.79
Main Channel	1073	22+65.00		100 YR	60% PR	672	122.47	129.63		130.21	0.002323	6.5	157.62	67.75	0.43	0.53	1
Main Channel	1060	22+65.00		10 YR	EX	343	122.47	125.59	125.32	126.63	0.011963	8.39	48.97	20.54	0.85	1.6	2.22
Main Channel	1060	22+65.00		50 YR	EX	538	122.47	126.32	126.25	127.9	0.013779	10.4	64.81	22.56	0.95	2.19	3.17
Main Channel	1060	22+65.00		100 YR	EX	672	122.47	126.78	126.78	128.67	0.014322	11.45	75.48	23.82	0.98	2.5	3.7
Main Channel			1056	10 YR	60% PR	343	122.41	128.02		128.24	0.001211	3.96	117.15	30	0.3	0.27	0.41
Main Channel			1056	50 YR	60% PR	538	122.41	129.06		129.42	0.001586	5.09	150.32	33.46	0.35	0.4	0.63
Main Channel			1056	100 YR	60% PR	672	122.41	129.68		130.14	0.001788	5.75	171.97	52.19	0.38	0.46	0.78
Main Channel			1046.031	10 YR	60% PR	343	124	127.86		128.21	0.001287	4.8	78.41	24.15	0.43	0.22	0.31
Main Channel			1046.031	50 YR	60% PR	538	124	128.85		129.39	0.001454	5.95	103.49	26.51	0.48	0.29	0.43
Main Channel			1046.031	100 YR	60% PR	672	124	129.44		130.1	0.001528	6.59	119.66	27.97	0.5	0.33	0.51
Main Channel			1044	10 YR	EX	343	122.42	125.66	125.05	126.36	0.008337	6.81	54.84	22.41	0.7	1.17	1.48
Main Channel			1044	50 YR	EX	538	122.42	126.57	125.87	127.54	0.00812	8.04	76.67	25.33	0.72	1.4	1.89
Main Channel			1044	100 YR	EX	672	122.42	127.13	126.37	128.26	0.007931	8.69	91.31	27.11	0.73	1.51	2.11
Main Channel			1033.5	10 YR	EX	343	122.31	125.04	125.04	126.2	0.017505	8.7	42.82	21.19	0.98	2.07	2.58
Main Channel			1033.5	50 YR	EX	538	122.31	125.88	125.88	127.38	0.015617	10	61.68	24.07	0.98	2.31	3.08
Main Channel			1033.5	100 YR	EX	672	122.31	126.38	126.38	128.09	0.014769	10.71	74.28	25.8	0.97	2.44	3.37
Main Channel			1030	10 YR	60% PR	343	124	127.77		128.18	0.001569	5.17	70.97	22.29	0.47	0.25	0.36
Main Channel			1030	50 YR	60% PR	538	124	128.71		129.35	0.001809	6.44	93.23	24.94	0.52	0.33	0.52
Main Channel			1030	100 YR	60% PR	672	124	129.28		130.06	0.001918	7.15	107.76	26.52	0.55	0.38	0.61
Main Channel			1028.25	10 YR	EX	343	122.21	124.85	124.85	125.96	0.018178	8.49	42.35	20.74	1	2.14	2.5
Main Channel			1028.25	50 YR	EX	538	122.21	125.64	125.64	127.1	0.016249	9.8	59.35	22.75	0.99	2.39	3.02
Main Channel			1028.25	100 YR	EX	672	122.21	126.12	126.12	127.8	0.015286	10.49	70.75	24.22	0.99	2.5	3.3
Main Channel			1026.224	10 YR	60% PR	343	124	127.34	126.93	128.13	0.017715	7.18	49.26	20.44	0.78	2.3	2.79
Main Channel			1026.224	50 YR	60% PR	538	124	128.22	127.72	129.29	0.016375	8.36	68.4	22.73	0.78	2.59	3.43
Main Channel			1026.224	100 YR	60% PR	672	124	128.79	128.23	130	0.015398	8.95	81.64	24.33	0.78	2.68	3.74
Main Channel			1023.528	10 YR	60% PR	343	123.98	126.91	126.91	128.04	0.030621	8.53	41.06	19.44	0.99	3.5	4.14
Main Channel			1023.528	50 YR	60% PR	538	123.98	127.71	127.71	129.2	0.027245	9.83	57.35	21.18	0.99	3.88	4.97
Main Channel			1023.528	100 YR	60% PR	672	123.98	128.21	128.21	129.9	0.025476	10.5	68.19	22.27	0.98	4.04	5.4
Main Channel			1023	10 YR	EX	343	121.7	124.44	124.44	125.6	0.017649	8.88	44.89	20.86	1	2.12	2.66
Main Channel			1023	50 YR	EX	538	121.7	125.25	125.25	126.81	0.016255	10.32	62.21	21.73	1.01	2.5	3.27
Main Channel			1023	100 YR	EX	672	121.7	125.84	125.75	127.55	0.014367	10.85	75.24	22.45	0.98	2.53	3.41
Main Channel			1020.646	10 YR	60% PR	343	123	125.23	125.97	127.75	0.112892	12.72	26.99	16.67	1.75	10.14	10.44
Main Channel			1020.646	50 YR	60% PR	538	123	125.96	126.82	128.92	0.081786	13.82	39.2	17.32	1.59	9.78	10.91
Main Channel			1020.646	100 YR	60% PR	672	123	126.42	127.35	129.63	0.069452	14.38	47.54	18.29	1.51	9.36	11.11
Main Channel			1018.817	10 YR	60% PR	343	123	125.46	125.98	127.44	0.066572	11.3	30.83	16.74	1.44	6.62	7.66
Main Channel			1018.817	50 YR	60% PR	538	123	126.29	126.85	128.63	0.048752	12.3	45.09	17.9	1.31	6.34	8.05
Main Channel			1018.817	100 YR	60% PR	672	123	126.93	127.38	129.29	0.037204	12.38	57.07	19.27	1.19	5.57	7.59
Main Channel			1016.78	10 YR	EX	343	119.58	124.55		125.28	0.005957	7.63	72.83	20.67	0.63	1.07	1.61
Main Channel			1016.78	50 YR	EX	538	119.58	125.41		126.6	0.007901	9.86	90.82	21.29	0.75	1.65	2.54
Main Channel			1016.78	100 YR	EX	672	119.58	125.9		127.42	0.009083	11.2	101.36	21.82	0.81	2.03	3.19
Main Channel			1015.576	10 YR	60% PR	343	122	124.26	125.1	127.08	0.105811	13.48	25.72	14.95	1.78	9.93	11.21
Main Channel			1015.576	50 YR	60% PR	538	122	125.06	126.02	128.34	0.075604	14.57	37.94	15.8	1.6	9.4	11.58
Main Channel			1015.576	100 YR	60% PR	672	122	125.62	126.61	129.04	0.060671	14.89	47.04	16.51	1.48	8.69	11.32
Main Channel			1013.799	10 YR	60% PR	343	122	124.52	125.14	126.77	0.068233	12.07	29.22	15.26	1.48	6.98	8.5
Main Channel			1013.799	50 YR	60% PR	538	122	125.39	126.07	128.05	0.050824	13.18	43.19	16.79	1.36	6.71	9.02
Main Channel			1013.799	100 YR	60% PR	672	122	126.06	126.65	128.74	0.039152	13.27	54.89	17.99	1.23	5.97	8.54
Main Channel			1012.33	10 YR	EX	343	119.7	124.54		125.24	0.005242	7.56	74.3	19.85	0.61	0.97	1.54
Main Channel			1012.33	50 YR	EX	538	119.7	125.38		126.56	0.007264	9.9	91.22	20.58	0.74	1.53	2.51
Main Channel			1012.33	100 YR	EX	672	119.7	125.85		127.38	0.008501	11.31	101.12	21.08	0.81	1.91	3.18
Main Channel			1011.329	10 YR	60% PR	343	121	123.32	124.26	126.47	0.105458	14.29	24.93	14.24	1.82	9.99	12.22
Main Channel			1011.329	50 YR	60% PR	538	121	124.15	125.24	127.79	0.076303	15.45	37.39	15.7	1.64	9.42	12.68
Main Channel			1011.329	100 YR	60% PR	672	121	124.73	125.85	128.5	0.061887	15.8	46.76	16.71	1.53	8.75	12.44
Main Channel			1008.253	10 YR	60% PR	343	121	123.47	124.21	126.01	0.078559	12.87	28.05	15.03	1.57	7.83	9.7
Main Channel			1008.253	50 YR	60% PR	538	121	124.24	125.16	127.44	0.065963	14.55	40.1	16.26	1.52	8.35	11.17
Main Channel			1008.253	100 YR	60% PR	672	121	124.78	125.76	128.23	0.056989	15.17	49.02	17.11	1.45	8.19	11.46
Main Channel			1007	10 YR	EX	343	120.72	124.44		125.2	0.0072	7.19	57.58	18.78	0.67	1.13	1.55
Main Channel			1007	50 YR	EX	538	120.72	125.36		126.5	0.008032	8.87	75.22	19.67	0.74	1.51	2.18
Main Channel			1007	100 YR	EX	672	120.72	125.89		127.29	0.008567	9.86	85.75	20.46	0.78	1.74	2.6
Main Channel			1006	10 YR	60% PR	343	120.88	123.39	124.08	125.8	0.072615	12.52	28.55	14.97	1.52	7.46	9.13

Main Channel			1006	50 YR	60% PR	538	120.88	124.13	125.03	127.28	0.064172	14.39	40.05	16.12	1.5	8.25	10.9
Main Channel			1006	100 YR	60% PR	672	120.88	124.66	125.63	128.08	0.056199	15.07	48.7	16.97	1.45	8.15	11.3
Main Channel			1003	10 YR	60% PR	343	120.58	123.26	123.88	125.53	0.064632	12.19	29.61	15.07	1.45	6.83	8.52
Main Channel			1003	50 YR	60% PR	538	120.58	123.99	124.84	127.03	0.059279	14.16	41.18	16.24	1.46	7.78	10.43
Main Channel			1003	100 YR	60% PR	672	120.58	124.48	125.44	127.9	0.054835	15.07	49.21	17.01	1.44	8.03	11.24
Main Channel			996	10 YR	EX	343	120.97	124.36		125.11	0.009206	6.95	51.08	18.94	0.7	1.32	1.57
Main Channel			996	10 YR	60% PR	343	120	122.57	123.28	125.06	0.073804	12.75	28.51	15.13	1.53	7.53	9.41
Main Channel			996	50 YR	EX	538	120.97	125.36		126.37	0.00866	8.14	70.76	20.66	0.72	1.52	1.95
Main Channel			996	50 YR	60% PR	538	120	123.29	124.24	126.59	0.067307	14.77	39.98	16.53	1.53	8.55	11.47
Main Channel			996	100 YR	EX	672	120.97	125.95		127.13	0.008463	8.82	83.29	21.79	0.72	1.64	2.19
Main Channel			996	100 YR	60% PR	672	120	123.76	124.86	127.47	0.062382	15.72	47.95	17.43	1.51	8.86	12.37
Main Channel	990.8881	23+44.00		10 YR	60% PR	343	119.4	124.2	122.43	124.56	0.00444	4.96	78.44	22.87	0.43	0.8	1.13
Main Channel	990.8881	23+44.00		50 YR	60% PR	538	119.4	125.33	123.27	125.86	0.004765	6.01	105.76	25.42	0.46	1.02	1.54
Main Channel	990.8881	23+44.00		100 YR	60% PR	672	119.4	125.99	123.8	126.63	0.004914	6.61	123.17	26.75	0.47	1.14	1.78
Main Channel			983.4701	10 YR	60% PR	343	119	124.34		124.48	0.001439	3.03	120.75	29.41	0.25	0.32	0.41
Main Channel			983.4701	50 YR	60% PR	538	119	125.53		125.74	0.001627	3.75	156.91	31.26	0.27	0.43	0.58
Main Channel			983.4701	100 YR	60% PR	672	119	126.23		126.49	0.001719	4.15	179.3	32.37	0.29	0.49	0.68
Main Channel	981	23+44.00		10 YR	EX	343	120.69	124.42		124.93	0.005705	5.78	65.67	25.2	0.58	0.85	1.05
Main Channel	981	23+44.00		50 YR	EX	538	120.69	125.51		126.17	0.004976	6.61	94.11	26.99	0.57	0.96	1.24
Main Channel	981	23+44.00		100 YR	EX	672	120.69	126.16		126.91	0.004722	7.09	112.04	28.06	0.57	1.02	1.36
Main Channel			974	10 YR	60% PR	343	119	124.21		124.45	0.002621	3.93	95.91	25.49	0.32	0.53	0.7
Main Channel			974	50 YR	60% PR	538	119	125.35		125.71	0.002977	4.87	126.29	27.88	0.36	0.71	1
Main Channel			974	100 YR	60% PR	672	119	126.02		126.45	0.003149	5.39	145.42	29.19	0.38	0.82	1.18
Main Channel			964	10 YR	EX	343	120.47	123.51	123.51	124.71	0.01749	9.24	47.97	22.52	1	2.17	2.82
Main Channel			964	50 YR	EX	538	120.47	124.37	124.37	125.94	0.01606	10.68	68.28	24.78	1.01	2.53	3.43
Main Channel			964	100 YR	EX	672	120.47	124.9	124.9	126.68	0.015244	11.44	81.84	26.21	1	2.7	3.75
Main Channel			962	10 YR	60% PR	343	119.97	123.07	123.07	124.28	0.02745	9.29	45.95	21.25	0.99	3.42	4.57
Main Channel			962	50 YR	60% PR	538	119.97	123.95	123.95	125.51	0.025167	10.69	65.75	23.79	0.99	3.95	5.53
Main Channel			962	100 YR	60% PR	672	119.97	124.49	124.49	126.24	0.023761	11.41	79.19	25.45	0.98	4.17	6.01
Main Channel			953	10 YR	EX	343	120.58	123.22	123.22	124.29	0.017815	8.42	44.53	23.07	0.99	2.03	2.46
Main Channel			953	50 YR	EX	538	120.58	123.98	123.98	125.4	0.016074	9.73	63.01	25.21	0.99	2.34	2.98
Main Channel			953	100 YR	EX	672	120.58	124.45	124.45	126.07	0.015268	10.43	75.1	26.51	0.99	2.5	3.27
Main Channel	925	24+00.00		10 YR	EX	343	119.53	122.4	122.4	123.55	0.013834	8.64	42.42	20.5	0.99	1.65	1.97
Main Channel	925	24+00.00		10 YR	60% PR	343	119.53	122.34	122.4	123.55	0.015085	8.87	41.21	20.37	1.03	1.77	2.09
Main Channel	925	24+00.00		50 YR	EX	538	119.53	123.21	123.21	124.73	0.01247	9.99	59.73	22.34	0.99	1.89	2.38
Main Channel	925	24+00.00		50 YR	60% PR	538	119.53	122.98	123.21	124.76	0.016121	10.8	54.67	21.81	1.11	2.3	2.86
Main Channel	925	24+00.00		100 YR	EX	672	119.53	123.7	123.7	125.44	0.011839	10.73	71.06	23.46	0.99	2.01	2.62
Main Channel	925	24+00.00		100 YR	60% PR	672	119.53	123.39	123.7	125.5	0.016066	11.77	63.84	22.75	1.14	2.54	3.25
Main Channel	768	25+57.00		10 YR	EX	343	118	121.19		121.69	0.004378	5.67	62.87	23.5	0.58	0.67	0.78
Main Channel	768	25+57.00		10 YR	60% PR	343	118	121.19	120.27	121.69	0.004378	5.67	62.87	23.5	0.58	0.67	0.78
Main Channel	768	25+57.00		50 YR	EX	538	118	122.24		122.9	0.003912	6.54	89.68	28.5	0.57	0.7	0.94
Main Channel	768	25+57.00		50 YR	60% PR	538	118	122.24	121	122.9	0.003912	6.54	89.68	28.5	0.57	0.7	0.94
Main Channel	768	25+57.00		100 YR	EX	672	118	123.72		124.24	0.002071	5.85	139.33	38.19	0.44	0.43	0.68
Main Channel	768	25+57.00		100 YR	60% PR	672	118	123.72	121.46	124.24	0.002071	5.85	139.33	38.19	0.44	0.43	0.68
Main Channel	715	26+10.00		10 YR	EX	343	117	120.85		121.45	0.004246	6.3	63.13	21.89	0.6	0.69	0.91
Main Channel	715	26+10.00		10 YR	60% PR	343	117	120.85		121.45	0.004246	6.3	63.13	21.89	0.6	0.69	0.91
Main Channel	715	26+10.00		50 YR	EX	538	117	121.75	120.73	122.64	0.004766	7.77	83.5	23.79	0.66	0.93	1.28
Main Channel	715	26+10.00		50 YR	60% PR	538	117	121.75	120.73	122.64	0.004766	7.77	83.5	23.79	0.66	0.93	1.28
Main Channel	715	26+10.00		100 YR	EX	672	117	123.4		124.1	0.002439	6.89	125.89	27.3	0.5	0.6	0.91
Main Channel	715	26+10.00		100 YR	60% PR	672	117	123.4		124.1	0.002439	6.89	125.89	27.3	0.5	0.6	0.91
Main Channel	576	27+49.00		10 YR	EX	343	116.94	119.3	119.3	120.42	0.01371	8.54	42.84	21.15	0.99	1.6	1.93
Main Channel	576	27+49.00		10 YR	60% PR	343	116.94	119.3	119.3	120.42	0.01371	8.54	42.84	21.15	0.99	1.6	1.93
Main Channel	576	27+49.00		50 YR	EX	538	116.94	120.1	120.1	121.58	0.01232	9.86	60.39	23.07	0.99	1.82	2.33
Main Channel	576	27+49.00		50 YR	60% PR	538	116.94	120.1	120.1	121.58	0.01232	9.86	60.39	23.07	0.99	1.82	2.33
Main Channel	576	27+49.00		100 YR	EX	672	116.94	123.25		123.76	0.00172	5.89	149.66	38.97	0.42	0.37	0.66
Main Channel	576	27+49.00		100 YR	60% PR	672	116.94	123.25		123.76	0.00172	5.89	149.66	38.97	0.42	0.37	0.66
Main Channel	525	28+00.00		10 YR	EX	343	116	118.36	118.26	119.27	0.012454	7.68	45.87	23.27	0.93	1.43	1.6
Main Channel	525	28+00.00		10 YR	60% PR	343	116	117.9	118.26	119.4	0.028495	9.85	35.27	22.38	1.35	2.66	2.87
Main Channel	525	28+00.00		50 YR	EX	538	116	120.03		120.71	0.004327	6.67	87.5	26.87	0.6	0.79	1
Main Channel	525	28+00.00		50 YR	60% PR	538	116	120.03	118.97	120.71	0.004327	6.67	87.5	26.87	0.6	0.79	1
Main Channel	525	28+00.00		100 YR	EX	672	116	123.39		123.63	0.000696	4.08	250.87	73.07	0.27	0.14	0.3
Main Channel	525	28+00.00		100 YR	60% PR	672	116	123.39		123.63	0.000696	4.08	250.87	73.07	0.27	0.14	0.3
Main Channel	416	29+09.00		10 YR	EX	343	114.37	117.34	116.93	118.18	0.007978	7.42	50.88	24.95	0.79	0.94	1.36
Main Channel	416	29+09.00		10 YR	60% PR	343	114.37	117.34	116.93	118.18	0.007978	7.42	50.88	24.95	0.79	0.94	1.36
Main Channel	416	29+09.00		50 YR	EX	538	114.37	119.97		120.35	0.001652	5.28	175.32	73.58	0.4	0.24	0.55

Main Channel	416	29+09.00	50 YR	60% PR	538	114.37	119.97		120.35	0.001652	5.28	175.32	73.58	0.4	0.24	0.55
Main Channel	416	29+09.00	100 YR	EX	672	114.37	123.44		123.54	0.000279	3.02	539.43	125.73	0.18	0.07	0.15
Main Channel	416	29+09.00	100 YR	60% PR	672	114.37	123.44		123.54	0.000279	3.02	539.43	125.73	0.18	0.07	0.15
Main Channel	351	29+75.01	10 YR	EX	343	113.97	117.23		117.67	0.00455	5.36	67.22	32.08	0.56	0.55	0.73
Main Channel	351	29+75.01	10 YR	60% PR	343	113.97	117.23		117.67	0.00455	5.36	67.22	32.08	0.56	0.55	0.73
Main Channel	351	29+75.01	50 YR	EX	538	113.97	120.04		120.21	0.000818	3.61	239.49	73.99	0.27	0.16	0.26
Main Channel	351	29+75.01	50 YR	60% PR	538	113.97	120.04		120.21	0.000818	3.61	239.49	73.99	0.27	0.16	0.26
Main Channel	351	29+75.01	100 YR	EX	672	113.97	123.45		123.51	0.000195	2.41	519.48	90.02	0.14	0.07	0.1
Main Channel	351	29+75.01	100 YR	60% PR	672	113.97	123.45		123.51	0.000195	2.41	519.48	90.02	0.14	0.07	0.1
Main Channel	311	30+13.88	10 YR	EX	343	112.01	117.33	114.71	117.45	0.000694	2.78	128.42	37.31	0.24	0.14	0.17
Main Channel	311	30+13.88	10 YR	60% PR	343	112.01	117.33	114.71	117.45	0.000694	2.78	128.42	37.31	0.24	0.14	0.17
Main Channel	311	30+13.88	50 YR	EX	538	112.01	120.06	115.36	120.16	0.000294	2.55	247.17	50.01	0.17	0.09	0.12
Main Channel	311	30+13.88	50 YR	60% PR	538	112.01	120.06	115.36	120.16	0.000294	2.55	247.17	50.01	0.17	0.09	0.12
Main Channel	311	30+13.88	100 YR	EX	672	112.01	123.44	115.74	123.5	0.000109	2.03	444.88	66.36	0.11	0.04	0.07
Main Channel	311	30+13.88	100 YR	60% PR	672	112.01	123.44	115.74	123.5	0.000109	2.03	444.88	66.36	0.11	0.04	0.07
Main Channel			261		Culvert											
Main Channel	205	31+20.09	10 YR	EX	343	111.7	114.25	114.25	115.1	0.015778	7.42	46.24	27.45	1.01	1.62	1.62
Main Channel	205	31+20.09	10 YR	60% PR	343	111.7	114.25	114.25	115.1	0.015778	7.42	46.24	27.45	1.01	1.62	1.62
Main Channel	205	31+20.09	50 YR	EX	538	111.7	114.87	114.87	115.97	0.014359	8.41	64.43	30.91	1	1.81	1.9
Main Channel	205	31+20.09	50 YR	60% PR	538	111.7	114.87	114.87	115.97	0.014359	8.41	64.43	30.91	1	1.81	1.9
Main Channel	205	31+20.09	100 YR	EX	672	111.7	115.26	115.26	116.48	0.013537	8.88	76.87	33.04	0.99	1.9	2.04
Main Channel	205	31+20.09	100 YR	60% PR	672	111.7	115.26	115.26	116.48	0.013537	8.88	76.87	33.04	0.99	1.9	2.04
Main Channel	125	32+00.00	10 YR	EX	343	110.36	113.14	112.94	113.88	0.011447	6.89	49.78	25.67	0.87	1.34	1.34
Main Channel	125	32+00.00	10 YR	60% PR	343	110.36	113.14	112.94	113.88	0.011441	6.89	49.79	25.67	0.87	1.33	1.33
Main Channel	125	32+00.00	50 YR	EX	538	110.36	113.64	113.64	114.76	0.014543	8.49	63.36	28.5	1	1.94	1.94
Main Channel	125	32+00.00	50 YR	60% PR	538	110.36	113.59	113.64	114.76	0.015494	8.69	61.92	28.23	1.03	2.04	2.04
Main Channel	125	32+00.00	100 YR	EX	672	110.36	114.02	114.02	115.29	0.013816	9.05	74.44	30.63	1	2.01	2.11
Main Channel	125	32+00.00	100 YR	60% PR	672	110.36	113.94	114.01	115.29	0.015492	9.34	72	30.16	1.05	2.21	2.27
Main Channel	25	33+00.00	10 YR	EX	343	109	111.64	111.64	112.5	0.015923	7.43	46.17	27.47	1.01	1.62	1.62
Main Channel	25	33+00.00	10 YR	60% PR	343	109	111.64	111.64	112.5	0.01593	7.43	46.16	27.47	1.01	1.62	1.62
Main Channel	25	33+00.00	50 YR	EX	538	109	112.32	112.32	113.31	0.01301	8.02	72.85	47.01	0.97	1.23	1.68
Main Channel	25	33+00.00	50 YR	60% PR	538	109	112.28	112.32	113.31	0.014581	8.21	70.68	46.46	1	1.36	1.84
Main Channel	25	33+00.00	100 YR	EX	672	109	112.67	112.67	113.77	0.012218	8.52	89.73	51.65	0.96	1.3	1.83
Main Channel	25	33+00.00	100 YR	60% PR	672	109	112.59	112.67	113.77	0.013946	8.81	85.88	50.71	1	1.45	2.03

Appendix B: Floodplain Exhibits


KING ST
QUINCY ST
Chesapeake Dr
Scroggins Road
RP
EX. CONC. BOX
EX. 6' DIA. RCP
EX. 6' DIA. CMP
EX. 6' DIA. CMP
EX. 6' DIA. RCP
EX. 6' DIA. RCP
EX. 6' DIA. RC

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Appendix J Construction Specifications

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ITEM 1010

PROJECT REQUIREMENTS

PART 1 - GENERAL

2.01 WORK COVERED BY CONTRACT DOCUMENTS:

A. The Work of Project is defined by the Contract Documents and generally consist of the following:

1. Stabilize the stormwater outfall and stream by replacing the wingwall for the 72-inch reinforced concrete pipe (RCP), updating the plunge pool energy dissipator to meet Design Standards.

2. Stabilize the stormwater outfall and stream by replacing the 36-inch RCP with a new cast-in-place endwall, following Virginia Department of Transportation (VDOT) Standards.

3. Stabilize approximately 590 linear feet (LF) of the riverbank with a combination of stabilization measures including approximately 215 linear foot (LF) gravity walls in three project locations.

4. Install concrete encasements for two sanitary sewer pipe crossings and install boulder cascade downstream to tie into existing stream elevation.

5. Protect sanitary sewer manhole by installing approximately 109 linear feet (LF) gravity wall.

6. Place riprap and coir fiber matting slope stabilization where required to stabilize streambank slope.

7. Provide all erosion and sediment control measures and sediment controls as indicated or specified and as required by the Virginia Department of Environmental Quality (DEQ).

8. Install all associated work as required.

B. Project will be constructed under a single prime contract.

2.02 WORK RESTRICTIONS:

A. Normal construction activity shall take place only between the hours of 7 a.m. to 6 p.m., excluding Saturdays, Sundays, and legal holidays. Work outside the above time periods

will be permitted only on an emergency basis and only with the written approval of the City.

2.03 CARE AND PROTECTION OF PROPERTY:

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the City.

2.04 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES:

A. The Contractor shall assume full responsibility for the protection of all structures and utilities, public or private, including headwalls, vaults, piping, and video cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.

2.05 TEMPORARY UTILITIES:

A. Provide temporary utilities needed for the work including, but not necessarily limited to, sanitary facilities.

2.06 CLEANUP AND DISPOSAL OF EXCESS MATERIAL:

A. During the course of the work, the Contractor shall keep the site of his operations in as clean and as neat a condition as is possible. He shall dispose of all residue resulting from the construction work and, at the conclusion of the work, he shall remove and haul away any surplus materials, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the work in a neat and orderly condition.

B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his subcontractors shall comply with all applicable Federal, State, and local laws, and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and elsewhere in the Specifications.

C. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and plains is strictly prohibited even if the permission of the property

owner is obtained. Any violation of this restriction by the Contractor or any person employed by him, will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the Contractor will be required to remove the fill at his own expense and restore the area impacted.

PART 2 - PRODUCTS

2.07 TEMPORARY FACILITIES AND UTILITIES

A. Provide mobile telephone for the person in charge of the project at the project site for use in connection with the work.

B. Provide temporary sanitary facilities in the quantity required for use by all personnel. Maintain in a sanitary condition at all times.

END OF SECTION

ITEM 1020

MOBILIZATION

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This work shall consist of the construction preparatory operations, including the movement of personnel and equipment to the project site necessary to begin work. All work to be performed under this item shall be in accordance with the requirements of Section 513 of the Virginia Department of Transportation, Road and Bridge Specifications.

1.02 MEASUREMENT AND PAYMENT

A. Mobilization will not be measured but will be paid for at the Contract lump sum price. Payment of 50% of Mobilization will be made in the first monthly invoice after the Contractor has established the necessary facilities. The remaining 50% of Mobilization will be prorated and paid in equal amounts on each of the next five monthly invoices. The payment will be full compensation for all labor, materials, equipment, tools, and incidentals necessary to complete the work.

B. Payment of the Mobilization item will not be made more than once and no additional payment will be made for demobilization and remobilization, regardless of the reason, including stream closure periods.

END OF SECTION

ITEM 1030

CONSTRUCTION STAKEOUT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This work shall consist of furnishing, placing, and maintaining construction layout stakes as specified in the Contract Documents or as directed by the Engineer, and shall otherwise be in accordance with Section 517 Virginia Department of Transportation, Road and Bridge Specifications, except as noted below:

1. The Contractor shall retain a professional Engineer or Land Surveyor registered in the state of Virginia to establish all lines and grades needed to construct the infrastructure stabilization.

2. It is the Contractor's responsibility to confirm existing grades, prior to construction activities, at no additional cost to The Owner and adjust quantities, earthwork, and work efforts as necessary with approval from The Owner.

3. The Contractor shall make all field measurements necessary to stakeout the baseline of construction and lay out the lines and grades called for in the Contract Documents or as directed by the Engineer. The Contractor shall use the horizontal and vertical survey controls as shown in the Contract Documents to lay out the lines of work, limits of grading, planting, fill placement and to stake out the location of all proposed structures.

4. Only those benchmarks shown on the drawings shall be used for construction. The Contractor shall be held responsible for their preservation.

5. The Contractor shall, as a part of his construction stakeout operation and before any clearing operation commences, demarcate any wetlands and the Limit of Disturbance throughout the entire project as shown on the Contract Documents and labeled as Limit of Disturbance and/or Wetlands, to the satisfaction of the Engineer. Where Limits of Disturbance are not shown on the Contract Documents, the Limit of Disturbance will be the top of cut, toe of slope or limit of ditch excavation.

6. Trees to be protected during construction are shown on the Contract Documents in the Forest Conservation Plans. Any necessary modifications to the Contract Documents for tree protection will be identified by The Owner and the Contractor prior to clearing and grubbing. All tree protection devices shall be installed before clearing and grubbing commences. Trees to be protected during construction shall

be identified by flagging and/or fencing. No paint or other permanent markings shall be used to indicate saved trees.

7. The Contractor shall notify The Owner once the stakeout or a phase of the stakeout is completed. The Owner will inspect the construction stakeout prior to the Contractor beginning clearing and grubbing activities. The purpose of the inspection is not to verify the stakeout, but to allow The Owner an opportunity to assess the lines established by the Contractor prior to the start of construction. If there are obvious errors with or questions concerning the stakeout, the visible errors and questions will be discussed with the Contractor, prior to the Contractor proceeding with construction. **This inspection will in no way relieve the Contractor of his responsibility to construct the site as specified in the Contract Documents.**

PART 2 - MATERIALS

2.01 Flagging Tape

A. The material for flagging the limits of disturbance shall be a 3-in. international orange vinyl material. The material for flagging wetlands shall be standard pink vinyl flagging. The material for flagging specimen trees shall standard white vinyl flagging.

PART 3 - CONSTRUCTION METHODS

3.01 LINE AND GRADE

The Contractor will provide the following:

3.02 STREAM CHANNEL STAKEOUT

A. The Contractor shall stake the base line and proposed center line as indicated in the Contract Documents. The stakes shall be clearly labeled with appropriate stations and offset distances. The stream channel base line of construction shall be staked with 3-ft long wooden stakes. The maximum spacing of stations (stakes, nails, crosses, etc.) will be 25 ft, and the elevations on the top of each marked point will be furnished. The Contractor shall establish appropriately spaced benchmarks and the necessary references including all points of curvature (P.C.), and points of tangency (P.T.) for the preservation and control of the base line. Upon completion of grading, the Contractor will provide a staked base line or working line. An elevation for the top of each marked point will also be furnished, as well as two sets of prints of the cross sections.

3.03 IN-STREAM STRUCTURE STAKEOUT

A. For in-stream structures, and bank protection, the Contractor shall stake out the boundaries, all breaks in slope, and the tops and toes of structures with a maximum

spacing of 25 ft. Stakes will be used to mark structure start and stop points, elevations, and offsets for the structures from the base line.

3.04 LINE AND GRADEEQUIPMENT AND PERSONNEL

A. The Contractor shall use competent personnel and state of the art equipment with current calibration for all engineering work required to set and maintain the elevations and dimensions as specified in the Contract Documents.

3.05 CONTROL MARKERS

A. The Contractor shall be responsible for preserving the base line of construction, working lines, and benchmarks set at the beginning of the project. The Contractor shall replace the baseline of construction, working lines, and benchmarks if they are disturbed or destroyed, at no additional cost to The Owner.

3.06 CONTROL STAKES

A. For the base line of construction, as specified in the Contract Documents, the Contractor shall furnish, set and preserve stakes at each station along each side of the proposed channel. On each of these stakes shall be marked its offset distance from the baseline of construction and its top elevation or the cut or fill to the profile grade line. Additional stakes, as needed for horizontal and vertical controls necessary for correct layout of the work, shall be set by the Contractor.

3.07 LAYOUT

A. For structures specified in the Contract Documents, the Contractor shall proceed with the layout work. From the field layouts, the Contractor shall check the proposed structure lengths by electronic distance measurement or chaining. When chaining is used, the measurements shall be compensated for horizontal alignment. The Contractor shall also check the location of the structure to affirm its correct location with relation to existing on-site features and conditions that are to remain in their original positions. If any discrepancies are found, the Contractor shall notify the Engineer at once in writing, otherwise, it will be assumed that all planned dimensions, grades and field measurements are correct.

3.08 UTILITES

A. The Contractor shall furnish to the utility companies or agencies working within the limits of the project, promptly upon request, reference to control points, alignment, and grade data, so that they may properly locate and coordinate their work and improvements in relation to the project.

1. UTILITY STAKEOUT

a. The Contractor shall notify the appropriate agencies a minimum of 48 hours (excluding weekends and holidays) prior to the Contractor's anticipated beginning of any underground work.

(1) Request a MISS UTILITY stakeout and possess a valid MISS UTILITY clearance ticket number for any underground work. 1-800-257-7777

(2) Contact all utilities within the limits of the project that are not a member of MISS UTILITY and obtain a stakeout of their respective facilities.

3.09 RIGHT-OF-WAY, EASEMENT LINES AND PROPERTY CORNERS

A. The Contractor shall define right-of-way and easement lines of the project for adjacent property owners, promptly upon request.

B. The Contractor shall retain a Land Surveyor registered in the State of Virginia who shall reference all existing property corners that are within the construction area or the area to be disturbed. Upon completion of the project, any corners that have been disturbed or destroyed shall be replaced by the registered land surveyor at the expense of the Contractor. Cost of this shall be included in the lump sum price bid for Construction Stakeout.

3.010 SUBGRADE, SUBBASE AND BASE CONTROLS

A. The Contractor shall furnish for subgrade, subbase and base courses, a string line and grade with fixed controls having a maximum longitudinal and transverse spacing of 25 feet.

3.011 FLAGGING

A. The flagging shall be placed continuously throughout wetland areas and buffers. In areas where trees are not to be disturbed, the Contractor shall individually flag those trees in a line along the clearing limits, which are not to be moved or destroyed. If the flagging has been destroyed and the Engineer determines that its use is still required, the Contractor shall re-flag the area at no cost to The Owner.

B. If the Contractor, after notification by the Engineer that replacement flagging is needed, does not replace the destroyed flagging within 48 hours, the Engineer may proceed to have the area re-flagged. The cost of the re-flagging by the Engineer will be charged to the Contractor and deducted from any monies due under the Contract.

3.012 MEASUREMENT AND PAYMENT

A. Construction Stakeout will not be measured but will be paid for at the Contract lump sum

price. Payment will be full compensation for furnishing, placing, and maintaining construction layout stakes, flagging of disturbance and wetland limits, removal of flagging and stakes following project completion, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. Payment of the Contract lump sum price will be prorated and paid in equal amounts on each monthly estimate. The number of months used for prorating will be the number estimated to complete the work.

END OF SECTION

ITEM 1040

CLEARING AND GRUBBING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This work shall consist of clearing and grubbing within the limits specified in the Contract Documents. All work to be performed under this item shall be in accordance with the requirements of Section 301 of the Virginia Department of Transportation, Road and Bridge Specifications, with the following additions and/or modifications.

B. Clearing within the construction area includes removing and disposing of trees, shrubs and other vegetation within the limits of disturbance as is required for construction or as directed by The Owner. **The Limit of Disturbance (LOD) shown on the plans is not the limit of clearing and grubbing.** *Only trees designated in the Contract Documents and those trees approved by The Owner and the Engineer may be removed.*

C. No open burning will be permitted within the construction limits for this project.

D. The removal, stockpiling and placing of any materials labeled for re–use shall be incidental to the pay item for Clearing and Grubbing.

E. Grubbing within the construction area includes removing from the ground and disposing of all stumps, roots, stubs, brush, trash, rubble, and debris at locations off the project site.

PART 2 - CONSTRUCTION METHODS

2.01 PROJECT STAGING

A. To minimize the potential for erosion, sedimentation, and the degradation of water quality, clearing and grubbing will be conducted in stages. The area cleared and grubbed at any one time shall be limited to the area of active construction work.

B. Unless noted in the Sequence of Construction, no areas will be cleared and grubbed until the areas disturbed during the previous construction stage have been stabilized (i.e. covered by fabric and/or seeded and mulched). The Engineer shall have ultimate authority in this determination.

2.02 DAMAGING OR DETROYING VEGETATION BEYOND THE LIMIT OF DISTURBANCE

A. The Contractor shall not damage or destroy any trees, shrubs or turf, which exist beyond

the limits of disturbance as illustrated on the Contract Documents and specified.

B. The Contractor shall be responsible for any and all damages to trees, shrubs, or turf located beyond the limits of disturbance that occurs from his operations during the life of the Contract. The Contractor shall fully restore, at his own expense, and to the satisfaction of the Engineer, any trees, shrubs, or turf that have been damaged or destroyed.

2.03 SALVAGING AND STOCKPILING

A. The Contractor and Engineer shall meet onsite to determine availability of boulders for use in bank protection. Boulders and riprap determined to meet the specifications shall be salvaged and stockpiled for later use on-site, at no additional cost to The Owner.

B. Salvaged boulders which are deemed suitable for re-use as identified in the Contract Documents should be stored and elevated off the ground until use in construction.

2.04 CHIPPING

A. Describes chipping of cut trees within the limit of disturbance and spreading or placing on the site as directed by the Engineer. Chipping shall be accomplished by use of a chipping machine to a size acceptable to the Engineer. Material deemed by the Engineer unsuitable for chipping (too large, invasive species, etc.) shall be hauled offsite to an approved disposal location at no additional cost to The Owner.

2.05 FLUSH CUTTING

A. Describes cutting trees flush with the ground. The stump is left in place to leave the surrounding soil and infrastructure undisturbed. Flush cutting shall be accomplished by removing the whole tree that is above ground and leaving the root system in place. The stump shall be treated with a systemic herbicide applied directly to the stump to prevent the stump from resprouting from the remaining plant material. The Contractor shall use a 25% herbicide solution in water that uses glyphosate (such as Round Up) or triclopyr (such as Remedy Ultra) for cut stump applications.

2.06 MEASUREMENT AND PAYMENT

A. Clearing and Grubbing will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for the removal and disposal of all materials cleared and grubbed, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. The chipping and spreading of chipped materials, removal of unsuitable material, vine removal, stump treatment and the salvaging and stockpiling of logs shall be incidental to this item.

END OF SECTION

ITEM 1050

MAINTENANCE OF TRAFFIC

PART 1 - GENERAL

1.01 DESCRIPTION

A. This item shall consist of maintenance of traffic for project access from all access points onto public or private roads, and for information signage related to ingress and egress from the work site. All work to be performed under this item shall be in accordance with the requirements of Section 512 of the Virginia Department of Transportation, Road and Bridge Specifications.

B. All temporary sign work to be performed under this item shall be in accordance with Section 512 Virginia Department of Transportation, Road and Bridge Specifications.

C. The Contractor shall submit, if required, a traffic control plan in writing to the City of Alexandria, Department of Transportation for approval prior to the preconstruction meeting. If the Contractor does not follow the traffic control plan; the Owner will stop all activity and charge working days until the Contractor complies with the traffic control plan.

D. If the Contractor needs to close a lane of traffic on a state-maintained roadway to complete any work on the County roadway at its intersection with the state roadway, a Land Use Permit from the Virginia Department of Transportation will be required. The Contractor shall notify the Engineer at least fourteen (14) days prior to the anticipated lane closure for The Owner to coordinate with the Department of transportation to obtain the Land Use Permit. Any Lane Closure on a state-maintained roadway shall be in accordance with the standard details of the Virginia Department of Transportation requirements.

1.02 MEASUREMENT AND PAYMENT

A. Maintenance of Traffic will not be measured but will be paid for at the Contract lump sum price. Payment of the Contract lump sum price will be prorated and paid in equal amounts on each monthly invoice. The number of months used for prorating will be the number estimated to complete the work as determined by the Contract documents. Payment will be full compensation for furnishing, placing, maintaining and removing traffic control measures, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

ITEM 1060

EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

2.08 DESCRIPTION:

A. Provide all work and take all measures necessary to control soil erosion resulting from construction operations, prevent flow of sediment from construction site, and contain construction materials within protected working area as to prevent damage to any stream or wetlands.

B. The Contractor is responsible for obtaining a Virginia Erosion and Sediment Control General Permit (9VAC25-880-70) prior to commencement of work.

2.09 REFERENCES:

A. United Stated Environmental Protection Agency (USEPA):

1. Guidelines for Erosion and Sediment Control, Planning and Implementation.

2. Processes, Procedures and Methods to Control Pollution Resulting from all Construction Activity.

B. Virginia Erosion and Sediment Control Handbook, latest available edition.

2.10 SUBMITTALS:

A. Submit product data for each type of product indicated and shop drawings in accordance with Item 9100.

B. Prior to the start of the work, submit to Engineer, a copy of the acquired E&SC General Permit.

2.11 QUALITY ASSURANCE:

A. Use acceptable procedures, including use of water diversion structures, diversion ditches, settling basins, and sediment traps.

B. Operations restricted to areas of work indicated on drawings and area which must be entered for construction of temporary or permanent facilities.

C. If construction materials are washed away during construction, remove materials from fouled areas.

D. Stabilize diversion outlets by means acceptable to Engineer.

E. City has authority to limit surface area of erodible earth material exposed by Contractor operations and to direct immediate permanent or temporary pollution control measures to prevent contamination of any stream or wetlands, including construction of temporary berms, dikes, dams, sediment basins, sediment traps, slope drains, and use of temporary mulches, mats, or other control devices or methods to control erosion.

PART 2 - PRODUCTS

1.01 COIR MATTING:

A. CM-700 or engineer approved equal.

1.02 WOOD STAKES:

A. 2 inches by 2 inches by 3 feet or approved COIR Matting biodegradable stake equivalent,

1.03 GEOTEXTILE FABRIC:

A. Geotextile/filter fabric shall be non-woven polypropylene geoxtextile, such as Mirafi 700x, Mirafi 70/20, Filterweave 500, or approved equal.

1.04 SUPER SILT FENCE:

A. Geotextile fabric shall consist of Class F filter cloth or approved equal.

B. Posts shall consist of galvanized steel poles six feet in length spaced no further than 10 feet apart. The posts shall be driven a minimum of 36 inches into the ground.

C. Fencing shall be a minimum of 42 inches in height and constructed in accordance with the latest Virginia Department of Transportation Road and Bridge Standards for chain link fencing. Geotextile and chain link fence shall be embedded a minimum of 8 inches into the ground.

D. Chain link fence shall be securely fastented to the fence posts with wire ties or other suitable means.

1.05 OTHER MATERIALS:

A. As indicated on Drawings.

B. Materials specified in the Virginia Erosion and Sediment Control Handbook, and as approved by Engineer. Applicable sections of the DEQ E&S handbook include but are not limited to the following:

1. Chapter 3.01 – Safety Fence
2. Chapter 3.02 – Construction Entrance
3. Chapter 3.19 – Riprap
4. Chapter 3.36 – Soil Stabilization Blankets and Matting

PART 3 – EXECUTION

1.06 GENERAL:

A. Do not discharge chemicals, fuels, lubricants, bitumen, raw sewage and other harmful waste into or alongside any body of water or into natural or man-made channels.

3.02 INSTALLATION:

A. Install all Erosion and Sediment Control devices per the Virginia Erosion and Sediment Control Handbook, latest available edition.

END OF SECTION

ITEM 1070

DEMOLITION AND DISPOSAL OF EXISTING STRUCTURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall furnish all labor, materials, and equipment necessary for the demolition and disposal of existing structures. The work consists of removing and properly disposing of all debris, including but not limited to fallen trees, drainage structures, existing retaining wall, concrete, and miscellaneous litter. Additionally, this item includes removal of existing riprap, where shown on the Contract Documents.

1.02 CONSTRUCTION METHODS

A. All demolition, removal, and disposal shall be performed according to the Contract Drawings and all applicable Federal, State and local laws, regulations and guidelines. Demolition shall generally be limited to removal of fallen trees, drainage structures, concrete, the sheet pile retaining wall, and miscellaneous litter as delineated and/or directed by the Engineer or County Inspector. These materials are to be disposed of legally by the Contractor.

B. The Contractor shall cut all existing asphalt and/or concrete surfaces with a power saw in such a manner as to create a tight, neat, straight water sealed joint. No “jack-hammering” or tearing of the existing surfaces will be allowed. The Contractor shall protect all adjacent surfaces as necessary.

C. Perform work so adjacent structures, equipment, paving and materials, which are to remain, shall not be damaged. If damage occurs, the Contractor shall repair or replace the adjacent structures, equipment, paving and materials as directed by the Engineer or County Inspector at no additional cost to Public Works. Existing utilities damaged by demolition shall be replaced with the same material and quality as the existing utilities. Before construction begins, the Contractor shall inspect existing structures, equipment and paving that will remain in-place within and adjacent to the work area for existing defects and damage found during this inspection. All damage repairs shall be at the Contractor’s expense.

D. The Contractor shall perform the work in a manner that will not damage parts of the structure or facility not intended for removal. If, in the opinion of the Engineer or County Inspector, the method of construction used may endanger or damage parts of the structure

or affect the satisfactory operation of the facilities, the Contractor shall promptly change the method when so notified. Perform all cutting required regardless of whether such cutting is specifically indicated. Examine the existing structures and make an estimate of cutting required and other conditions to be encountered in order to accomplish the work. No blasting will be permitted.

E. All equipment, materials, and piping within the project limits, designated for removal, shall become the property of the Contractor.

F. The Contractor is responsible for the removal and proper disposal of all debris and structures within the limits of disturbance as shown on the Contract Drawings. Debris shall be removed from areas of proposed grading and all other areas within the limits of disturbance. Large debris may be removed using excavator buckets, cable winch, towing strap, laborers with bags or buckets, or other methods identified by the Contractor and approved by the Engineer.

G. The Contractor shall provide warning signs as required, for personnel and the public.

1.03 MEASUREMENT AND PAYMENT

A. Demolition and Disposal of Existing Structures will not be measured and will be paid for at the Contract lump sum price. The payment will be full compensation for the removal and disposal of all materials, saw cutting, and for all material, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION

ITEM 1080

CHAIN LINK FENCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Chain link fence shall be installed as specified on the contract documents for use along and within areas of the Limits of Disturbance where trees, shrubs, and property are to be protected and as directed by the Engineer.

1.02 MATERIALS

A. Steel Mesh – Shall be 9-gauge zinc-coated steel.

B. Posts - Shall be zinc-coated steel pipe.

C. Top Nails - Shall be zinc-coated steel pipe.

D. Braces – Shall be zinc-coated steel.

E. Gates - Shall be single- or double-swing, zinc-coated steel. Gates should be a minimum of 12 feet wide

1.03 CONSTRUCTION METHODS

A. The Contractor shall erect the chain link fence as designated on the Contract Documents and as directed by the Engineer prior to beginning construction.

B. Posts shall be spaced a maximum of ten (10) feet. Posts will be set in concrete and backfilled or anchored by other acceptable means. All corner posts, end posts, gate posts, and pull posts should be embedded, braced, and trussed as shown in the "Standard Fence – Chain Link" detail found in the latest version of the Virginia Department of Transportation Road and Bridge Standards.

C. Applicable warning signs noting hazardous conditions must be installed immediately upon installation of safety fence. The safety fence and posts shall be removed at the end of the contract and with the approval of the Engineer. The fence and posts shall become the property of the Contractor at the completion of the project.

1.04 MEASUREMENT AND PAYMENT

A. Chain Link Fence will be measured and paid for at the contract unit price per linear foot

installed. The payment will be full compensation for furnishing, installation, maintenance, and removal of the fence as shown on the Contract Documents, including all materials, labor, equipment, tree protection area signage, tools and incidentals necessary to complete the work.

END OF SECTION

ITEM 1090

TRAIL MANAGEMENT

1.01 DESCRIPTION

A. Furnish, transport, and replace in kind existing on-site Recreation Area as specified in the Contract Documents or as directed by the Engineer.

1.02 MEASUREMENT AND PAYMENT

A. Recreation Area will not be measured and paid for at the contract unit price but paid per lump sum (LS). Price and payment will be full compensation for all material, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION

ITEM 2010

STREAM CHANNEL EXCAVATION (CLASS 5)

PART 1 - GENERAL

1.01 Description

A. All work to be performed under this item shall be in accordance with the requirements of Section 303 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications.

B. All excavation specified on the plans and in the Contract Documents, unless otherwise specified, shall be classified as Class 5 Excavation. The Contractor shall use all suitable materials, including topsoil, subsoil, and channel bed material, as specified in the Contract Documents, from excavation in the construction throughout the Contract.

C. This item includes excavation, separation, removal and disposal of debris and unsuitable materials from the stream channel, floodplain, or wetland areas and salvaging, transporting, placing, and stockpiling of suitable materials in areas designated on the plans and as outlined below. All concrete, rubble, asphalt or other unsuitable material, such as clay or wet material, removed from the channel is considered unsuitable material.

1.02 Layout

A. The layout of the grading shall be as shown on Contract Drawings (plans and cross-sections). Grading shall transition smoothly between cross-sections, with no abrupt changes in channel geometry.

1.03 Excavation

A. Excavation shall include the following:

1. Cut areas within the boundary faces of the cross-sections specified in the Contract Documents, including excavation within the channel, banks or floodplain for stabilization activities. This shall include excavation for the installation of rock grade control structures and bank treatment techniques, as specified on the plans and in these specifications.

2. Demolition and/or removal of debris from the stream channel, including trees and debris jams, tires, concrete lining, broken up concrete and other materials as designated by the Engineer.

3. Additional rock encountered within the stream channel that may be handled by

the same tools and equipment used for channel or stream excavation under this Contract.

4. When excavating for infrastructure stabilization or other facilities indicated on the plans, the Contractor may encounter wet or saturated soils. The Contractor shall be prepared to dewater and transport unsuitable soil off-site in a manner that prevents discharge or spillage of soils or water onto adjacent properties or roads. Should any discharge occur, the Contractor shall be responsible for immediate and complete clean-up.

5. There shall be no overnight stockpiling of erodible material in the 100-year floodplain.

PART 2 - CONSTRUCTION

2.01 Excavation and Fill

A. Excavation and fill for the construction of the new channel shall be as shown on the Contract Documents. Construction shall be as shown in the plan view, cross sections, and the stream profile drawings. All work to be performed under this item shall be in accordance with the requirements of Section 303 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications.

B. Due to the requirement to dewater the stream channel, all excavation and fill to construct the new channel, as well as all in-stream structures, must be done in an expeditious manner. Dewatering periods must be limited, and the stream flow returned to the new channel as soon as is reasonably possible. The Contractor is responsible to provide adequate equipment and manpower, as well as to establish a work schedule that will meet this requirement.

C. In areas where fill is required to establish the design channel, the Contractor shall place the required fill and compact the soil by tamping it with the excavator bucket. Fill shall be placed in 8 to 12 inch lifts. Each lift shall be compacted by tamping with the excavator bucket or by tracking in by the excavator. Reasonable compaction as determined by the site engineer/city inspector shall be achieved before placement of succeeding lifts.

D. Immediately upon completion of streambank grading and the installation of in-stream structures along a given segment, the Contractor will provide permanent stabilization of all disturbed areas. Permanent stabilization will be completed as set forth in the Standard Specifications for Permanent Seed and Mulch, and Soil Stabilization Matting

2.02 Site Clean-up

A. Prior to undercutting any stream invert, cutting into any stream bank, or excavating the

site, the reach that is being constructed shall be cleaned of all non-desirable items such as waste concrete, metal, vegetation debris, and rubbish prior to stockpiling. The Contractor shall be responsible for removing as much unnatural or undesirable material as possible prior to salvaging and stockpiling of the suitable on-site materials. Disposal of non-desirable material shall be the responsibility of the Contractor.

2.03 Use of Salvaged Streambed Materials

A. Material shall be salvaged from the existing channel to provide natural streambed material. The use of salvaged streambed material is defined in each treatment specification. Salvaged streambed material meeting the specifications of materials referenced in the following specifications shall be used prior to the furnished materials: Item 9020: Salvaged Streambed Material

B. Topsoil and subsoil shall be salvaged from within the grading limits for use as specified in the Contract Documents or as directed by the Engineer. Placement of salvaged or furnished topsoil meeting the specifications of materials referenced in the following specifications shall be used prior to the furnished materials: Item 7030: Placing Salvaged Topsoil – 4" Depth and Item 7040: Placing Furnished Topsoil – 4" Depth.

C. In addition to the specifications described for furnished material, salvaged topsoil and salvaged subsoil shall be free of any plant parts (seeds, rhizomes, stolon, roots, etc.) of noxious weeds (Johnsongrass, Canada Thistle, Phragmities, etc. as defined by the Virginia Department of Conservation and Recreation) as well as non-native, invasive plants (Multiflora rose, garlic mustard, etc.) as determined by the Engineer. Salvaged topsoil and subsoil shall be stockpiled on site and kept separate from other materials.

2.04 Disposal of Unsuitable Materials

A. Existing debris, concrete, waste, and other unsuitable materials, as determined by these specifications or by the Engineer, shall be removed from the site and shall be disposed of in a site with an approved erosion and sediment control permit.

2.05 Rock Excavation

A. Boulders and rock from the excavation may not be broken and used for any of the proposed in-stream or bank structures unless authorized by the Engineer or provided for in the Contract Documents.

B. Blasting. The Contractor shall obtain prior approval from the Engineer before performing any rock blasting necessary to complete the excavation to the grades and lines indicated on the plans. All blasting shall conform to SHA standards.

C. Pre-splitting. The Contractor shall obtain prior approval from the Engineer before

performing any pre-splitting activities, necessary to complete the excavation to the grades and lines indicated on the plans. All pre-splitting shall conform to VDOT standards.

2.06 Excavation Beyond Specified Limits.

A. The widening of cut or excavation sections beyond the limits of the cross-sections, as specified in the Contract Documents, is prohibited in all instances except by written order from the Engineer. When so ordered by the Engineer, the procurement of additional suitable materials for fill shall conform to the following provisions.

1. Finished Excavation. Refer to Section 303 of the Standard Specifications.

2. Excavation Limits.

a. If the Engineer directs the Contractor to excavate beyond the limits of the cross-sections originally proposed, and within the limits of disturbance, then all material within the limits will be classified as Class 5 Excavation.

b. If the Contractor, with approval of the Engineer, elects to obtain material by widening cuts beyond the limits of the cross-sections originally proposed and within the limits of disturbance, the excavation of the materials will be classified as Class 5 Excavation.

2.07 Unsuitable Material and Undercuts.

A. Unstable or other unsuitable material encountered at or below the lowest normal excavation limit, as specified in the Contract Documents, shall be undercut and removed to the extent directed by the Engineer. The undercutting and removal of unsuitable material shall be incidental to Class 5 Excavation. In rock areas, the limit of measurement for excavation will be at the bottom of the normal plan section. All voids created by the removal of unsuitable material and undercuts, except when rock is encountered at subgrade, shall be backfilled to the lines and grades specified in the Contract Documents. Backfill material for undercuts shall conform to materials specified and shall be incidental to the Class 5 Excavation.

2.08 Placement of Salvaged Streambed Materials

A. Salvaged streambed materials meeting the specifications described in the Contract Documents shall be placed as described in the Contract Documents.

2.09 Stabilization

A. The Contractor shall be responsible for temporary and permanent stabilization of all streambanks and graded or traversed floodplain areas, immediately upon completion of grading, as specified in the Contract Documents. The Contractor shall perform all care

and remediation work required to maintain stable streambanks, including erosion and sediment control.

B. In cases where additional material is required, The Contractor is responsible for furnishing and transporting suitable fill material to the project site. The suitability of fill material is dependent on the area to be filled. If unsuitable streambed materials are available on site the use of Item 9030: 2-3" Stone for Stream Mixes will be used as described in the specifications.

PART 3 - MEASUREMENT AND PAYMENT

3.01 Stream Channel Excavation (Class 5) will be measured and paid for at the Contract unit price per cubic yard. The payment will be full compensation for all excavation, hauling, salvaging, separating, stockpiling, and placing of suitable materials, formation and compaction of embankments and backfill, backfilling of stream beds or otherwise disposing of excess and unsuitable materials, undercutting and backfilling of undercuts, and for all material, labor, equipment, tools, and incidentals necessary to complete the work. The cost of handling and re-handling wet soils, reuse of salvaged fill material, salvaged streambed material, salvaged topsoil, and over-excavation to construct a temporary access bridge, if necessary, shall be considered incidental to the cost of Stream Channel Excavation (Class 5), as appropriate. The cost of over excavating for the installation of structures shall be incidental to the materials necessary for construction of the structure.

3.02 Material will be measured in its original position and the volume computed by the Method of Average End Area. The cross-sectional area measured will not include water or other liquids. Measurement for Stream Channel Excavation (Class 5) will not include any material removed outside the limits of disturbance as specified in the Contract Documents.

3.03 Earthwork bid item quantities are based on existing elevations/contours and proposed grading, as shown on the Contract Document's cross-sections and profiles. Existing elevations and grades may have changed since the original survey was completed, due to erosion and sediment accumulation. Prior to the start of excavation, the Contractor may conduct surveys to confirm existing grades and verify and adjust earthwork quantities and work efforts, at no additional cost to The Owner. Because of the possibility of changes to grades following completion of an area of work due to extremes in stream flow, the Contractor may conduct surveys incrementally as a particular work area is completed for quantity verification. The survey shall be submitted to the Engineer for review to confirm incremental as-built conditions and quantities. The Contractor is solely responsible for restoring un-surveyed sections to design conditions at no additional cost to The Owner.

END OF SECTION

ITEM 2020

DISPOSAL OF EXCAVATED MATERIALS (STOCKPILE)

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall perform disposal of unsuitable, unsatisfactory, and excess excavated material offsite at an approved stockpile location or approved disposal facility. Disposal of Excavated Unsuitable Materials shall be performed as described in Item 2010: Stream Channel Excavation (Class 5). Stockpile Construction shall be performed as described in the Contract Documents.

1.02 Suitable Material

A. Excess suitable soil material shall be transported and disposed of as specified in the contract documents at the location of the stockpile. Disposal of unsuitable material including, but not limited to, rock, concrete, asphalt, sidewalk, curb and gutter, vegetation debris, soft soil, trash, and other miscellaneous debris shall be performed as described in Item 2010: Stream Channel Excavation (Class 5).

PART 2 - CONSTRUCTION

2.01 Excavation and fill for the permanent stockpile construction shall be as shown on the Contract Documents. Construction shall be as shown in the plan view.

2.02 In areas where fill is required to establish the design permanent stockpile, the Contractor shall place the required fill and compact the soil by tamping it with the excavator bucket. Fill shall be placed in 8 to 12 inch lifts. Each lift shall be compacted by tamping with the excavator bucket or by tracking in by the excavator before placement of succeeding lifts. The final lift placed shall not be compacted. The stockpile construction and incremental stabilization shall occur in two phases. Phase One shall not exceed 15 feet in vertical height. Once 15-foot maximum vertical height is achieved the stockpile shall be seeded and stabilized. Phase Two can then be constructed to bring the stockpile to final grade.

2.03 Immediately upon completion of permanent stockpile grading, the Contractor will provide permanent stabilization of all disturbed areas. Permanent stabilization will be completed as set forth in the Standard Specifications for Permanent Seed and Mulch, and Soil Stabilization Matting.

PART 3 - MEASUREMENT AND PAYMENT

3.01 Disposal of Excavated Material (Stockpile) will be measured and paid for at the Contract

unit price per cubic yard. The payment will be full compensation for all hauling, grading, and disposing of excess and unsuitable materials and for all material, labor, equipment, tools, and incidentals necessary to complete the work. The cost of handling, re-handling soils, and grading shall be considered incidental to the cost of Disposal of Excavated Materials (Stockpile), as appropriate.

3.02 Material volume for Disposal of Excavated Materials (Stockpile) will be estimated by 80% of estimated truck load volume and documented by the on-site Construction Services Manager prior to leaving the site. Measurement for Disposal of Excavated Materials will not include any material removed outside the limits of disturbance as specified in the Contract Documents.

END OF SECTION

ITEM 3010

STABILIZED CONSTRUCTION ENTRANCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work to be performed under this item shall be in accordance with the detail on the Contract Documents and the requirements of Section 512 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications.

1.02 MATERIALS

A. Stone shall be VDOT No. 2 aggregate.

B. Geotextile - Nonwoven Geotextile as specified in Section 245 Virginia Department of Transportation, Road and Bridge Specifications.

1.03 CONSTRUCTION METHODS

A. The entrance(s) shall be constructed and maintained in a condition, which will prevent tracking or flowing of sediment onto private or public right-of-way or roads. The location of entrances shall be determined in the field by the Contractor with the approval of the Engineer and the Sediment Control Inspector.

B. Rehabilitate Stabilized Construction Entrance shall consist of periodic top dressing with additional aggregate, replacement of pipe or other repairs to the entrance.

1.04 MEASUREMENT AND PAYMENT

A. Stabilized Construction Entrance will be measured and paid for at the Contract unit price per each. When pipe is required, it will not be measured but the cost will be incidental to the Contract unit price for Stabilized Construction Entrance. The payment will be full compensation for excavation, geotextile, aggregate, pipe, rehabilitation, relocation and removal and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

ITEM 3020

TEMPORARY ACCESS ROAD

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work shall consist of establishing and maintaining a temporary access road as shown on the Contract Documents and the requirements of C-SCM-02 of the Virginia Department of Transportation, Virginia Department of Environmental Quality, Stormwater Management Handbook.

1.02 MATERIALS

A. Wood Chips or Mulch - Standard Specification 605 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications.

B. Timber Matting - Timber mats shall be made from all natural select hardwood (no preservatives), 100% bolted - no nails, overlapping and designed for heavy duty construction equipment.

C. Temporary Pipe – A temporary conduit placed to convey drainage beneath a Temporary Access Road. Temporary Pipe must be sufficiently protected from vehicle traffic by timber or bridge matting to prevent pipe collapse.

1.03 CONSTRUCTION METHODS

A. A Temporary Access Road with a maximum width of 12’ shall be installed and maintained as shown on the Contract Documents in the manner selected by the Contractor and as approved by the Engineer. The contractor shall maintain the minimum access road depth as outlined in C-SCM-02 of the Virginia Department of Transportation, Virginia Department of Environmental Quality, Stormwater Management Handbook.

B. The Contractor may need to use additional Timber Matting or Swamp Mats in areas as directed by the Project Manager to minimize impacts to wetlands, control sediment, or facilitate movement of equipment. Moving and reuse of timber mats as needed shall be at no additional cost to the Owner.

C. Contractor is responsible for any damage and subsequent repairs to asphalt walking paths due to temporary access road.

1.04 MEASUREMENT AND PAYMENT

A. Temporary Access Road will be measured and paid for at the Contract unit price per linear foot installed. The payment shall be full compensation for all wood chips, mulch, stone, temporary pipe, timber matting, and all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

ITEM 3030

TEMPORARY ACCESS BRIDGE

PART 1 - GENERAL

1.05 DESCRIPTION

A. This work shall consist of establishing, maintaining, and removing a temporary access bridge as shown on the Contract Documents. Work shall be executed in accordance with C-ENV-03 of the Virginia Department of Transportation, Virginia Department of Environmental Quality, Stormwater Management Handbook.

1.06 MATERIALS

A. Materials shall conform to C-ENV-03 of the Virginia Department of Transportation, Virginia Department of Environmental Quality, Stormwater Management Handbook.

1.07 CONSTRUCTION METHODS

A. A Temporary Access Bridge shall be installed, maintained, and removed in accordance with C-ENV-03 of the Virginia Department of Transportation, Virginia Department of Environmental Quality, Stormwater Management Handbook..

1.08 MEASUREMENT AND PAYMENT

A. Temporary Access Bridge will not be measured but will be paid for per each (EA) at the contract unit price. The payment shall be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

ITEM 3040

CONTINGENT SILT FENCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work shall consist of installing and maintaining silt fence as shown on the Erosion and Sediment Control Contract Documents or as directed by the Engineer. All work to be performed under this item shall be in accordance with the requirements of Sections 242 and 245 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications, with the following additions and/or modifications herein:

1.02 MATERIALS

A. Contractor shall furnish all materials necessary to construct and install the Silt Fence as specified in Sections 242 and 245 Virginia Department of Transportation, Road and Bridge Specifications.

1.03 CONSTRUCTION METHODS

A. This work shall include furnishing, installing and maintaining silt fence for sediment control. Silt fence shall be installed in accordance with the specifications as shown on the Erosion and Sediment Control Contract Documents or as directed by the Engineer or the Sediment Control Inspector.

1.04 MEASUREMENT AND PAYMENT

A. Silt Fence will be measured and paid for at the Contract unit price per linear foot. The payment shall be full compensation for furnishing, installation, maintenance, and removal and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

B. Replacement or resetting of the Silt Fence, if deemed necessary by the inspector, will not be measured for payment but will be incidental to the Silt Fence.

END OF SECTION

ITEM 3050

SUPER SILT FENCE

PART 1 - GENERAL

1.05 DESCRIPTION

A. This work shall consist of installing and maintaining silt fence as shown on the Erosion and Sediment Control Contract Documents or as directed by the Engineer. All work to be performed under this item shall be in accordance with the requirements of Section 242 and 245 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications, with the following additions and/or modifications herein:

1.06 MATERIALS

A. Contractor shall furnish all materials necessary to construct and install the Super Silt Fence as specified in Sections 242 and 245 of the Virginia Department of Transportation, Road and Bridge Specifications.

1.07 CONSTRUCTION METHODS

A. This work shall include furnishing, installing and maintaining silt fence for sediment control. Silt fence shall be installed in accordance with the specifications as shown on the Erosion and Sediment Control Contract Documents or as directed by the Engineer or the Sediment Control Inspector. Super Silt fence shall be installed prior to the disturbance of stockpiling, staging and construction access areas shown on the Erosion and Sediment Control Contract Documents.

1.08 MEASUREMENT AND PAYMENT

A. Super Silt Fence will be measured and paid for at the Contract unit price per linear foot. The payment shall be full compensation for furnishing, installation, maintenance, and removal and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

B. Replacement or resetting of the Super Silt Fence, if deemed necessary by the inspector, will not be measured for payment but will be incidental to the Silt Fence.

END OF SECTION

ITEM 3060

FOREST RETENTION SIGNAGE

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall furnish all labor, equipment, and materials necessary for the installation and maintenance of appropriate forest retention signs. Trees that have limited potential to be damaged by construction activities and with sufficient room to avoid during construction shall be protected with Safety Fence and Forest Retention Signage. Safety Fence with Forest Retention Signage shall be installed as described in Item 1080: Safety Fence and modified to include a forest retention signage as described below.

1.02 MATERIALS

A. Safety Fence – Item 1080

B. Forest Retention Signage – Signs shall be constructed using durable materials to withstand all anticipated weather conditions. The signs shall also be mounted to posts capable of withstanding possible inundation and flood conditions. Contractor shall maintain signs throughout the duration of the work, including downtime periods.

1.03 CONSTRUCTION METHODS

A. The Contractor shall erect the Safety Fence as designated on the Contract Documents and as directed by the Engineer prior to beginning construction.

B. In addition, tree protection fencing shall not be fastened or nailed to trees. One Forest Retention Signage, sign or equivalent, shall be posted for every 100 linear feet of tree protection high visibility fence. Signs shall be mounted to posts.

1.04 MEASUREMENT AND PAYMENT

A. Forest Retention Signage will be measured and paid for at the contract unit price per each installed. The payment will be full compensation for furnishing, installation, maintenance, and removal of the fence as shown on the Contract Documents, including all materials, labor, equipment, signage, tools and incidentals necessary to complete the work.

END OF SECTION

ITEM 3070

MAINTENANCE OF STREAM FLOW

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work shall consist of maintaining and diverting stream flow and installing flow diversion devices for the purpose of isolating work areas when construction activities take place within the stream channel, as specified in the Erosion and Sediment Control Contract Documents or as directed by the Engineer.

1.02 MATERIALS

A. Sandbags - Sandbags shall consist of materials, which are resistant to ultraviolet radiation, tearing and puncture, and woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).

B. Sheeting - Sheeting shall consist of polyethylene or other material, which is impervious and resistant to puncture and tearing.

C. Pump(s) - Pump(s) shall be large enough to maintain un-interrupted base flow to the channel downstream of the work area. The pump-around shall include a hose suitable to convey water over land to the downstream section. The minimum length of hose required (measured in linear feet) is equivalent to the maximum estimate for three workdays provided by the Contractor.

D. Sediment Filter Bag(s) - Filter bags shall be in accordance with the plan and construction specifications per VDEQ Virginia Stormwater Management Handbook

1. The filter bag will be removed and replaced at the discretion of the Engineer when the filtering rate is inadequate for the pumping rate. The bags and sediment will be disposed of off-site.

2. Sediment Filter Bags should be made of nonwoven, needle-punched, polypropylene Geotextile designed to meet or exceed the mechanical properties:

a. Tensile Strength (ASTM D4632) - 250 lbs

b. Elongation @ Break (ASTM D4632) - 50%

c. Mullen Burst (ASTM D3786) - 350 psi

d. Puncture Strength (ASTM D4833) - 150 lbs

e. Trapezoidal Tear (ASTM D4533) - 80 lbs

f. Apparent Opening Size (ASTM D4751) - 40-80 US Sieve

g. Permittivity (ASTM D4491) - 1.30 Sec-1

h. UV Resistance, % Retained (ASTM D4355) - 70%

i. Flow Rate (ASTM D4491) - 70 gal/min/sf

3. The Engineer may specify any size up to 15’ x 15’.

1.03 CONSTRUCTION METHODS

A. During all operations, the Contractor shall maintain continuous flow and operation of all waterways, channels and storm drains while minimizing the discharge of sediment to any watercourse. The Contractor shall conduct their operations in a manner that reduces the amount of sedimentation introduced into the stream to an absolute minimum. Dewatering of excavation areas directly into the stream is prohibited.

B. The Contract Documents include details and suggested sequences for maintaining channel flow during construction. The Contractor may develop his/her own plan to maintain flow and control erosion with the approval of the Engineer. The Contractor shall obtain approval from the Prince William County Soil and Water Conservation District for any significant modifications to the Contract Documents.

C. The Contractor shall utilize sandbags, pumps, sump pits, hoses, energy dissipaters, diversion pipes, dewatering methods, and other means to divert flow around the work area, dewater work areas, and control discharges of sediment to receiving waters.

D. Maintenance of Stream Flow measures shall be maintained throughout the duration of the work to the Engineer’s satisfaction. Any discharge of sediment resulting from the Contractor’s construction shall be remedied to the satisfaction of the Engineer at the Contractor’s expense.

E. Upon completion of the work, after the drainage devices have served their purposes, and with the inspector’s approval, the devices shall be removed and disposed of away from the project by the Contractor at their own expense. Removal and disposal shall be done in compliance with erosion and sediment control and waste disposal requirements of the Prince William County Code.

1.04 MEASUREMENT AND PAYMENT

A. Maintenance of Stream Flow will not be measured but will be paid for at the Contract lump sum price. The payment will include designing and providing diversion structures regardless of the type required to satisfactorily divert the stream flow, excavation, backfill, pump-around and dewater the site and excavated areas within the stream diversion area, maintenance of the diversion system, sandbags, polyethylene sheeting, dikes, sediment filter bags, excavation and cleanout of dewatering basins, diversion pipes, pumps, sump pits, hoses, connections, Geotextile, energy dissipaters for hose outfalls, resetting of the diversion system, removal of the diversion system, and all other materials, labor, equipment, tools and incidentals necessary to complete the work. This price will not be adjusted when consideration is given to an alternative stream diversion system regardless of any changes in quantities from that shown in the Contract Documents. The Contractor may make requests for partial payment of dewatering expenses monthly. Payment request shall be prorated based on the percentage of the dewatering completed to date.

B. If the total payments made for dewatering are less than the Contract Lump Sum Price for this item, the unpaid balance will be included in the final contract payment.

C. Payment of the Contract Lump Sum Price shall constitute full compensation for completion of the work.

END OF SECTION

ITEM 3080

TREE PROTECTION PLANKING

PART 1 - GENERAL

1.01 DESCRIPTION

A. The Contractor shall protect all trees within the limit of disturbance not designated for removal. Trees that have limited the potential to be damaged by construction activities and with sufficient room to avoid during construction shall be protected with Tree Protection Fencing. Tree Protection Fencing shall be installed as described in Item 1060: Safety Fence, and as detailed on the Construction Documents. Trees that are directly adjacent to or have the potential to be damaged by machinery that is in close operation shall be protected with Tree Protection Planking. The Contractor shall provide wooden planks as impact protection on individual trees or as directed by the Engineer.

1.02 MATERIALS

A. Wooden planks - Wooden planks shall be hardwood and shall be a minimum of 2 inch thick.

B. 10 Gauge Wire

C. Burlap

1.03 CONSTRUCTION METHODS

A. Place wooden planks around trees to a height of 8 foot or as directed by the Engineer. During installation of the wood planks, caution shall be used to avoid damaging any bark or branches. Tree bark must be protected from damage due to direct contact with wire or other anchoring materials by use of burlap.

1.04 MEASUREMENT AND PAYMENT

A. Tree protection planking will be measured and paid for at the Contract price per each item. The payment will be full compensation for all material, labor, equipment, tools, and incidentals (including watering during the construction period) necessary to complete the work. The price must include removal from site of all related materials upon project completion. Reuse of tree protection planking shall be incidental to this item.

END OF SECTION

ITEM 3090

ROOT PRUNING

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work to be performed under this item shall be in accordance with the detail on the Contract Documents.

1.02 CONSTRUCTION METHODS

A. Root pruning shall be done with a trencher or vibratory plow to a depth of 12”.

B. Root pruning shall take place prior to any clearing or grading. Exact pruning location shall be determined by a certified arborist.

C. Avoid damage to existing structures, plants, and turfgrass. Keep turfgrass areas, paved surfaces and sidewalks clean.

D. Promptly remove, disperse, or dispose of wood debris and other waste materials as directed.

E. Do not injure vegetation to be preserved. Repair injuries to bark, ttrunks, or limbs by cutting, smoothing, and tracing the bark in accordance with ANSI A300 Standards for Tree Care Operations.

1.03 MEASUREMENT AND PAYMENT

A. Root Pruning will be measured and paid for at the Contract unit price per linear foot. The payment will be full compensation for all labor, materials, equipment, tools, cleanup and restoration, damage repair, disposal fees, and incidentals necessary to complete the work.

END OF SECTION

ITEM 4010

BOULDER CASCADE

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This work shall consist of furnishing, transporting, stockpiling, installing, and maintaining boulder cascade structures along the stream channel, as specified in the Contract Documents.

PART 2 - Materials

A. ROCK

a. Rock shall consist of angular flat rock imbricated? of appropriate color (e.g. green/gray, brown/gray, dark gray, and/or dark brown in color) obtained from an approved source. Any rock shall be free from laminations, weak cleavages, and shall not disintegrate from the action of air, water, and in handling and placing. Granular sedimentary rock shall generally not be acceptable.

b. The rock shall have a minimum unit weight of 165 lbs per cubic foot.

c. Rocks shall have a minimum width (Y-Axis) and length (X-Axis) between 2.75 feet and 3.25 feet.

d. Rocks shall have a Minimum height (Z-Axis) between 1.5 feet and 2.5 feet.

e. Weight of rock must be 2 tons or greater.

f. The Contractor shall obtain from the quarry and submit to the City of Alexandria a certificate verifying the follow – 1) Rock, 2) Classification, 3) Weight per cubic foot, 4) Weight of rock being supplied, and 5) Rock Size

g. Samples shall be delivered to the project site for approval by the City of Alexandria prior to its use in the project. Any unsuitable material shall be removed at the Contractor’s expense.

h. The Contractor shall not be granted an extension of time or extra compensation due to delay caused by sampling, testing, approval, or disapproval of rock material under the requirements of these Specifications.

i. Rock sizes shall be as specified below:

Structure	X-Axis (Length)	Y-Axis (Width)	Z-Axis (Height)
Boulders (Footer Rock and Top Rocks)	2.75 – 3.25 feet	2.75 – 3.25 feet	1.5 – 2.5 feet

B. FOOTER ROCK

a. Footer rock shall meet the specifications for Rock contained in the Contract Documents. Footer rock consists of rock placed below the invert of the proposed channel or underneath top rocks to provide support for the top rock and prevent toe scour.

C. TOP ROCKS (HEADER)

a. Top rock (header rock) shall meet the specifications for Rock contained in the Contract Documents. Top rock consists of the row(s) of rock place upon and above footer rocks.

D. GEOTEXTILE FABRIC

a. Geotextile/filter fabric shall be non-woven polypropylene geoxtextile, such as Mirafi 700x, Mirafi 70/20, Filterweave 500, or approved equal.

E. SAND

a. Sand shall meet the AASHTO-M-6 or ASTM-C-33 standard, 0.02 inches to 0.04 inches in size.

F. GRAVEL

a. Gravel shall meet the ASTM No. 57 standard.

PART 3 -Construction

3.01 GENERAL

A. Construction and construction tolerances shall be in accordance with the Drawings and Specifications. Grades shall be within 0.25’ of the grades shown on the plans.

B. Before beginning installation, verify site conditions are as indicated on the Drawings. Notify the Engineer if site conditions are not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

3.02 CONSTRUCTION OBSERVATION

A. The City or Project Engineer should verify the materials supplied by the contractor meet all the requirements of the specification. This includes all submittals and proper installation of the system.

B. The Contractor's field construction supervisor shall have demonstrated experience and be qualified to direct all work at the site as approved the City or Engineer.

3.03 INSTALLATION INSTRUCTIONS

A. The contractor shall ensure that the erosion and sediment control devices specified in the contract documents are in place before any work begins on the rock cascades.

B. Contractor shall excavate to the extents required to construct the structure. The subgrade should be smooth, firm, and free from protruding objects or voids that would affect the proper positioning of the first layer of rock and filter fabric. Contractor shall take precautions to minimize over-excavation. Over-excavation shall be filled with compacted infill material, or as directed by the Engineer, at the Contractor's expense.

C. The Contractor shall place filter fabric under all layers of boulders. Place filter fabric loosely and evenly on the prepared slope and secure per manufacturer requirements. Adjacent strips should overlap 12 inches. The upslope filter fabric should always be placed over the downslope filter fabric. If the filter fabric is torn or damaged, it should be repaired or replaced.

D. The contractor shall place footer rocks on the downstream end of cascade. A second or third row (as necessary) of footer boulders shall anchor the cascade boulders such that footers extend a minimum of 2 feet below the receiving pool bottom elevation. Adjacent boulders shall be placed in direct physical contact with one another. Gaps shall not exceed 2 inches unless otherwise shown on the plans or approved by the Engineer.

E. Lay footer boulders as a gently curved rack to spread water laterally (ends of curve point downstream). Form a gentle parabolic shape to keep flow within the thalweg and shoulders. Embed boulders, a minimum of 2 feet into adjacent banks. When boulders are unable to be placed into the stream bank due to their proximity to segmental gravity block retaining walls, the contractor shall work with the selected segmental block retaining wall supplier to determine an appropriate method to ensure cascade stability with the approval of the City and Project Engineer, whether by pocket keying, grout, or similar.

F. Secure footer boulders into soil over pinned geotextile.

G. Stack the first layer of rock ensuring that the rocks are stacked so the placed rock rests on two rocks in the tier below it. Place in irregular offset pattern.

H. Use smaller stones in voids between the tiers to ensure that stacked rocks rest solidly on the tier below with minimal opportunity for movement.

I. Place filter fabric at the completion of each tier of stacked rock.

J. Continue placing tiers of rock until the design height is achieved.

K. Wash in smaller particles into the structure at the end of construction Start at top of cascade and use a 2-inch pump and hose to seal structures and promote surface flow.. Repeat multiple times and supply more sand and gravel at the top weirs to continue supplying materials to fill voids in subsequent storms and washes.

L. Chink larger voids between boulders.

M. Liberally cast sand and gravel over each finished tier to fill in voids and to supply material for the wash-in stage.

N. Trim any excess geotextile fabric such that it is not visible.

O. Upon completion of work, remove unsuitable and surplus rocks and excavated materials to fill areas or approved off-site locations.

END OF SECTION

ITEM 4020

CASCADE POOL

1.01 DESCRIPTION:

A. Cascade pool structures are in-stream streambed features directly downstream of boulder cascades composed of rock constructed in steep stream reaches to provide grade control energy dissipation during storm flow events. This work shall consist of transporting, installing and maintaining step-pools within the stream channel, as specified on the Contract Documents or as directed by the Engineer.

1.02 MATERIALS

A. Item 9070: Rip Rap for Cascade Pools

1.03 CONSTRUCTION METHODS

A. Rock step pools shall be installed per the Contract Documents and details, and the following Construction Specifications. The Contractor shall arrange and construct rock step pools under the direction and approval of the Engineer.

B. The structure installation area shall be graded to the general shape of the steps and pools and to a depth sufficient to allow for installation of the Rock Step Pool header and footer rocks and geotextile.

C. Geotextile shall be placed to the upstream side of the Rock Step so that the geotextile fabric is on the backside of the rock and not visible once backfilled with proposed stream substrate mix as shown in the Contract Documents. Any excess or exposed fabric shall be trimmed.

D. Surface elevations, widths, slopes, and dimensions should conform to those specified in the Contract Documents. Tolerances of the finished structure are as follows:

Stations and Offsets: +/-0.5 ft

Surface Elevations: +/-0.1 ft

Placed material not conforming to the specified limits shall be removed and replaced as directed by Engineer at no additional cost to the County.

1.04 MEASUREMENT AND PAYMENT

A. Payment will be full compensation for all materials, transport, excavation, installation, and maintenance of rock step pools, and for all material, labor, equipment, tools, and incidentals necessary to complete each Pool as specified in these specifications and on the Contract Documents.

B. Cascade Pools will not be measured and paid for separately but will be incidental to the following items:

C. Excavating, sorting, stockpiling, and placing salvaged Streambed Material shall be incidental to Item 2010: Stream Channel Excavation.

D. Item 9070: Rip Rap for Cascade Pools will be measured and paid for at the Contract unit price per linear ton placed and installed as part of Cascade Pool construction.

E. Geotextile shall be considered incidental to the cost of Cascade Pools .

END OF SECTION

ITEM 4030

GRAVITY BLOCK RETAINING WALL

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes furnishing all materials and labor required for the design and construction of a precast concrete modular block (PMB) retaining wall with or without geosynthetic reinforcement. Precast modular block retaining wall blocks under this section shall be cast utilizing a wet-cast concrete mix and exhibit a final handling weight in excess of 1,000 pounds (450 kg) per unit and may utilize concrete-reinforcing steel.

B. Scope of Work: The work shall consist of furnishing materials, labor, equipment and supervision for the construction of a precast modular block (PMB) retaining wall structure in accordance with the requirements of this section and in acceptable conformity with the lines, grades, design and dimensions shown in the project site plans.

C. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 31, Division 32 and Division 33 also apply to this Section.

1.02 PRICE AND PAYMENT PROCEDURES

A. Allowances. No allowance shall be made in the price of the retaining wall for excavation beyond the limits required for retaining wall construction as shown on the project plans. The cost of excavation for the purposes of site access shall be the responsibility of the Contractor. Removal of unsuitable soils and replacement with select fill shall be as directed and approved in writing by the Client or Client's representative and shall be paid under separate pay items.

B. Unit Prices. In addition to a lump sum price pursuant to completion of the scope of work described in Part 1.01 of this Section, the Contractor shall provide a unit price per square foot of vertical wall face that shall be the basis of compensation for up to a ten (10) percent increase or reduction in the overall scope of the retaining wall work.

C. Measurement and Payment

1. The unit of measurement for furnishing the precast modular block retaining wall system shall be the vertical area of the wall face surface as measured from the top

of the leveling pad to the top of the wall including coping. The final measured quantity shall include supply of all material components and the installation of the precast modular block system.

2. The final accepted quantities of the precast modular block retaining wall system will be compensated per the vertical face area as described above. The quantities of the precast modular block retaining wall as shown on the plans and as approved by the Owner shall be the basis for determination of the final payment quantity. Payment shall be made per square foot of vertical wall face.

1.03 ADMINISTRATIVE REQUIREMNETS

A. Preconstruction Meeting. As directed by the Client, the Contractor shall schedule a preconstruction meeting at the project site prior to commencement of retaining wall construction. Participation in the preconstruction meeting shall be required of the Contractor, Retaining Wall Installation Contractor (RWIC), Grading Contractor, and Inspection Engineer. The Contractor shall provide notification to all parties at least 10 calendar days prior to the meeting.

1. Preconstruction Meeting Agenda:

a. The Contractor shall explain all aspects of the retaining wall construction drawings.

b. The Contractor shall explain the required bearing capacity of soil below the retaining wall structure and the shear strength of in-situ soils assumed in the retaining wall design to the Inspection Engineer.

c. The Contractor shall explain the required shear strength of fill soil in the reinforced, retained and foundation zones of the retaining wall to the Inspection Engineer.

d. The Contractor shall explain any measures required for coordination of the installation of utilities or other obstructions in the reinforced or retained fill zones of the retaining wall.

e. The RWIC shall explain all excavation needs, site access and material staging area requirements to the Contractor and Grading Contractor.

1.04 SUBMITTALS

A. Product Data. At least 14 days prior to construction, the Contractor shall submit the retaining wall product submittal package for review and approval. The submittal package shall include technical specifications and product data from the manufacturer.

B. The Contractor shall provide certified manufacturer test reports for the geosynthetic soil reinforcement material in the manufactured roll width specified. The test report shall list the individual numbers for which the certified materials properties are valid.

C. Installer Qualification Data. At least 14 days prior to construction, the Contractor shall submit the qualifications of the business entity responsible for installation of the retaining wall.

D. Retaining Wall Design Calculations and Construction Drawings. At least 14 days prior to construction, the Contractor shall furnish electronic versions construction drawings and the supporting structural calculations report for review and approval. The submittal shall include

1. Signed, sealed and dated drawings and engineering calculations prepared in accordance with these specifications.

2. Qualifications Statements by the Contractor summarizing their experience.

3. Certificate of Insurance, as specified in paragraph 1.06, subparagraph B of this section.

1.05 CONSTRUCTION DRAWING PREPARATIONS

A. Construction drawings shall include, but is not limited to, the following:

1. Current versions of the site, grading, drainage, utility, erosion control, landscape, and irrigation plans;

2. Electronic CAD file of the civil site plans listed in (1);

3. Report of geotechnical investigation and all addenda and any supplemental reports;

4. Recommendations of the project Geotechnical Engineer regarding effective stress shear strength and total stress shear strength (when applicable) parameters for in-situ soils in the vicinity of the proposed retaining wall(s) and for any fill soil that may potentially be used as backfill in retained and/or foundation zones of the retaining wall.

B. Contractor shall provide a certificate of professional liability insurance verifying the minimum coverage limits of $1 million per claim and $1 million aggregate.

C. Design of the precast modular block retaining wall shall satisfy the requirements of this section. Where local, State, or national design or building code requirements exceed these specifications, these requirements shall also be satisfied.

D. Contractor shall note any exceptions to the requirements of this section by listing them at the bottom right corner of the first page of the construction shop drawings.

E. Approval or rejection of the exceptions taken by the Contractor will be made in writing as directed by the Owner.

F. Contractor shall determine the appropriate standard(s) to be utilized, and to which the precast modular block design shall be based upon, except as noted herein. Refer to Part 1.03, Paragraph C, Part 1.

G. In the event that a conflict is discovered between these specifications and a reasonable interpretation of the design specifications and methods referenced in paragraph F above, these specifications shall prevail. If a reasonable interpretation is not possible, the conflict shall be resolved per the requirements in paragraph 1.03, subparagraph A of this section.

H. Soil Shear Parameters. Contractor shall prepare the construction shop drawings based upon soil shear strength parameters from the available project data and the recommendations of the project Geotechnical Engineer. If insufficient data exists to develop the retaining wall design, the Contractor shall communicate the specific deficiency of the project information or data in writing.

I. Allowable bearing pressure requirements for each retaining wall shall be clearly shown on the construction drawings.

J. Global Stability. Overall (global) stability shall be evaluated in accordance with the principals of limit equilibrium analysis as set forth in FHWA-NHI-10-024 Volume I and FHWA-NHI-10-025 Volume II GEC 11 Design of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes, or other methods, as determined by the Contractor, as referenced in Section 1.06, Part F. The minimum factors of safety shall be as follows:

Normal Service (Static)	1.3
Seismic	1.1
Rapid Drawdown (if applicable)	1.2

Note: Contractor to select appropriate FOS

K. Seismic Stability. Seismic loading shall be evaluated in accordance with AASHTO Load and Resistance Factor Design (LRFD) methodology, or NCMA (ASD) methodology as determined by the Contractor as referenced in Section 1.06, Part F.

PART 2 - MATERIALS

2.01 PRECAST MODULAR BLOCK RETAING WALL UNITS

A. All units shall be wet-cast precast modular retaining wall units conforming to ASTM C1776.

B. All units for the project shall be obtained from the same manufacturer. The manufacturer shall be licensed and authorized to produce the retaining wall units by the precast modular block system patent holder/licensor and shall document compliance with the published quality control standards of the proprietary precast modular block system licensor for the previous three (3) years or the total time the manufacturer has been licensed, whichever is less.

C. Concrete used in the production of the precast modular block units shall be first-purpose, fresh concrete. It shall not consist of returned, reconstituted, surplus or waste concrete. It shall be an original production mix meeting the requirements of ASTM C94 and exhibit the properties as shown in the following table:

Concrete Mix Properties

Freeze Thaw Exposure Class[1]	Minimum 28-Day Compressive Strength[2]	Maximum Water Cement Ratio	Nominal Maximum Aggregate Size	Aggregate Class Designation[3]	Air Content[4]
Moderate	4,000 psi (27.6 MPa)	0.45	1 inch (25 mm)	3M	4.5% +/- 1.5%
Severe	4,000 psi (27.6 MPa)	0.45	1 inch (25 mm)	3S	6.0% +/- 1.5%
Very Severe	4,500 psi (30.0 MPa)	0.40	1 inch (25 mm)	4S	6.0% +/- 1.5%
Maximum Water-Soluble Chloride Ion (Cl^-) Content in Concrete, Percent by Weight of Cement[5,6]					0.15
Maximum Chloride as Cl^- Concentration in Mixing Water, Parts Per Million					1000
Maximum Percentage of Total Cementitious Materials By Weight [7,9] (Very Severe Exposure Class Only):					
Fly Ash or Other Pozzolans Conforming to ASTM C618					25
Slag Conforming to ASTM C989					50
Silica Fume Conforming to ASTM C1240					10
Total of Fly Ash or Other Pozzolans, Slag, and Silica Fume[8]					50
Total of Fly Ash or Other Pozzolans and Silica Fume[8]					35
Alkali-Aggregate Reactivity Mitigation per ACI 201					
Slump (Conventional Concrete) per ASTM C143[10]			5 inches +/- 1½ inches (125 mm +/- 40 mm)		
Slump Flow (Self-Consolidating Concrete) per ASTM C1611			18 inches – 32 inches (450 mm – 800 mm)		

[1]Exposure class is as described in ACI 318. "Moderate" describes concrete that is exposed to freezing and thawing cycles and occasional exposure to moisture. "Severe" describes concrete that is exposed to freezing and thawing cycles and in continuous contact with moisture. "Very Severe" describes concrete that is exposed to freezing and thawing cycles and in continuous contact with moisture and exposed to deicing chemicals. Exposure class should be specified by owner/purchaser prior to order placement.

[2]Test method ASTM C39.

[3]Defined in ASTM C33 Table 3 *Limits for Deleterious Substances and Physical Property Requirements of Coarse Aggregates for Concrete*.

[4]Test method ASTM C231.

[5]Test method ASTM C1218 at age between 28 and 42 days.

[6]Where used in high sulfate environments or where alkali-silica reactivity is an issue, water soluble chloride shall be limited to no more than trace amounts (from impurities in concrete-making components, not intended constituents.)

[7]The total cementitious material also includes ASTM C150, C595, C845, C1157 cement. The maximum percentages shall include:

(a) Fly ash or other pozzolans in type IP, blended cement, ASTM C595, or ASTM C1157.

(b) Slag used in the manufacture of an IS blended cement, ASTM C595, or ASTM C1157.

(c) Silica fume, ASTM C1240, present in a blended cement.

[8]Fly ash or other pozzolans and silica fume shall constitute no more than 25 and 10 percent, respectively, of the total weight of the cementitious materials.

[9]Prescriptive limits shown may be waived for concrete mixes that demonstrate excellent freeze/thaw durability in a detailed and current testing program.

[10]Slump may be increased by a high-range water-reducing admixture.

D. Concrete reinforcing steel, when required for the specified block, shall conform to ASTM A615 and have a minimum yield strength of 60,000 psi.

E. At least 1 inch of concrete cover shall be maintained over all reinforcing steel bars.

F. Each concrete block shall be cast in a single continuous pour without cold joints. With the exception of half-block units, corner units and other special application units, the precast modular block units shall conform to the nominal dimensions listed in the table below and be produced to the dimensional tolerances shown:

Block Type	Dimension	Nominal Value	Tolerance
28” (710 mm) Block	Height	18” (457 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	28” (710 mm)	+/- 1/2” (13 mm)
41” (1030 mm) Block	Height	18” (457 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	40-1/2” (1030 mm)	+/- 1/2” (13 mm)
60” (1520 mm) Block	Height	18” (457 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	60” (1520 mm)	+/- 1/2” (13 mm)
52” (1320 mm) XL Block	Height	36” (914 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	60” (1520 mm)	+/- 1/2” (13 mm)
72” (1830 mm) XL Block	Height	36” (914 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	60” (1520 mm)	+/- 1/2” (13 mm)
96” (2440 mm) XL Block	Height	36” (914 mm)	+/- 3/16” (5 mm)
	Length	46-1/8” (1172 mm)	+/- 1/2” (13 mm)
	Width*	60” (1520 mm)	+/- 1/2” (13 mm)

* Block tolerance measurements shall exclude variable face texture

G. With the exception of half-block units, corner units and other special application units, the precast modular block units shall have two (2), circular dome shear knobs that are 10 inches (254 mm), 7.5 inches (190 mm), or 6.75 inches (171 mm) in diameter and 4 inches (102 mm) or 2 inches (51 mm) in height. The shear knobs shall fully index into a continuous semi-cylindrical shear channel in the bottom of the block course above. ThePeak interlock shear between any two (2) vertically stacked precast modular block units, with 10-inch (254 mm) diameter shear knobs, measured in accordance with

ASTM D6916 shall exceed 6,500 lb/ft (95 kN/m) at a minimum normal load of 500 lb/ft (7kN/m). as well as an ultimate peak interface shear capacity in excess of 11,000 lb/ft (160 kN/m). The peak interlock shear between any two (2) vertically stacked precast modular block units, with 7.5-inch (190 mm) or 6.75-inch (171 mm) diameter shear knobs, measured in accordance with ASTM D6916 shall exceed 1,850 lb/ft (27 kN/m) at a minimum normal load of 500 lb/ft (7kN/m) as well as an ultimate peak interface shear capacity in excess of 10,000 lb/ft (146 kN/m).Test specimen blocks tested under ASTM D6916 shall be actual, full-scale production blocks of known compressive strength. The interface shear capacity reported shall be corrected for a 4,000 psi (27.6 MPa) concrete compressive strength. Regardless of precast modular block configuration, interface shear testing shall be completed without the inclusion of unit core infill aggregate.

H. The 28-inch (710 mm) and 41-inch (1030 mm) precast modular block units may be cast with a continuous vertical core slot that will permit the insertion of a 12-inch (305 mm) inch wide strip of geogrid reinforcement to pass completely through the block. When installed in this manner, the geogrid reinforcement shall form a non-normal load dependent, positive connection between the block unit and the reinforcement strip. The use of steel for the purposes of creating the geogrid-to-block connection is not acceptable.

I. Without field cutting or special modification, the precast modular block units shall be capable of achieving a minimum radius of 14 ft - 6 in (4.42 m).

J. The precast modular block units shall be manufactured with an integrally cast shear knobs that establishes a standard horizontal set-back for subsequent block courses. The precast modular block system shall be available in the standard horizontal set-back facing batter options listed below:

18-inch High Blocks Horizontal Set-Back/Blk. Course	Max. Facing Batter
3/8” (10 mm)	1.2˚
1-5/8” (41 mm)	5.2˚
9-3/8” (238 mm)	27.5˚
16-5/8” (422 mm)	42.7˚

36-inch High Blocks Horizontal Set-Back/Blk. Course	Max. Facing Batter
3-1/4” (83 mm)	5.2˚

The precast modular block units shall be furnished with the required shear knobs that provide the facing batter required in the construction shop drawings.

K. The precast modular block unit face texture shall be selected by the owner from the available range of textures available from the precast modular block manufacturer. Each textured block facing unit shall be a minimum of 5.76 square feet (0.54 square meters) with a unique texture pattern that repeats with a maximum frequency of once in any 15 square feet (1.4 square meters) of wall face.

L. The block color shall be selected by the owner from the available range of colors available from the precast modular block manufacturer.

M. All precast modular block units shall be sound and free of cracks or other defects that would interfere with the proper installation of the unit, impair the strength or performance of the constructed wall. PMB units to be used in exposed wall construction shall not exhibit chips or cracks in the exposed face or faces of the unit that are not otherwise permitted. Chips smaller than 1.5" (38 mm) in its largest dimension and cracks not wider than 0.012" (0.3 mm) and not longer than 25% of the nominal height of the PMB unit shall be permitted. PMB units with bug holes in the exposed architectural face smaller than 0.75" (19 mm) in its largest dimension shall be permitted. Bug holes, water marks, and color variation on non-architectural faces are acceptable. PMB units that exhibit cracks that are continuous through any solid element of the PMB unit shall not be incorporated in the work regardless of the width or length of the crack.

N. Preapproved Manufacturers. Manufacturers of Redi-Rock Retaining Wall Systems as licensed by Redi-Rock International, LLC, 05481 US 31 South, Charlevoix, MI 49720 USA; telephone (866) 222-8400; website www.redi-rock.com.

O. Substitutions. Technical information demonstrating conformance with the requirements of this specification for an alternative precast modular block retaining wall system must be submitted for preapproval at least 14 calendar days prior to the bid date. Acceptable alternative PMB retaining wall systems, otherwise found to be in conformance with this specification, shall be approved in writing by the owner 7 days prior to the bid date. The Client's Representative reserves the right to provide no response to submissions made out of the time requirements of this section or to submissions of block retaining wall systems that are determined to be unacceptable to the owner.

P. Value Engineering Alternatives. The owner may evaluate and accept systems that meet the requirements of this specification after the bid date that provide a minimum cost savings of 20% to the Client. Construction expediency will not be considered as a contributing portion of the cost savings total.

2.02 DRAINAGE AGGREGATE AND WALL INFILL

A. Drainage aggregate (and wall infill for retaining walls designed as modular gravity structures) shall be a durable crushed stone conforming to No. 57 size per ASTM C33 with the following particle-size distribution requirements per ASTM D6913:

U.S. Standard

Sieve Size	% Passing
1-½" (38 mm)	100
1" (25 mm)	95-100
½" (13 mm)	25-60
No. 4 (4.76 mm)	0-10
No. 8 (2.38 mm)	0-5

2.03 LEVELING PAD

A. The precast modular block units shall be placed on a leveling pad constructed from crushed stone or unreinforced concrete. The leveling pad shall be constructed to the dimensions and limits shown on the retaining wall design drawings prepared by the Contractor.

B. Crushed stone used for construction of a granular leveling pad shall meet the requirements of the drainage aggregate and wall infill in section 2.04 or a preapproved alternate material.

C. Concrete used for construction of an unreinforced concrete leveling pad shall satisfy the criteria for AASHTO Class B. The concrete should be cured a minimum of 12 hours prior to placement of the precast modular block wall retaining units and exhibit a minimum 28-day compressive strength of 2,500 psi (17.2 MPa).

PART 3 - EXECUTION

3.01 GENERAL

A. All work shall be performed in accordance with OSHA safety standards, state and local building codes and manufacturer's requirements.

B. The Contractor is responsible for the location and protection of all existing underground utilities. Any new utilities proposed for installation in the vicinity of the retaining wall, shall be installed concurrent with retaining wall construction. The General Contractor shall coordinate the work of subcontractors affected by this requirement.

C. New utilities installed below the retaining wall shall be backfilled and compacted to a minimum of 98% maximum dry density per ASTM D698 standard proctor.

D. The Contractor is responsible to ensure that safe excavations and embankments are maintained throughout the course of the project.

E. All work shall be inspected by the Inspection Engineer as directed by the Owner.

3.02 EXAMINATION

A. Prior to construction, the Contractor, Grading Contractor, RWIC and Inspection Engineer shall examine the areas in which the retaining wall will be constructed to evaluate compliance with the requirements for installation tolerances, worker safety and any site conditions affecting performance of the completed structure. Installation shall proceed only after unsatisfactory conditions have been corrected.

3.03 PREPARATION

A. Fill Soil.

1. The Inspection Engineer shall verify that reinforced backfill placed in the reinforced soil zone satisfies the criteria of this section.

2. The Inspection Engineer shall verify that any fill soil installed in the foundation and retained soil zones of the retaining wall satisfies the specification of the Contractor as shown on the construction drawings.

B. Excavation.

1. The Grading Contractor shall excavate to the lines and grades required for construction of the precast modular block retaining wall as shown on the construction drawings. The Grading Contractor shall minimize over-excavation. Excavation support, if required, shall be the responsibility of the Grading Contractor.

2. Over-excavated soil shall be replaced with compacted fill in conformance with the specifications of the Contractor and “Division 31, Section 31 20 00 – Earthmoving” of these project specifications.

3. Embankment excavations shall be bench cut as directed by the project Geotechnical Engineer and inspected by the Inspection Engineer for compliance.

C. Foundation Preparation.

1. Prior to construction of the precast modular block retaining wall, the leveling pad area and undercut zone (if applicable) shall be cleared and grubbed. All topsoil, brush, frozen soil and organic material shall be removed. Additional foundation soils found to be unsatisfactory beyond the specified undercut limits shall be undercut and replaced with approved fill as directed by the project Geotechnical Engineer. The Inspection Engineer shall ensure that the undercut limits are consistent with the requirements of the project Geotechnical Engineer and that all soil fill material is properly compacted in accordance with project specifications. The Inspection Engineer shall document the volume of undercut and replacement.

2. Following excavation for the leveling pad and undercut zone (if applicable), the Inspection Engineer shall evaluate the in-situ soil in the foundation and retained soil zones.

    a. The Inspection Engineer shall verify that the shear strength of the in-situ soil assumed by the Contractor is appropriate. The Inspection Engineer shall immediately stop work and notify the Owner if the in-situ shear strength is found to be inconsistent with the retaining wall design assumptions.

    b. The Inspection Engineer shall verify that the foundation soil exhibits sufficient ultimate bearing capacity to satisfy the requirements indicated on the retaining wall construction shop drawings per paragraph 1.06 I of this section.

D. Leveling Pad.

1. The leveling pad shall be constructed to provide a level, hard surface on which to place the first course of precast modular block units. The leveling pad shall be placed in the dimensions shown on the retaining wall construction drawings and extend to the limits indicated.

2. Crushed Stone Leveling Pad. Crushed stone shall be placed in uniform maximum lifts of 6” (150 mm). The crushed stone shall be compacted by a minimum of 3 passes of a vibratory compactor capable of exerting 2,000 lb (8.9 kN) of centrifugal force and to the satisfaction of the Inspection Engineer.

3. Unreinforced Concrete Leveling Pad. The concrete shall be placed in the same dimensions as those required for the crushed stone leveling pad. The RWIC shall erect proper forms as required to ensure the accurate placement of the concrete leveling pad according to the retaining wall construction drawings.

3.04 PRECAST MODULAR BLOCK WALL SYSTEM INSTALLATION

A. The precast modular block structure shall be constructed in accordance with the construction drawings, these specifications and the recommendations of the retaining wall system component manufacturers. Where conflicts exist between the manufacturer's recommendations and these specifications, these specifications shall prevail.

B. Drainage components. Pipe, geotextile and drainage aggregate shall be installed as shown on the construction shop drawings.

C. Precast Modular Block Installation: Manufacturer's printed installation instructions. Include methods for maintaining installed products.

D. Construction Tolerance. Allowable construction tolerance of the retaining wall shall be as follows:

1. Deviation from the design batter and horizontal alignment, when measured along a 10' (3 m) straight wall section, shall not exceed 3/4" (19 mm).

2. Deviation from the overall design batter shall not exceed ½" (13 mm) per 10' (3 m) of wall height.

3. The maximum allowable offset (horizontal bulge) of the face in any precast modular block joint shall be 1/2" (13 mm).

4. The base of the precast modular block wall excavation shall be within 2" (50 mm) of the staked elevations, unless otherwise approved by the Inspection Engineer.

5. Differential vertical settlement of the face shall not exceed 1' (300 mm) along any 200' (61 m) of wall length.

6. The maximum allowable vertical displacement of the face in any precast modular block joint shall be ½" (13 mm).

7. The wall face shall be placed within 2" (50 mm) of the horizontal location staked.

3.05 WALL INFILL AND REINFORCED BACKFILL PLACEMENT

A. Backfill material placed immediately behind the drainage aggregate shall be compacted as follows:

1. 98% of maximum dry density at ± 2% optimum moisture content per ASTM D698 standard proctor or 85% relative density per ASTM D4254.

B. Compactive effort within 3' (0.9 m) of the back of the precast modular blocks should be accomplished with walk-behind compactors. Compaction in this zone shall be within

95% of maximum dry density as measured in accordance with ASTM D698 standard proctor or 80% relative density per ASTM D 4254. Heavy equipment should not be operated within 3’ (0.9 m) of the back of the precast modular blocks.

C. Backfill material shall be installed in lifts that do not exceed a compacted thickness of 9” (230 mm).

D. At the end of each work day, the RWIC shall grade the surface of the last lift of the granular wall infill to a 3% ± 1% slope away from the precast modular block wall face and compact it.

E. The Contractor shall direct the Grading Contractor to protect the precast modular block wall structure against surface water runoff at all times through the use of berms, diversion ditches, silt fence, temporary drains and/or any other necessary measures to prevent soil staining of the wall face, scour of the retaining wall foundation or erosion of the reinforced backfill or wall infill.

3.06 OBSTRUCTIONS IN THE INFILL AND REINFORCED FILL ZONE – ADD ALL INFO

A. The RWIC shall make all required allowances for obstructions behind and through the wall face in accordance with the approved construction shop drawings.

B. Should unplanned obstructions become apparent for which the approved construction shop drawings do not account, the affected portion of the wall shall not be constructed until the Contractor can appropriately address the required procedures for construction of the wall section in question.

3.07 COMPLETION – ADD ALL INFO

A. For walls supporting unpaved areas, a minimum of 12” (300 mm) of compacted, low-permeability fill shall be placed over the granular wall infill zone of the precast modular block retaining wall structure. The adjacent retained soil shall be graded to prevent ponding of water behind the completed retaining wall.

B. For retaining walls with crest slopes of 5H:1V or steeper, silt fence shall be installed along the wall crest immediately following construction. The silt fence shall be located 3’ to 4’ (0.9 m to 1.2 m) behind the uppermost precast modular block unit. The crest slope above the wall shall be immediately seeded to establish vegetation. The Contractor shall ensure that the seeded slope receives adequate irrigation and erosion protection to support germination and growth.

C. The Contractor shall confirm that the as-built precast modular block wall geometries conform to the requirements of this section. The Contractor shall document and notify the Client of any deviations.

3.08 MEASUREMENT AND PAYMENT

A. Gravity Block Retaining Walls will be measured and paid for per linear foot (LF) of wall installed. The cost of drainage aggregate, leveling pad, reinforced backfill, and geotextile shall be considered incidental to the cost of Gravity Block Retaining Walls, as appropriate. The payment will be full compensation for all material, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION

ITEM 4040

METAL RAILING

1.01 DESCRIPTION

A. This work shall consist of furnishing and installing metal railing true to the line, grade, and dimensions shown on the plans or as established by the City or Engineer.

1.02 MATERIALS

A. Concrete shall conform to Section 217 of the Virginia Department of Transportation, Road and Bridge Specifications. If the Engineer approves the Contractor placing concrete by the extrusion method, the slump of the concrete may be less than 2 inches, the air content shall be no less than 4 percent, and the size of the coarse aggregate shall be no less than No. 7.
B. Steel reinforcement shall conform to Section 223 of the Virginia Department of Transportation, Road and Bridge Specifications.
C. Hydraulic cement mortar and grout shall be nonshrinking and shall conform to Section 218 of the Virginia Department of Transportation, Road and Bridge Specifications.
D. Aluminum railings and materials shall conform to Section 229 of the Virginia Department of Transportation, Road and Bridge Specifications.
E. Anchor bolts shall conform to Section 226.02(c) of the Virginia Department of Transportation, Road and Bridge Specifications.
F. Grounding materials shall conform to Section 238 of the Virginia Department of Transportation, Road and Bridge Specifications.

1.03 CONSTRUCTION

A. Fabrication and erection shall be performed in accordance with Section 407 and Section 410 of the Virginia Department of Transportation, Road and Bridge Specifications. The Contractor shall submit working drawings in accordance with Section 407, including anticipated finish, to be approved by the City and Engineer.

1.04 MEASUREMENT AND PAYMENT

A. Metal railing will be paid for at the contract unit price per linear foot installed. This price shall include constructing, fabricating, and furnishing rails, rail posts, post bearing pads, anchor assemblies, and sleeves; furnishing and installing grounding materials; painting; galvanizing; reinforcing steel necessary; and concrete where applicable.

ITEM 4050

PRE-CAST ENDWALL FOR PIPE CULVERTS

1.01 DESCRIPTION:

A. This item covers the furnishing and installation of Precast Endwalls for Pipe Culverts and Precast Endwalls for Multiple Pipe Culverts.

1.02 MATERIALS

A. 36” Precast Endwall for Pipe Culverts

1.03 CONSTRUCTION METHODS

A. Precast Endwalls for Pipe Culverts shall be installed in accordance with the contract documents. Precast Endwalls for Pipe Culverts shall be installed in accordance with Detail 101.18 and Detail 101.06 of the Virginia Department of Transportation, Road and Bridge Specifications

1.04 MEASUREMENT AND PAYMENT

A. Precast Endwalls for Pipe Culverts will be measured and paid for each Precast Endwalls for Pipe Culverts installed. The payment will be full compensation for all material, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION

ITEM 4060

ARMORED UTILITY CROSSING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Armored Utility Crossings structures are used to protect existing sanitary sewer lines and provide protection from storm flows. The work includes placement of a stone structure within the proposed stream channel overtop of utilities as well as a cast-in-place concrete pipe encasement. This work shall consist of transporting material, installing and maintaining Armored Utility Cross within the stream channel and stream bank, as specified on the Contract Documents or as directed by the Engineer.

1.02 MATERIALS

A. Class I Riprap for Armored Utility Crossing shall consist of stone of appropriate color (e.g., green/gray, brown/gray, and tan/brown in color) obtained from an approved source. All rock shall be free from laminations, weak cleavages and will not disintegrate from the action of air, salt water and in handling and placing. Granular sedimentary rock will generally be unacceptable. Concrete will not be considered as an alternative for rock. White rock is not acceptable.

B. Concrete (3,000 P.S.I or greater) shall be used for the encasement.

1.03 CONSTRUCTION METHODS

A. Armored Utility Crossing shall be installed per the Contract Documents and details, and the following Construction Specifications. The Contractor shall arrange and construct Armored Utility Crossings under the direction and approval of the Engineer.

B. Contractor shall review the Armored Utility Crossing Contract documents and details with Engineer prior to construction. Any questions or concerns regarding structure placement or structure construction should be brought to the attention of the Engineer for clarification prior to proceeding with structure installation.

C. Concrete Placement

1. Do not place concrete until free water has been removed or has been diverted by pipes or other means and carried out of the forms, clear of the work. Do not deposit concrete underwater, and do not allow free water to rise on any concrete until the concrete has attained its initial set. Do not permit free or storm water to flow over surfaces of concrete so as to injure the quality or surface finish.

2. Do not place concrete during inclement weather. Protect concrete placed from inclement weather. Keep sufficient protective covering ready at all times for this purpose.

3. Deposit concrete at or near its final position to avoid segregation caused by rehandling or flowing. Do not deposit concrete in large quantities in one place to be worked along the forms with a vibrator.

4. Do not deposit partially hardened concrete in forms. Retempering of partially hardened concrete is not permitted. Remove partially hardened concrete from site at no additional compensation.

5. Do not allow concrete to fall freely in forms to cause segregation (separation of coarse aggregate from mortar). Limit maximum free fall of concrete to 4 feet. Do not move concrete horizontally more than four feet from point of discharge. Space points of deposit not more than eight feet apart.

6. Conduct vibration to produce concrete of uniform texture and appearance, free of honeycombing, streaking, cold joints or visible lift lines.

D. Encasements

1. All concrete encasements shown on the plans shall be constructed per the details on the Drawings. The earth may be used for side and bottom forms provided such sides can be excavated uniformly smooth and to the size and shape specified.

2. Care must be taken during the pouring operation to ensure that the pipe does not float or move from the buoyant effects of the concrete. Misalignments of the crossings shall be cause for total removal and replacement of the encasement and pipe at the Contractor's expense.

3. Once the concrete is set, measures shall be taken to cure the concrete by covering it with plastic. Water shall not be allowed to run over the concrete for at least 48 hours. Forms will be required if the subgrade and sides are not firm or will not hold shape.

4. Concrete encasement shall extend into existing ground 6" on either side and beneath the pipe and 6" above the pipe.

5. Placed material not conforming to the specified limits shall be removed and replaced as directed by Engineer at no additional cost to The Owner.

1.04 MEASUREMENT AND PAYMENT

A. Armored Utility Crossing will not be measured but will be paid for at the Contract lump

sum price. Price and payment will be full compensation for all grading, excavation, stone, backfill, concrete placement, disposal of excess material, prewashing when required, and for all material, labor, equipment, tools and incidentals necessary to complete the work.

B. Excavating, sorting, stockpiling, and placing fill material shall be incidental to Item 2010: Stream Channel Excavation (Class 5).

END OF SECTION

ITEM 4070

CAST-IN-PLACE CONCRETE ENDWALL

1.05 DESCRIPTION:

A. All work performed under this item and payment therefore shall be in accordance with Section 302 – Drainage Structures of the Virginia Department of Public Tranportation *Standard Specifications for Construction and Materials*. This work includes constructing a cast-in-place Standard Endwall as shown on the design plans.

1.06 MATERIALS

A. Class A-3 Portland Cement Concrete – Cast-in-place concrete mix must meet the requirements of Section 214 of the Virginia Department of Transportation Road and Bridge Specifications.

B. #4 Straight Bars – Reinforced steel bars must meet the requirements of Section 406 of the Virginia Department of Transportation Road and Bridge Specifications *Standard Specifications for Construction and Materials*.

1.07 CONSTRUCTION METHODS

A. Standard Endwall shall be constructed in accordance with Section 302 – Drainage Structures of the Virginia Department of Public Tranportation *Standard Specifications for Construction and Materials* or as directed by the County or Engineer.

1.08 MEASUREMENT AND PAYMENT

A. Standard Endwalls for Pipe Culverts will be measured and paid for each Endwalls installed. The payment will be full compensation for all material, labor, equipment, tools and incidentals necessary to complete the work.

END OF SECTION

ITEM 4080

STAMPED CONCRETE PAVING

1.09 DESCRIPTION:

A. All work performed under this item and payment therefore shall be in accordance with Section 217 of the VDOT Road and Bridge Specifications.

1.10 CONSTRUCTION METHODS

A. Concrete surfaces designated to receive a stamped finish shall be imprinted with a pattern approved by the Owner and Engineer while concrete is in the plastic state.

B. Color, pattern, release agents, curing, sealing, and acceptance shall conform to the approved manufacturer recommendations. The finished surface shall be uniform in appearance and free of defects.

1.11 MEASUREMENT AND PAYMENT

A. Stamped concrete paving shall be incidental to Item 4050: Pre-Cast Endwall for Pipe Culverts and Item 4070: Cast-In-Place Concrete Endwall. The payment will be full compensation for all material, labor, equipment, tools and incidentals necessary to complete the work.

ITEM 7010

TYPE D SOIL STABILIZATION MATTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work consists of furnishing and installing Type D Soil Stabilization Matting on graded stream banks and adjacent slopes, as shown on the contract documents and as may be determined to be necessary by the Contractor and Engineer.

1.02 MATERIALS

A. Type D Soil Stabilization Matting - A woven fabric of high strength coir twine made from well-cleaned, fresh water cured coconut fiber meeting the following minimum mechanical properties:

1. Thickness (ASTM D5199) - 0.35 in.
2. Mass per unit area (ASTM D5261) - 20.6 oz/sq.yd
3. Width Tensile Strength Dry (ASTM D4595) - 1512 x 1032 lbs/ft
4. Width Tensile Strength Wet (ASTM D4595) - 924 x 684 lbs/ft
5. Maximum Elongation Dry (ASTM D4595) - 40% x 33% lbs/ft
6. Maximum Elongation Wet (ASTM D4595) - 69% x 35% lbs/ft
7. Sheer Stress - 4.5 psf
8. Velocity - 12 fps
9. Open Area - 50%

B. Wooden Stakes - Stakes for securing the matting shall be triangular wooden stakes with a nominal dimension of 2” x 4” at the head and tapering to a point. Stakes must be a minimum of 18” long. Staples are not allowed for use to secure matting.

1.03 CONSTRUCTION

A. If topsoil is determined to be necessary by the Engineer, the topsoil shall be placed prior to installing the Type D Soil Stabilization matting. Soil or seedbed preparation and

permanent seeding shall be complete prior to the placement of Type D soil stabilization matting.

1.04 PLACING AND SECURING

A. Type D Soil Stabilization Matting shall be laid smoothly and firmly in the direction of water flow. Stretching shall be avoided. Where more than one width of matting is required, the ends of each strip shall overlap at least 12 inches for vertical and 6 inches for horizontal overlaps. Overlapping shall be done with both the upslope and upstream ends of the matting overlapping the downslope and downstream ends. Type D Soil Stabilization Matting shall be installed as depicted on the typical details. In no case shall matting extend less than 12 inches beyond the top of the slope.

1.05 KEYING-IN

A. The Contractor shall excavate a shallow trench at the top of the slope and key-in the top edge of the matting a minimum of 12-inches x 12-inches x 12-inches as shown on the construction documents. Vertical ends of the matting at both the upstream and downstream ends of the bank treatment areas shall also be keyed-in to a trench excavated into the slope a minimum of 6-inches. Following installation of stakes, the trenches shall be backfilled with topsoil and tamped firmly. The Engineer may require any other edge exposed to more than normal flow of water to be keyed-into the slope in a similar manner.

B. The bottom edge of the matting shall be installed within a toe trench. The matting shall be secured in-place along the bottom edge one foot below the bottom of the bank using stakes.

1.06 SECURING MATTING WITH STAKES

A. Type D Soil Stabilization matting shall be securely fastened in place with stakes driven vertically into the soil. Stakes shall be installed 24-inches apart along the upstream and downstream edges of the matting, within the key-in trench at the top of slope, and on vertical and horizontal overlapping edges. On slopes 2:1 or steeper, wooden stakes shall be installed on 3-foot centers in alternating rows throughout the remainder of the matting. On slopes of 3:1 or gentler, wooden stakes shall be installed on 4-foot centers throughout the remainder of the matting.

1.07 MAINTENANCE

A. Areas of torn or degraded matting shall be repaired or replaced unless such degradation is within the accepted tolerances for temporary blankets. Edges or seams which are loose or frayed shall be secured with additional Stakes. Bare patches of vegetation shall be reseeded as necessary.

1.08 MEASUREMENT AND PAYMENT

A. Type D Soil Stabilization Matting will be measured and paid for at the Contract unit price per square yard of area covered. Should the Type D Soil Stabilization Matting become unsecured or degrade before the disturbed area is fully stabilized, the Contractor shall replace the matting and re-seed the affected area at the Contractor's expense. The payment will be full compensation for all materials, labor, equipment, tools, and incidentals necessary to complete the work.

B. Wooden Stakes will not be measured and paid for separately, but the cost will be considered incidental to the Contract unit price for Type D Soil Stabilization Matting.

C. Seeding will be measured and paid for at the Contract unit price per pound installed for the planting zone seed mix as shown on the Contract Documents for Item 7050, 7060, 7070, and 7080.

END OF SECTION

ITEM 7020

TEMPORARY SEED AND MULCH

PART 1 - GENERAL

1.01 DESCRIPTION

A. This item involves the placement of temporary seed and mulch and for the purposes of temporary stabilization of disturbed areas prior to permanent vegetative establishment.

B. This item shall be in accordance with Section 603 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications, and as described in the Planting Schedule of the Contract Documents.

1.02 CONSTRUCTION METHODS

A. Temporary seed and mulch shall be applied to any disturbed area that cannot be permanently stabilized for an extended period of time, as directed by the Engineer.

1.03 MEASUREMENT AMD PAYMENT

A. Temporary Seed and Mulch shall be measured and paid for at the Contract unit price per square yard covered. Payment shall be full compensation for all materials, labor, equipment, tools and incidentals necessary to complete the work as directed by the Engineer.

END OF SECTION

ITEM 7030

PLACING SALVAGED TOPSOIL – 4” DEPTH

PART 1 - GENERAL

1.04 DESCRIPTION

A. The Contractor shall salvage and place topsoil to a depth of 4 inches throughout all areas that have been disturbed and require permanent seeding. The Contractor shall use salvaged topsoil prior to using furnished topsoil.

B. This item shall be in accordance with Section 602 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications, and as described in the Planting Schedule of the Contract Documents.

1.05 MATERIALS

A. This item shall be in accordance with Section 602 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications, and as described in the Planting Schedule of the Contract Documents

1.06 CONSTRUCTION METHODS

A. The Contractor shall furnish and place topsoil to a depth of 4 inches throughout all areas that have been disturbed and require permanent seeding., as directed by the Engineer.

1.07 MEASUREMENT AMD PAYMENT

A. Placing Salvaged Topsoil - 4” Depth will be measured and paid for at the Contract unit price per square yard placed. The payment will be full compensation for all material, testing, certification, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

ITEM 7040

PLACING FURNISHED TOPSOIL – 4” DEPTH

PART 1 - GENERAL

1.08 DESCRIPTION

A. The Contractor shall furnish and place topsoil to a depth of 4 inches throughout all areas that have been disturbed and require permanent seeding. The Contractor shall use salvaged topsoil prior to using furnished topsoil.

B. This item shall be in accordance with Section 602 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications, and as described in the Planting Schedule of the Contract Documents.

1.09 MATERIALS

A. This item shall be in accordance with Section 602 of the Virginia Department of Transportation, Virginia Department of Transportation, Road and Bridge Specifications, and as described in the Planting Schedule of the Contract Documents

1.10 CONSTRUCTION METHODS

A. The Contractor shall furnish and place topsoil to a depth of 4 inches throughout all areas that have been disturbed and require permanent seeding., as directed by the Engineer.

1.11 MEASUREMENT AMD PAYMENT

A. Placing Furnished Topsoil - 4” Depth will be measured and paid for at the Contract unit price per square yard placed. The payment will be full compensation for all material, testing, certification, labor, equipment, tools, and incidentals necessary to complete the work.

ITEM 7050

RIPARIAN BUFFER SEEDING

ITEM 7060

STREAMSIDE/STREAMBANK SEEDING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work shall consist of soil preparation, and seeding all areas shown in the Contract Documents.

1.02 MATERIALS

A. Seed shall conform to the seed mixes specified within the Contract documents.

B. Seed tags with the seed origin, purity of the seed, germination percentage and date of germination testing shall be provided for all seed introduced into the project area.

C. No lime, fertilizer, or other amendments are to be used, unless otherwise approved by the Engineer.

1.03 CONSTRUCTION

A. All areas to be seeded shall conform to the finished grades as specified on the plans and be free of all weeds, trash, debris, brush, clods, loose rocks and other foreign materials larger than 3 inches in diameter or length that would interfere with seeding. All gullies, washes or disturbed areas that develop subsequent to final dressing shall be repaired prior to seeding.

B. Seeding shall be performed within the dates specified by the Contract documents, or as directed by The Owner. No seeding shall be performed on frozen ground or when the temperature is 32°F/0°C or lower.

C. Loosen graded soils to a depth of 1 to 2 inches with a hand rake or other approved device. Seed mixes shall be applied at the rate specified in the Contract documents. Apply seed when the soil is friable (soil should break up easily and not form clods when worked) using a broadcast seeder or hydroseeder. If a broadcast seeder is used, mix the seed with

a carrier of similar weight (perlite, vermiculite, sawdust, or similar product) and make two passes over each area. The second pass shall be made at a 90-degree angle to the first pass to ensure even seed distribution. Work seed into the soil with the back of a hand rake. Finally, press the seed into the soil with a hand roller or by simply walking on the seeded areas following raking to ensure soil to seed contact. If using a hydroseeder, no carrier is required and one pass over each area will be sufficient provided that all portions of the site to be seeded are covered.

D. For those areas that are not to be covered by soil stabilization matting, mulch seeded areas with straw at a rate of 100 bales/acre or 16 cubic yards/acre. Immediately after seeding, the site shall be watered lightly but thoroughly, so that the top 4 inches of soil is saturated.

1.04 WARRANTY

A. The Contractor shall maintain a minimum 85% aerial coverage of seeded areas for 1 year after final inspection. This shall include necessary care and replacement to achieve the required coverage.

1.05 MEASUREMENT AND PAYMENT

A. Upland Native Seed Mix, Riparian Buffer Seeding, Wetland Seeding, and Streamside/Streambank seeding shall be measured and paid for at the contract unit price per pound of seed installed. Payment will be full compensation for furnishing and incorporating all seed, including all maintenance and warranty, mulch, materials, labor, equipment, tools, and incidentals necessary to complete the work as specified in Contract Documents, or as directed by The Owner.

END OF SECTION

ITEM 7070

LIVE STAKE PLANTING

PART 1 - GENERAL

2.12 DESCRIPTION

A. This work shall consist of acquiring, transporting, and installing live stakes along the stream banks as specified on the Contract Documents, these Construction Specifications or as directed by The Owner. Acquiring, transporting, and installation shall take place when plants are dormant (December 1 through April 1, inclusive).

2.13 MATERIALS

A. Live cuttings for live stakes shall be 0.5 inches to 1.5 inches in diameter and between 2 feet to 3 feet long. Side branches shall be removed, and the bark left intact prior to installation. Buds on the stakes shall be oriented in an upward position. The basal ends shall be tapered to a point for easy insertion into the soil. The top shall be cut smooth and square. Live stakes shall consist of a mix of three species, as shown on the planting schedule:

Cornus amomum	Silky Dogwood
Cornus sericea	Red Osier Dogwood
Salix sericea	Silky Willow
Salix nigra	Black Willow

B. All plant material shall conform to the current issue of the American Standard for Nursery Stock published by the American Association of Nurserymen.

C. Plant materials must be selected from certified nurseries that have been inspected by state and/or federal agencies. Nursery inspection certificates shall be furnished to The Owner upon request.

D. Plant material collected from the “wild” is prohibited.

E. The Owner may reject plants damaged in handling or transport.

PART 2 - CONSTRUCTION METHODS

2.01 LIVE MATERIAL PREPARATION

F. All cuts shall be smooth, and the cut surface kept small. The use of large pruning shears or power saws may be required.

G. Live materials must be protected against drying out and overheating before/during transport (e.g., they shall be covered transported in unheated vehicles, moistened, kept in soak pits) and on-site prior to installation (e.g., by storing in controlled conditions, storing in shade, covering with evergreen branches or plastic, placing in moist soil, or spraying with anti-transpirant chemicals). Live materials shall receive continuous shade, shall be sheltered from the wind, and shall be continuously protected from drying by being heeled into moist soils. Where water is available, live stakes shall be sprayed or immersed.

H. Live materials shall be installed the same day that the cuttings are harvested. If installation of live materials cannot be accomplished on the same day and storage is required, live materials shall be stored for a period no longer than 3 calendar days.

2.02 LIVE STAKE INSTALLATION PREPARATION

I. Live Stakes shall be installed according to the Sequence of Construction, Contract Documents, and the following specifications.

J. Soil Stabilization matting should be placed on the banks prior to installing the live stakes.

K. Use a rebar stake or other approved method to make a pilot hole at $\pm$ 45-degree angle into firm soil, insert the point of the stake into the pilot hole and tamp it into the ground at $\pm$ 45-angle to the slope using a hammer and wood block, dead blow hammer or with a rubber mallet.

L. The live stakes should be installed in 2 rows that are 3.0 feet apart using triangular spacing.

M. Buds should be oriented up.

N. Approximately three-fourths of the length of the live stake should be installed into the ground, and soil should be firmly packed around it after installation.

O. Do not split the stakes during installation. Stakes that split should be removed and replaced.

2.03 INSTALLATION PHASE ACCEPTANCE

A. Installation Phase acceptance shall be granted when all Live Stakes Construction Method activities have been satisfactorily completed as determined by The Owner or a representative of The Owner.

2.04 PLANT ESTABLISHMENT

P. The Contractor is responsible for maintaining a 50% plant establishment success rate at the end of the one–year establishment period, following Installation Phase acceptance. The Contractor is responsible for replanting all areas not meeting 50% survival.

Q. The Contractor will not be responsible for plant material that has been damaged by vandalism, fire, or other activities beyond the Contractors' control, as determined by The Owner.

2.05 MEASUREMENT AND PAYMENT

R. Live Stakes will be measured and paid for at the Contract price per each Live Stake installed. The payment will be full compensation for furnishing, storing, soaking, watering, and planting, and for all materials, labor, equipment, tools and incidentals necessary to complete the work specified in the Contract Documents, or by The Owner. No separate payment will be made for the replacement of Live Stakes during construction or the one–year establishment period.

S. Live Stakes will be paid according to the Live Stakes Payment Schedule:

Live Stakes Payment Schedule		
Requirements	**Percent of Total Contract Price**	**Payment for Completed Work**
Installation Phase	70%	At Installation Phase Acceptance
Establishment Phase	30%	At Establishment Phase Acceptance
Total Payment	100%	

END OF SECTION

ITEM 7080

UPLAND TREE AND SHRUB

PART 1 - GENERAL

2.14 DESCRIPTION

A. This work shall consist of furnishing and planting trees and shrubs and all plant establishment operations as specified in the Contract Documents and shown on the Planting Contract Documents, or as directed by The Owner. Transporting and installation of plant material shall take place March 1 to June 15, inclusive or September 15 to December 15, inclusive.

B. Prior to the start of work on this item, the Contractor shall submit a proposed planting schedule, including source of plant material to The Owner for review. No work shall be performed until The Owner approves this schedule.

2.15 GENERAL

A. The Contractor shall possess a Virginia Department of Agriculture and Consumer Services Commercial Pesticide Business License and a Pesticide Applicator Certificate for the pertinent pesticide application Category: (2) Forest; (3A) Ornamental Plant Exterior; (3-C) Turf; (5) Aquatic; (6) Right-of-Way and Weed.

B. Apply pesticides in conformance with the Virginia Pesticide Applicator's Law, OSHA and VOSH regulations, and the manufacturer's label and Safety Data Sheets (SDS).

C. Ensure that pesticides are applied by a Virginia Certified Pesticide Applicator, or by a Registered Pesticide Applicator under the supervision of a Certified Pesticide Applicator.

D. Pesticides shall be EPA-approved and registered for use in Virginia to control plants, fungi, insects or other pests. Pesticides shall be approved for use and used at labeled application rates.

1. Herbicide. Herbicide shall control or prevent regrowth of plants or vegetation.

2. Insecticide. Insecticide shall control or protect against insect or other arthropod pests.

3. Fungicide. Fungicide shall control or protect against fungal or bacterial pests.

E. Record the location and details of pesticide applications on Virginia Department of Agriculture and Consumer Services Pesticide Application Records Form. Submit the Form to Prince William County within 24 hours after applying pesticides.

PART 2 MATERIALS

2.16 PLANT MATERIAL

A. All plant materials shall meet the standards outlined in Section 605 of the Virginia Department of Transportation, Road and Bridge Specifications . The plant material shall also be inspected in accordance with Section 605.04.

B. Plant materials must be selected from certified nurseries that have been inspected by state and/or federal agencies. Nursery inspection certificates shall be furnished to The Owner upon request.

C. Plant material collected from the "wild" is prohibited.

D. Container grown stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil. Roots shall visibly extend to the inside face of the growing container, but container grown stock shall not be root bound. All container plants shall be grouped and watered daily until they are planted.

E. The Owner may reject plants that do not meet the standards outlined in Section 605.09 or plants that have been damaged in handling or transport.

2.17 SUBSTITUTE PLANT MATERIAL

A. If a substitute is selected, it must be native to the Virginia Coastal Plain Region; of the same size, value, and quality; and have the same habitat requirements as the original plant. All substitution requests shall be submitted to Prince William County for review.

2.18 SHELTERS

A. Refer to Items 7130: Deer Protection Guard – Sleeves

PART 3 - CONSTRUCTION METHODS

3.01 Preparation

A. The live plant material shall be transported to the construction site within 3 calendar days of delivery from the nursery. Live plant materials must be protected against drying out and overheating before/during transport (e.g., they shall be covered transported in unheated vehicles, moistened, kept in soak pits) and on–site prior to installation (e.g., by storing in controlled conditions, storing in shade, covering with evergreen branches or

plastic, placing in moist soil, or spraying with anti–transpirant chemicals). Live materials shall receive continuous shade, shall be sheltered from the wind, and shall be continuously protected from drying by being heeled into moist soils.

3.02 Planting

A. The Contractor shall refer to the Plant Schedules and Details on the Contract Documents for specific planting pit and spacing requirements. Perform the following operations when preparing planting pits for individual plants.

1. Undesirable Vegetation. Manually remove undesirable vegetation and apply an aquatic non-selective herbicide in water with wetting agent and dye at least 14 calendar days before plant installation. Cut and remove dead vegetation or debris that interferes with soil preparation, plant installation or future maintenance.

2. Excavation. Excavate planting pits to the depth required to allow for the placement of root collars at the soil surface. Retain the excavated soil for preparation as backfill soil. Remove excess soil from the site or spread as directed. Excavate additional depth and width as shown in the detail, place furnished subsoil to the dimensions shown in the detail, and complete tree or installation using Table 1. Remove excess soil from the site or spread as directed.

3. Planting Pit Diameter. Use Table 1 to determine the diameter of the planting pit based upon the container or root ball diameter.

4. Compost. Use Table 1 to determine the quantity of compost to mix into backfill soil, based upon planting pit diameter. Uniformly mix compost into the backfill soil.

5. Mulch. Spread shredded hardwood bark mulch uniformly over the soil surface to a 3-in. depth. Promptly repair damage caused by washouts or construction activities.

6. Water. Use Table 1 to determine the quantity of water to apply for each installed plant based upon planting pit diameter.

TABLE 1 - PREPARING PLANTING PITS AND BACKFILL SOIL AND WATERING				
Container or Root Ball Diameter, In.	ANSI Z60 Container Size	Planting Pit Diameter, In.	Compost, Ft^3	Water per Event, Gal
<3	Plugs and Tubelings	2 to 4	0.01	0.10
3	#SP3	6	0.02	0.15
5	#SP4	10	0.02	0.20
6	#SP5 or #1	12	0.03	0.30
8	#2	17	0.09	0.50
10	#3	21	0.18	1.00
12	#5	24	0.28	1.50
14	#7	28	0.44	2.30
16	#10	32	0.65	3.50
18	#15	36	0.94	5.00

3.03 Plant Protection

A. The Contractor shall install tree and shrub shelters as indicated in Items 7130: Deer Protection Guard – Single Stem Tree.

3.04 Clean Up

A. During planting all areas shall be kept neat, clean and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants, turf, structures and private property.

B. Remove all tags, labels, strings, and wire from the plant materials, unless otherwise directed by The Owner.

C. Final cleanup shall be the responsibility of the Contractor and consist of removing all trash

and materials incidental to the project and disposing of them off–site.

3.05 Installation Phase Acceptance

A. The Contractor shall submit a request for Installation Phase Inspection when operations are completed. The Installation Phase Inspection will be scheduled by The Owner or a representative of The Owner at the project site with the Contractor to verify completion. At least 7 calendar days' notice will be provided before the scheduled Inspection so that it may be completed in the company of the Contractor.

B. The Owner or a representative of The Owner, in consultation with the Contractor, shall develop an Installation Phase punch list and list of plants to be replaced, if necessary. Installation Phase acceptance shall be granted when all the Installation Phase requirements are completed according to the Installation Phase Acceptance Table.

Installation Phase Acceptance Table	
Item	**Requirement**
1	Inspection is completed.
2	Damaging pests are controlled.
3	Layouts are inspected and approved.
4	Compost is mixed in soil, as required.
5	Trees and shrubs are pruned.
6	Trees are installed vertically and straight.
7	Tree and shrub shelters are installed properly.
8	Mulch is uniformly spread to the specified depth.
9	Washouts in planting pits are repaired.
10	Plants receive initial watering and follow up watering.
11	Clean up is completed, plant tags and ribbons are removed.
12	Plants are relocated to approved locations.
13	Abandoned planting pits are filled and seeded.
14	Unacceptable plants are replaced.
15	Damage repairs and Installation Phase Punch List are completed.
16	Pesticide Application Reporting Forms are completed.

3.06 Plant Establishment

A. The Contractor is responsible for maintaining an 85% plant establishment success rate for a one–year establishment period, following Installation Phase acceptance. The Contractor is responsible for replanting all areas not meeting 85% survival during the establishment period. The plant establishment period of all replacement plants shall extend for an

additional one-year period from the date of their acceptance after replacement.

B. A plant is considered unsuccessful if:

1. The plant is dead or missing
2. 25% or more of the leaf area is dead, lost or dropped
3. a bark wound over 2-in. is present
4. 10% or more of the tree height is lost due to leader die-back
5. or 75% of the branches exhibit 6-in. or more of branch die-back.

C. Watering shall conform to Table 1, above.

D. The Contractor will not be responsible for plant material that has been damaged by vandalism, fire, or other activities beyond the Contractors' control, as determined by The Owner.

3.07 Year One Acceptance:

A. The Owner will inspect the tree and shrub plantings one year after the Installation Phase Acceptance for Items 7100 and 7110. Year One Acceptance will be granted when the requirements of the Establishment Table are satisfactorily completed.

3.08 Establishment Phase Acceptance:

A. The Owner will inspect the tree and shrub plantings at the end of the Item 7100 and 7110 establishment periods. Establishment Acceptance will be granted when the requirements of the Establishment Table are satisfactorily completed.

Establishment Phase Table	
Item	**Requirement**
1	Water sprouts are manually pruned and removed.
2	Trees are straightened.
3	Washouts in planting pits are repaired.
4	Plants are relocated to approved locations.
5	Abandoned planting pits are filled and seeded.
6	Plants are successfully established.
7	Damaging pests are controlled.
8	Planting pits are weed free.
9	Unacceptable plants are replaced.
10	Pesticide Application and Nutrient Management Reporting Forms are completed.
11	Damage repairs and Establishment Punch List are completed.

PART 4 – MEASUREMENT AND PAYMENT

A. Planting Trees and Shrubs will be measured and paid for at the Contract price per each item specified in the Contract Documents. The payment will be full compensation for all trees, shrubs, transporting, installing, planting pit excavation, backfill, mulch, clean up, plant establishment, watering, maintenance, replanting and all material, labor, equipment, tools, and incidentals necessary to complete the work.
B. Planting Trees and Shrubs will be paid according to the Planting Trees and Shrubs Payment Schedules.

Planting Trees and Shrubs Payment Schedule – Items 7100 and 7110		
Requirements	**Percent of Total Contract Price**	**Payment for Completed Work**
Installation Phase	70%	At Installation Phase Acceptance
Establishment Phase	30%	At Establishment Phase Acceptance
Total Payment	100%	

END OF SECTION

ITEM 7090

DEER PROTECTION

PART 1 - GENERAL

3.01 DESCRIPTION

A. Provide, install, and maintain tree and shrub deer protection guard for newly installed trees and shrubs as directed by The Owner.

B. Single stem trees shall be protected by sleeves. Multi-stem trees and shrubs shall be protected by wire cages.

3.02 MATERIALS

A. Deer Protection Guard (Sleeves)

1. The 4-ft. protection guard shall consist of 4-in. diameter, high strength / heavy duty, open weave mesh (with grid not to exceed 3/4 in. x 3/4 in.) to prohibit harboring of insects and animals, and to prevent moisture/mildew build-up. Material shall be UV stable rigid plastic, black in color, with an expected useful lifespan of a minimum of 5 years.

B. Deer Protection Guard (Wire Cages)

1. The 4 ft. protection guard shall consist of 14-gauge welded wire fence (with grid not to exceed 2 in. x 2 in.) to prohibit harboring of insects, and animals, and to prevent moisture/mildew build-up. Material shall be, 14-gauge welded wire fence with an expected useful lifespan of a minimum of 5 years.

C. Fastening Ties

1. Ties shall be approximately 3/16 in. x 11 in. in length and made of black UV treated plastic with a releasable, ratchet locking mechanism to fasten to a hardwood stake. Lock shall securely close.

D. White Oak Stakes

1. Stakes shall be a minimum of 1 in. x 1 in. x 47 in. in size, and shall consist of straight, rot-resistant, White Oak with a pencil point ground on one end.

3.03 CONSTRUCTION.

A. Installation of Deer Protection Guard (Sleeves)

B. Install HDPE Deer Protection Guard on single stem trees as directed.

1. Compare guard height to height of first significant scaffold branch tree or shrub to be protected.

2. Prune branch if needed to avoid wrapping branches within guard.

3. Carefully wrap the guard around the installed tree or shrub.

4. Place hardwood stake upright and outside of the guard, so that it rests alongside of the guard.

5. Drive stake vertically into the ground until the top of the stake is approximately 12 inches below the top of the guard.

6. Ensure the guard is always in full contact with the ground surface.

7. Evenly space 3 fastening ties along the guard and tighten ties to secure the guard to the hardwood stake.

C. Installation of Deer Protection Guard (Wire Cages)

D. Install Deer Protection Guard on multi stem trees and shrubs as directed.

1. Compare guard height to height of first significant scaffold branch tree or shrub to be protected. Measure and cut appropriate wire mesh length to wrap fully around the plant and leave 6 inches away from the existing growth.

2. Prune branch if needed to avoid wrapping branches within guard.

3. Carefully wrap the guard around the installed tree or shrub.

4. Install at least 2 hardwood stakes to secure the wire mesh.

5. Drive stake vertically into the ground a minimum of 12 inches and until the top of the stake is approximately 12 inches below the top of the guard to prevent deer uplift

6. Ensure the guard is always in full contact with the ground surface.

7. Evenly space 3 fastening ties along the guard and tighten ties to secure the guard to the hardwood stakes.

E. Maintenance of Guards

1. During the one-year establishment period for trees and shrubs, guards shall be

repaired or replaced if damaged or missing, at no cost to The Owner.

2. Check guards on a semi-annual basis to ensure the following:

   a. Guards are upright, ties are tight, and hardwood stakes are providing

   b. the designed support.

   c. Guards are maintaining contact with the ground surface.

   d. Guards are not girdling the plants.

   e. Sucker growth is not growing through the guards.

3.04 MEASUREMENT AND PAYMENT

A. Deer Protection Guards will be measured and paid for at the Contract unit price per each installed. The payment will be full compensation for installation and maintenance and for all materials, labor, equipment, tools, maintenance, removal, replacement and other incidentals necessary to complete the work.

B. Deer Protection Guards will be paid for according to the Deer Protection Guard Schedule Payment Schedule

Deer Protection Guard Payment Schedule		
Requirements	**Percent of Total Contract Price**	**Payment for Completed Work**
Installation of Deer Protection Guards	70%	At Installation Phase Acceptance
Establishment Phase	30%	At Establishment Phase Acceptance
Total Payment	100%	

END OF SECTION

ITEM 9010

IMBRICATED ROCK

3.05 DESCRIPTION

A. This work shall consist of furnishing and placing stone for instream structures (rock cascade) and other features as shown on the Contract Documents or as directed by the Engineer.

3.06 MATERIALS

A. Rock shall consist of appropriate color (e.g., green/gray, brown/gray, and tan/brown in color) obtained from an approved source. Rock shall not be harvested from offsite streams or rivers outside a commercial quarry operation. All rock shall be free from laminations, weak cleavages and will not disintegrate from the action of air, water and in handling and placing. Granular sedimentary (sandstone) rock will generally be unacceptable. Concrete will not be considered as an alternative for rock. White rock is not acceptable.

Stone for Instream Structures shall meet the following Construction Specifications:

Structure		Minimum Density (lb/cu ft)	Length (ft)	Width (ft)	Height (ft)	Min. # of Flat Sides
Rock Cascade	Headers	150	2.75 - 3.25 feet	2.75 – 3.25 feet	1.5 – 2.5 feet	1
	Footers	150	2.75 – 3.25 feet	2.75 – 3.25 feet	1.5 – 2.5 feet	2

3.07 CONSTRUCTION METHODS

A. Stone Sourcing

a. Stone shall be salvaged from the limits of disturbance of this Contract first. If sufficient material meeting the above requirements is not available from within the limits of disturbance, the Contractor shall obtain material meeting specifications.

2. The Contractor will locate potential sources for the stone. The Contractor will not be granted an extension of time or extra compensation due to delay caused by sampling, testing, approval or disapproval of stone material under the requirements of these specifications. The Contractor shall obtain from the quarry and submit to the Engineer a certificate verifying the following:

    a. Stone Classification

    b. Weight per Cubic Foot

    c. Weight of Stone Being Supplied.

    d. Stone quality shall meet all of the above specifications.

3. It will be the contractor's responsibility to make all necessary arrangements with the source of supply in a timely fashion, so that the contractor shall maintain an adequate supply of stone material and that work shall not be unnecessarily delayed due to insufficient supply.

B. Stone Installation

1. The Contractor shall install the stone in accordance with Contract Documents and these Construction Specifications for Rock Cross Vanes and other features as shown on the Contract Documents or as directed by the Engineer.

3.08 MEASUREMENT AND PAYMENT

A. All Stone for Instream Structures described in this section will be measured and paid for at the Contract unit price per Ton installed. Salvaging and storing stone onsite shall be incidental to Item 2010: Stream Channel Excavation. Payment will be full compensation for all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

ITEM 9020

SALVAGED STREAMBED MATERIAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. Salvage, transport, stockpile, maintain, and place Salvaged Streambed Material associated with pool substrate construction as specified in the Contract Documents or as directed by the Engineer. If salvaged streambed material is no longer available, use of furnished stream bed material must be approved by the Engineer prior to placement.

1.02 MATERIALS

A. Salvaged Streambed Material consisting of native cobble, gravel, and stone shall be salvaged from the project site first. If sufficient streambed material is not available from the project site, the Contractor shall furnish material as described in the Item 9030: 2" – 3" Stone for Stream Mixes to the Engineer for approval prior to placement. Only approved material shall be placed at the site.

1.03 CONSTRUCTION METHODS

A. Salvaged Streambed Material shall be used in accordance with Contract Documents and associated with pool substrate construction as shown on the Contract Documents or as directed by the Engineer.

1.04 MEASUREMENT AND PAYMENT

A. Salvaged Streambed Material shall be incidental to Item 2010: Stream Channel Excavation (Class 5).

END OF SECTION

ITEM 9030

2” – 3” STONE FOR STREAM MIXES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish, transport, stockpile, maintain, and place 2” – 3” Stone for Stream Mixes associated with stream substrate construction as specified in the Contract Documents or as directed by the Engineer. If salvaged streambed material is no longer available, use of furnished stream bed material must be approved by the Engineer prior to placement.

1.02 MATERIALS

A. 2 - 3” Stone for Stream Mixes shall consist of a mixture of gravel, cobble, and stone of appropriate color (e.g., green/gray, brown/gray, and tan/brown in color) obtained from an approved source. Gravel, cobble, and stone shall not be harvested from streams or rivers outside the project limits unless part of a commercial quarry operation. All rock shall be free from laminations, weak cleavages and will not disintegrate from the action of air, water and in handling and placing. Concrete will not be considered as an alternative for rock. White rock is not acceptable.

Material	**Gradation**	**Proportion (%)**
2” – 3” River Stone	2.0 to 3.0 inch; D_{50}= 2.5in	100%

B. The Contractor shall provide a sample of 2” – 3” Stone for Stream Mixes to the Engineer for approval prior to placement. Only approved material shall be placed at the site.

1.03 CONSTRUCTION METHODS

A. 2" - 3” Stone for Stream Mixes shall be used in accordance with Contract Documents and associated with stream substrate construction as shown on the Contract Documents or as directed by the Engineer.

1.04 MEASUREMENT AND PAYMENT

A. Payment will be full compensation for all materials, transport, excavation, mixing, and installation for all material, labor, equipment, tools, and incidentals necessary to complete the work as specified in these specifications and on the Contract Documents.

B. 2” – 3” Stone for Stream Mixes will be measured and paid for at the Contract unit bid price per CY installed.

END OF SECTION

ITEM 9040

RIPRAP FOR UTILITY PROTECTION

ITEM 9050

RIPRAP FOR ROCK PACKING

ITEM 9060

RIPRAP FOR PLUNGE POOLS

ITEM 9070

RIPRAP FOR CASCADE POOLS

ITEM 9080

RIPRAP FOR ARMORED UTILITY CROSSINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Furnish, transport, stockpile, maintain, and Class 0, Class I, Class II, and Class III as specified in the Contract Documents or as directed by the Engineer.

B. Class 0, Class I, Class II, and Class III Riprap shall meet the specifications as per Section 901.02 of Virginia Department of Transportation, Road and Bridge Specifications.

1.02 MATERIALS

A. Class 0, Class I, Class II, and Class III Riprap shall consist of stone of appropriate color (e.g., green/gray, brown/gray, and tan/brown in color) obtained from an approved source. All rock shall be free from laminations, weak cleavages and will not disintegrate from the action of air, salt water and in handling and placing. Granular sedimentary rock will generally be unacceptable. Concrete will not be considered as an alternative for rock. White rock is not acceptable.

1.03 CONSTRUCTION METHODS

A. Class 0, Class I, Class II, and Class III Riprap shall be used in accordance with Contract Documents and these Construction associated with stream construction and rock packing as shown on the Contract Documents or as directed by the Engineer.

1.04 MEASUREMENT AND PAYMENT

A. Class 0, Class I, Class II, and Class III Riprap will be measured and paid for at the contract unit price per Cubic Yard. Price and payment will be full compensation for all grading, excavation, stone, backfill, placement, disposal of excess material, geotextile, prewashing when required, and for all material, labor, equipment, tools and incidentals necessary to complete the work.

B. Salvaged Riprap shall be incidental to Item 2010: Stream Channel Excavation (Class 5).

END OF SECTION

ITEM 9080

COARSE AGGREGATE

1.01 DESCRIPTION

A. Aggregate backfill shall include, but not necessarily be limited to, furnishing and placing granular material for the installation of gravity block retaining walls and other structures as indicated on the plans, and in accordance with the Contract Documents.

1.02 MATERIALS

A. Aggregate fill material for the subsurface drainage behind gravity block retaining walls as noted in the Standard Details shall meet the requirements of VDOT No. 78 stone.

B. Aggregate fill material for subgrade stabilization shall meet the requirements of VDOT No. 1 stone.

1.03 CONSTRUCTION METHODS

A. If areas of the foundation are soft, composed of mud, or are, in the Engineer's judgement, unfit to receive the pipe, structure, concrete, or masonry, then such unacceptable material shall be removed and replaced with aggregate fill material as directed by the Engineer.

B. The aggregate backfill material shall be carefully placed to the dimensions indicated on the plans or directed by the Engineer.

C. Except for VDOT No. 78 stone, all aggregate backfill material shall be compacted.

1.04 MEASUREMENT AND PAYMENT

Payment for furnishing and installing aggregate fill shall be measured and paid for at the Contract unit bid price per CY installed. Payment for removal of unacceptable foundation material will be made under the pertinent contingent item. No payment will be made for any aggregate fill which is used because of any error in the Contractor's operations, such as excavating beyond specified lines or grades, etc.

END OF SECTION

ITEM 9090

GEOTEXTILE CLASS SE – NON-WOVEN FOR IN-STREAM STRUCTURES

1.05 DESCRIPTION

A. This work shall consist of furnishing and placing Geotextile as shown on the Contract Documents for the boulder cascade, cascade pools, and gravity block retaining wall or as directed by the Engineer.

1.06 MATERIALS

Class	Type of Geotextile	Grab Strength (lb) D4632	Puncture Strength (lb) D4833	Permittivity sec^{-1} D4491	Apparent Opening Size, max. (mm) D4751	Trapezoid Tear Strength (lb) D4533
SE	Nonwoven	250	90	0.20	0.30	90

1.07 CONSTRUCTION METHODS

A. Geotextile shall be used in the construction of the boulder cascade, cascade pools, and gravity block retaining wall or as directed by the Engineer.

1.08 MEASUREMENT AND PAYMENT

Geotextile will be measured based on square yards installed. The payment will be full compensation for the preparation of surfaces, loading, hauling, supplying and placement for all material, labor, equipment, tools, and incidentals necessary to complete the work.

END OF SECTION

ITEM 9100

AS-BUILT DRAWINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The contractor shall prepare and submit to The Owner for approval, certified As-built Drawings of the completed infrastructure stabilization activity to fully illustrate all construction within the established limits of disturbance.

B. The Owner shall provide the services of Construction Services Manager to verify elevations, locations, and dimensions of the grading and infrastructure stabilization structures. It is the Contractor's responsibility to coordinate, during all phases of construction, with the Construction Services Manager. The Contractor and the Construction Services Manager will document the installed features as construction is occurring.

1.02 MATERIALS

A. The As-built Drawings shall be reproducible Mylar copies of the approved Contract documents (to be obtained from The Owner). Features to be surveyed shall consist of the following:

1. Plan view

a. Extent of constructed grading

b. Identify and show extent of bioengineering

c. Identify elevations and dimensions of all structures

2. Profile along thalweg

a. Elevations at design stations and at locations of any revisions

b. Instream structures/bioengineering controls should be identified with elevation notes.

3. Cross Sections

a. Offset and elevation identified at inverts and grade breaks

b. Identify and show placement of structures, bioengineering controls and any bank stabilization with elevations notes

c. Show existing ground and the extent of constructed grading

B. The As-built Drawings shall be certified by a Professional Land Surveyor licensed within the State of Virginia and shall be prepared in accordance with Section 317 of Virginia Department of Transportation, Road and Bridge Specifications. During construction, the Contractor shall adhere to tolerances noted within these Contract Documents. The signed, sealed and certified reproducible mylar As-built Drawings along with 3 print copies shall be forwarded to The Owner for approval.

1.03 CONSTRUCTION METHODS

A. NOTE: It is HIGHLY recommended the Contractor's land surveyor check grades, locations and elevations of structures throughout the construction process.

B. It is the Contractor's responsibility to coordinate with the Construction Services Manager to verify grades, locations and elevations during the course of construction.

C. The Contractor shall notify The Owner a minimum of 14 calendar days prior to completion of construction activities.

D. Upon completion of construction activities, the Contractor shall have no longer than 28 calendar days to furnish The Owner with certified As-built Drawings.

E. The Contractor may choose to submit to The Owner partial survey drawings in order to illustrate the layout of all plan features and grading; however, this submission of a partial drawing does not automatically convey approval of construction or eliminate the requirement for the Contractor to provide final As-built Drawing of the entire completed project certified by a Professional Land Surveyor.

F. Any errors or omissions found during the course of the red-line survey and determined by The Owner, who shall be sole judge, to have occurred during construction shall be repaired by the Contractor to the satisfaction of The Owner at no additional expense. The Contractor shall make any necessary repairs or corrections required by The Owner with a re-survey of the problem area showing the original Red-line information and any modification highlighted and noted. A Professional Land Surveyor, registered in the State of Virginia, shall also certify the resurvey.

G. Final acceptance of the project by The Owner will not occur until the certified As-built Drawings have been completed for the entire project and approved by The Owner.

1.04 Maintenance

A. The Contractor shall be held responsible for maintaining the integrity of the project until final acceptance of the As-built Drawings and a determination by The Owner that no errors or omissions have been made by the Contractor during the course of construction. The Owner shall make every effort to notify the Contractor within 35 calendar days of receipt of the drawing as to the acceptability or rejection of the project construction; however, lapse of this time frame does not relieve the Contractor of responsibility for maintaining the integrity of the project or for correcting any errors/omissions until final acceptance or the As-built Drawings for the entire project.

1.05 MEASUREMENT AND PAYMENT

A. Preparation of the As-built Drawings will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for surveying, processing, preparation of the As-built Drawings, and for the Professional Land Surveyor to certify and seal the drawings. Payment shall include all materials, labor, equipment, tools, maintenance, and incidentals necessary to complete the work.

END OF SECTION

ITEM 9110
SUPPLEMENTAL WATERING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This item refers to supplemental watering during the establishment period for all plants.

B. Apply water to permanent seeding areas and/or to trees, shrubs, sod and herbaceous plant material when weekly rainfall is less than 1 inch from May 1 through September 15, inclusive, or as directed by Prince William County.

1.02 MATERIALS

A. Refer to Section 605 of the Virginia Department of Transportation, Road and Bridge Specifications.

1.03 CONSTRUCTION METHODS

A. The Contractor shall notify Prince William County 3 business days prior to commencing watering operations for approval.

B. Water using a 1-in. inside diameter hose with breaker or watering probe. Supply a minimum 1000-gallon tank, 300 feet of hose and a power-driven pump adequately powered to efficiently supply water to permanent seeding areas and trees. Provide Prince William County with measurements and capacities to provide a complete and accurate record of the quantity of water furnished and applied. Apply water at low pressure directly to seeding area or each planting pit. For permanent seeding areas, apply 1 gallon of water for every 5 SF of seeding. For planting pits, apply water as per Table 1 under Item 7110.

1.04 MEASUREMENT AND PAYMENT

A. Supplemental Watering will be measured and paid for at the Contract Unit Price per gallon of water applied. Water will be measured by means of satisfactorily installed meters, or by measurement of tank capacities, or by acceptable documentation of tanks of predetermined capacity. The payment will be full compensation for all water, material, labor, equipment, tools, and incidentals necessary to complete the work. No compensation will be allowed for water wasted as determined by Prince William County.

END OF SECTION

Appendix K Cost Estimate

TAYLOR RUN INFRASTRUCTURE STABILIZATION						AECOM
60% OPINION OF PROBABLE CONSTRUCTION COSTS						Apr-26
CITY OF ALEXANDRIA						BY: S BERNHEISEL
#	TECH SPEC #	ITEM/DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
		General Conditions				
1.1	ITEM 1050	Maintenace of Traffic	1	LS	$4,800.00	$4,800.00
		Construction Surveying				
2.1	ITEM 1030	Construction Stakeout	1	LS	$102,000.00	$102,000.00
		Erosion/Sediment Control				
3.1	ITEM 3010	Stabilzed Construction Entrance	2	EA	$4,098.00	$8,196.00
3.2	ITEM 3020	Temporary Access Road	1287	LF	$44.00	$56,628.00
3.3	ITEM 3030	Temporary Access Bridge	2	EA	$5,175.00	$10,350.00
3.4	ITEM 3030	Contingent Silt Fence	NA	LF	$6.00	$0.00
3.5	ITEM 3050	Super Silt Fence	279	LF	$16.00	$4,464.00
3.6	ITEM 1080	Chain Link Fence	3221	LF	$4.00	$12,884.00
3.7	ITEM 7020	Temporary Seeding and Mulching	1295	SY	$1.00	$1,295.22
3.8	ITEM 3060	Tree Protection Fence	759	LF	$12.00	$9,108.00
3.9	ITEM 3080	Tree Protection Planking	19	EA	$390.00	$7,410.00
3.10	ITEM 3090	Contingent Root Pruning	NA	LF	$8.00	$0.00
3.11	ITEM 3050	Maintenance of Stream Flow	1	LS	$38,800.00	$38,800.00
		Access Road & Staging				
4.1	ITEM 1100	Stockpile/Staging Areas	613	SY	$8.00	$4,904.00
		Clearing and Demolition				
5.1	ITEM 1040	Clearing & Grubbing, Including Trees up to 12" Diameter	0.3	AC	$6,800.00	$1,785.39
5.2	ITEM 1040	Tree Removal (13" to 24" diameter)	10	EA	$650.00	$6,500.00
5.3	ITEM 1040	Tree Removal (25" to 54" diameter)	1	EA	$3,000.00	$3,000.00
5.4	ITEM 1070	Demolition of Existing Structures	2	LS	$25,000.00	$50,000.00
		Earthwork				
6.1	ITEM 2010	Stream Channel Excavation - Class 5	1895	CY	$30.00	$56,856.85
6.2	ITEM 2020	Load and Haul Off-site	905	CY	$46.00	$41,636.83
		Project Area 1: Upstream Stormwater Outfall				
7.1	ITEM 9080	VDOT No. 78 Stone (Drainage Stone)	78	TON	$65.00	$5,101.88
7.2	ITEM 9080	VDOT No. 1 Stone (Leveling Pad)	57	TON	$85.00	$4,882.10
	ITEM 9080	VDOT No. 57 Stone (Boulder Cascade)	45	TON	$36.00	$1,620.00
7.4	ITEM 4030	Gravity Retaining Wall, Concrete Gravity (greater than 6 FT)	140	LF	$1,164.00	$162,960.00
7.5	ITEM 4070	Gravity Wingwall, 8' high	1	EA	$4,528.00	$4,528.00
7.6	ITEM 9060 & 9070	Rip Rap Class III (Cascade Pool and Plunge Pool)	489	TON	$110.00	$53,740.13
7.7	ITEM 4010 &9010	Imbricated Rock for Rock Cascade	160	TON	$215.00	$34,292.50
7.9	ITEM 7010	Type D Soil Stabilization Matting	345	SY	$6.00	$2,068.27
7.10	ITEM 4080	Rock Façade Stamp & Seal	1	LS	$5,000.00	$5,000.00
7.11	ITEM 4040	Three Rail Smooth Aluminum Railing	140	LF	$152.00	$21,280.00
					Project Area 1 Subtotal:	$295,472.89
		Project Area 2: Sanitary Sewer Crossing 1 and Stormwater Outfall				
8.1	ITEM 4060	Armored Utility Crossing	22	LF	$97.00	$2,134.00
8.2	ITEM 4050	Concrete Endwall, 36" Pipe	1	EA	$2,113.00	$2,113.00
8.3	ITEM 9080	VDOT No. 78 Stone (Drainage Stone)	85	TON	$65.00	$5,519.09
8.4	ITEM 9080	VDOT No. 1 Stone (Leveling Pad)	38	TON	$85.00	$3,243.98
	ITEM 9080	VDOT No. 57 Stone (Boulder Cascade)	88	TON	$36.00	$3,168.00
8.5	ITEM 4030	Retaining Walls, Concrete Gravity (greater than 6 FT)	125	LF	$1,164.00	$145,406.88
8.6	ITEM 9070	Rip Rap Class III (Cascade Pool)	296	TON	$110.00	$32,505.98
8.7	ITEM 4010 & 9010	Imbricated Rock for Rock Cascade	222	TON	$215.00	$47,659.48
8.9	ITEM 7010	Type D Soil Stabilization Matting	356	SY	$6.00	$2,133.33
8.10	ITEM 4080	Rock Façade Stamp & Seal	1	LS	$3,000.00	$3,000.00

8.11	**ITEM 4040**	Three Rail Smooth Aluminum Railing	125	LF	$152.00	$18,987.84
					Project Area 2 Subtotal:	$265,871.58
		Project Area 3: Exposed Sanitary Sewer Manhole				
9.1	**ITEM 9080**	VDOT No. 78 Stone (Drainage Stone)	209	TON	$65.00	$13,556.40
9.2	**ITEM 9080**	VDOT No. 1 Stone (Leveling Pad)	123	TON	$85.00	$10,434.60
9.4	**ITEM 4030**	Retaining Walls, Concrete Gravity (6FT or less)	19	LF	$657.00	$12,574.98
9.5	**ITEM 4030**	Retaining Walls, Concrete Gravity (greater than 6 FT)	50	LF	$1,164.00	$58,188.36
9.6	**ITEM 4040**	Three Rail Smooth Aluminum Railing	69	LF	$152.00	$10,507.76
					Project Area 3 Subtotal:	$105,262.10
		Project Area 4: Sanitary Sewer Crossing 2 and Retaining Wall				
10.1	**ITEM 9050**	Riprap for Rockpacking (Rip Rap Type III)	40	TON	$215.00	$8,632.25
10.2	**ITEM 7010**	Type D Soil Stabilization Matting	363	SY	$6.00	$2,180.91
10.4	**ITEM 9070**	Rip Rap Class III (Cascade Pool)	136	TON	$110.00	$14,966.36
10.5	**ITEM 4010 &9010**	Imbricated Rock for Rock Cascade	125	TON	$215.00	$26,957.45
10.6	**ITEM 9060**	VDOT No. 78 Stone (Drainage Stone)	209	TON	$65.00	$13,556.40
10.7	**ITEM 9060**	VDOT No. 1 Stone (Leveling Pad)	123	TON	$85.00	$10,434.60
	ITEM 9080	VDOT No. 57 Stone (Boulder Cascade)	27	TON	$36.00	$972.00
10.8	**ITEM 4030**	Retaining Walls, Concrete Gravity (6FT or less)	12	LF	$657.00	$7,581.78
10.9	**ITEM 4030**	Retaining Walls, Concrete Gravity (greater than 6 FT)	69	LF	$1,164.00	$80,537.16
10.10	**ITEM 4060**	Armored Utility Crossing	22	LF	$97.00	$2,134.00
10.11	**ITEM 4040**	Three Rail Smooth Aluminum Railing	81	LF	$152.00	$12,270.96
					Project Area 4 Subtotal	$180,223.86
		Planting and Seeding				
11.1	**ITEMS 7030 & 7040 & 7050 & 7060**	Permanent Seeding	1,908	SY	$14.00	$26,715.11
11.2	**ITEM 7080**	Tree Planting #7 Container	55	EA	$140.00	$7,700.00
11.3	**ITEM 7080**	Shrub Planting #2 Container	360	EA	$50.00	$18,000.00
11.4	**ITEM 7090**	Deer Protection Guard (Single Stem Trees)	55	EA	$20.00	$1,100.00
11.5	**ITEM 7090**	Deer Protection Guard (Multi-Stem Trees and Shrubs)	360	EA	$47.00	$16,920.00
					Construction Subtotal	$1,337,883.83
					Construction Escalation Factor (4.3%)	$76,705.34
					Construction Subtotal w/ Escalation Factor	$1,414,589.17
					Mobilzation/Demobilziation (5%)	$96,894.19
					Construction Contingency (20%)	$282,917.83
					Construction Total	**$1,794,401.20**

Notes :

(1)		Assumes a construction start date of October 2026, midpoint of construction February 2027. The annual inflation rate is 4.4% for the 12 months ending in September 2025, according to data published by the U.S Department of Labor. This 4.4% is applied to the construction subtotal until the midpoint of construction.
(2)		Mobilization/Demobilization is assumed to include the transport, staging, delivery, assembly and set-up of all equipment, tools, storage facilities, fuel and oil, office trailers, etc. required to perform the work, and the subsequent demobilization of same. It also includes labor costs for on-site project manager, project engineer and quality assurance manager. No additional payment will be made for demobilization and remobilization because of shutdowns, suspensions of work, or other mobilization actives. Based on standard VDOT formula for projects up to $200,000 is 10% of total contract amount, for projects under $1M ($20,000 + 7.5%*(Total Construction Cost - $200,00)), and for projects over $1M is ($80,000 + 5%*(Total Construction Cost - $1M)).
(3)		The "Construction Contingency" is to account for unforeseen and unknown items that may be encountered during the construction of the project and variations in contractor unit prices resulting from competitive bidding. Due to the level of detail contained in this construction cost estimate, the contingency is estimated at 20% of the Subtotal plus its Escalation Factor.

Appendix L 60% Design Plans

OWNER

CITY OF ALEXANDRIA
301 KING STREET, ROOM 4100
ALEXANDRIA, VA 22314

APPLICANT/DEVELOPER

DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 3200
ALEXANDRIA, VA 22314

CITY OF ALEXANDRIA SERVICES CONTRACT

CONTRACT NO. 2910, RFQU 1054, TOR #07
PURCHASE ORDER NO. 251818-00
AECOM PROJECT NUMBER: 60742359

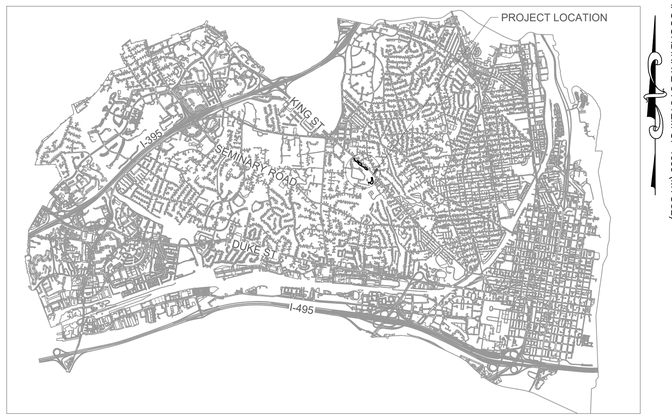
CITY OF ALEXANDRIA, VIRGINIA

TAYLOR RUN INFRASTRUCTURE STABILIZATION

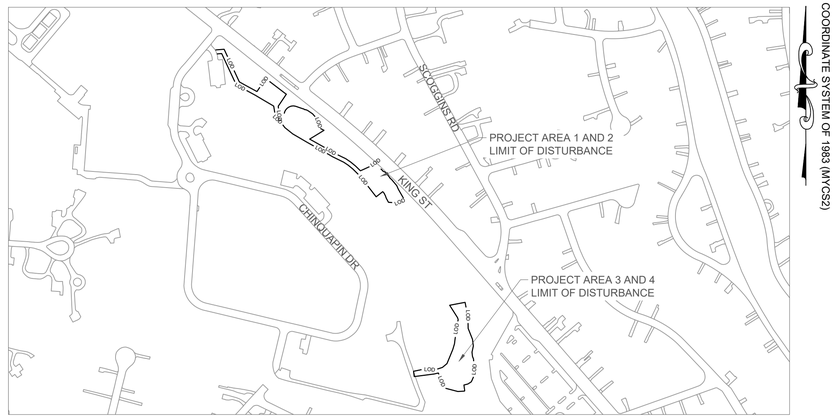
60% DESIGN

SHEET INDEX

SHEET NO.	DRAWING NO.	SHEET NAME
01	G-01	COVER SHEET
02	G-02	GENERAL NOTES
03	G-03	LEGEND
04	O-01	OVERALL SITE PLAN
05	EC-01	EXISTING CONDITION PLAN
06	EC-02	EXISTING CONDITION PLAN
07	EC-03	EXISTING CONDITION PLAN
08	EC-04	EXISTING CONDITION PLAN
09	TI-01	TREE INVENTORY
10	TI-02	TREE INVENTORY
11	TI-03	TREE INVENTORY
12	TI-04	TREE INVENTORY
13	PC-01	PROPOSED CONDITIONS
14	PC-02	PROPOSED CONDITIONS
15	PC-03	PROPOSED CONDITIONS
16	PC-04	PROPOSED CONDITIONS
17	GN-01	GRADING NOTES
18	LP-01	LONGITUDINAL PROFILE
19	LP-02	LONGITUDINAL PROFILE
20	LP-03	LONGITUDINAL PROFILE
21	LP-04	LONGITUDINAL PROFILE
22	LP-05	LONGITUDINAL PROFILE
23	GEO-01	GEOMETRY PLAN
24	GEO-02	GEOMETRY PLAN
25	GEO-03	GEOMETRY PLAN
26	GEO-04	GEOMETRY PLAN
27	CS-01	CROSS SECTIONS
28	CS-02	CROSS SECTIONS
29	CS-03	CROSS SECTIONS
30	CS-04	CROSS SECTIONS
31	CS-05	CROSS SECTIONS
32	CS-06	CROSS SECTIONS
33	CS-07	CROSS SECTIONS
34	CS-08	CROSS SECTIONS
35	ST-01	STRUCTURE STAKEOUT
36	DE-01	CONSTRUCTION DETAILS
37	DE-02	CONSTRUCTION DETAILS
38	DE-03	CONSTRUCTION DETAILS
39	SE-01	SEQUENCE OF CONSTRUCTION
40	ESC-01	EROSION AND SEDIMENT CONTROL PLAN
41	ESC-02	EROSION AND SEDIMENT CONTROL PLAN
42	ESC-03	EROSION AND SEDIMENT CONTROL PLAN
43	ESC-04	EROSION AND SEDIMENT CONTROL PLAN
44	ESC-05	EROSION AND SEDIMENT CONTROL NARRATIVE
45	ESC-06	EROSION AND SEDIMENT CONTROL DETAILS
46	ESC-07	EROSION AND SEDIMENT CONTROL DETAILS
47	ESC-08	EROSION AND SEDIMENT CONTROL DETAILS
48	PP-01	PLANTING PLAN
49	PP-02	PLANTING PLAN
50	PP-03	PLANTING PLAN
51	PP-04	PLANTING PLAN
52	PN-01	PLANTING DETAILS
53	PN-02	PLANTING DETAILS
54	PN-03	PLANTING DETAILS
55	WQIA-01	WATER QUALITY IMPACT ASSESSMENT



LOCATION MAP
SCALE 1" = 4000'



VICINITY MAP
SCALE 1" = 300'

TOTAL DISTURBED AREA: 73,949 SF (1.7 AC)
INCREASE IN IMPERVIOUS AREA: 0 SF (0 AC)
APRIL 17, 2026

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AECOM
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

POINT OF CONTACT:
BRANDON ALDERMAN, CERP
BRANDON.ALDERMAN@AECOM.COM

PROJECT DESCRIPTION:
THE OBJECTIVE OF THIS PROJECT IS TO PROVIDE A MINIMAL STABILIZATION APPROACH ALONG TAYLOR RUN TO PROTECT THE CITY'S COMPROMISED STORMWATER AND SANITARY SEWER INFRASTRUCTURE.

DEPARTMENT OF TRANSPORTATION & ENVIRONMENTAL SERVICES.

APPROVED
X DATE:
DIRECTOR

RECOMMENDED FOR APPROVAL
X DATE:
DEPUTY DIRECTOR OF OPERATIONS

RECOMMENDED FOR APPROVAL
X DATE:
DEPUTY DIRECTOR OF INFRASTRUCTURE & ENVIRONMENT QUALITY

RECOMMENDED FOR APPROVAL
X DATE:
DEPUTY DIRECTOR OF RIGHT-OF-WAY & DEVELOPMENT SERVICES

RECOMMENDED FOR APPROVAL
X DATE:
DEPUTY DIRECTOR OF TRANSPORTATION

DEPARTMENT OF RECREATION, PARKS, AND CULTURAL ACTIVITIES

APPROVED
X DATE:
DIVISION CHIEF RPCA

DEPARTMENT OF PROJECT IMPLEMENTATION

APPROVED
X DATE:
DIRECTOR

RECOMMENDED FOR APPROVAL
X DATE:
DIVISION CHIEF

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS
DATE | BY | DESCRIPTION

ALEXANDRIA PROJECT NO.:	23086
DATE OF PLAN ISSUANCE:	
CONSULTANT PROJECT ID.:	60742359
DESIGNED BY: SB, TN	DATE: 10/2025
DRAWN BY: SB, TN	DATE: 10/2025
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SEAL:

COVER SHEET

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

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PROJECT NARRATIVE

THIS PROJECT ENTAILS STREAM STABILIZATION USING A 'MINIMAL STABILZIATION' APPROACH TO LIMIT TREE IMPACTS AND DISTURBANCE TO THE COMMUNITY. THE TAYLOR RUN PROJECT AREA BEGINS AT THE 72' RCP CULVERT OUTFALL TO THE NORTHEAST OF THE CHINQUAPIN RECREATION CENTER, ADJACENT TO KING STREE IN THE CITY OF ALEXANDRIA, VIRIGNIA. APPROXIMATELY 1,500 LINEAR FEET OF TAYLOR RUN IS WIHTIN THE PROJECT AREA BUT APPROXIMATELY 590 LINEAR FEET WILL BE IMPACTED. THE PROJECT TERMINANTES DOWNSTREAM OF THE EXISTING SHEET PILE WALL.
WITHIN THE PROJECT AREA, THERE ARE TWO STORMWATER OUTFALLS IN DISREPAIR AND AN UNDERSIZED PLUNGE POOL. SEVERE EROSION HAS UNDERCUT TREES CAUSING THEM TO FALL, EXPOSED ROOTS AND UNDERMINED THE STREAM BANKS, INCLUDING THE CRITICAL ROOT ZONE OF A CHAMPION TREE. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH TWO EXPOSED CROSSINGS AND AN EXPOSED MANHOLE.
THE PROJECT LIES WITHIN A FEMA MAPPED ZONE AE SEPCIAL FLOOD HAZARD AREA (SFHA) AND IS ENTIRELY WITHIN THE CITY RESOURCE PROTECTION AREA (RPA). THE SURROUNDING AREA IS HIGHLY RESIDENTIAL, WHICH INCLUDES THE CITY OF ALEXANDRIA HIGH SCHOOL.

EXISTING CONDITIONS SURVEY NOTES

1. HORIZONTAL DATUM: NAD83
   VERTICAL DATUM: NAVD88 (FOR ALL SOURCES: GIS, AERIAL TOPOGRAPHY, SURVEY)
2. UTILITY INFORMATION INFORMATION, AS SHOWN ON THIS PLAN, IS A COMBINATION OF GIS DIGITAL DATA, AERIAL TOPOGRAPHY, AND SURVEY PROVIDED BY THE CITY OF ALEXANDRIA, QUANTUM SPATIAL, AND WETLAND STUDIES AND SOLUTIONS (WSSI), RESPECTIVELY. FOR EXACT LOCATIONS OF EXISTING UNDERGROUND UTILITIES NOTIFY "VA811" AT 811 OR 1-800-552-7001, 72 HOURS BEFORE THE START OF ANY EXCAVATION OR CONSTRUCTION.
3. LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION CONTRACTOR/ENGINEER SHOULD DIG TEST PITS BY HAND AT ALL UTILITY CROSSINGS TO VERIFY EXACT LOCATION.
4. SITE TOPOGRAPHY WAS SURVEYED AND PROVIDED BY THE CITY OF ALEXANDRIA, QUANTUM SPATIAL, AND RICE ASSOCIATES FOR A TARGET HORIZONTAL MAP SCALE OF 1"=20' AT A CONTOUR INTERVAL OF 1'.
5. RICE ASSOCIATES SURVEYED THE TOPOGRAPHY, EXISTING SANITARY SEWER STRUCTURE LOCATIONS, CULVERTS, STORM DRAINS, AND ADDITIONAL FEATURES FROM 05/22/2025 THROUGH 06/11/2025.

CITY STANDARD GENERAL NOTES

1. "CITY" MEANS THE CITY OF ALEXANDRIA, A MUNICIPAL CORPORATION OF VIRGINIA AND ITS AUTHORIZED REPRESENTATIVES AND EMPLOYEES.
2. THE SUBJECT SITE IS LOCATED ON CITY OF ALEXANDRIA ASSESSMENT MAPS NO. 032.04 AND 041.02, PARCELS 041.02-02-02 AND 041.02-02-06, AND IS ZONED R20, AND POS.
3. OWNER: CITY OF ALEXANDRIA
4. LEGAL DESCRIPTION: LOTS 600 SUBDIVISION OF THE PROPERTY OF T C WILLIAMS HIGH SCHOOL AND PAR "B" CHINQUAPIN VILLAGE.
5. ADDRESS: PO BOX 178 ALEXANDRIA VA 22313-1500
6. THE NATURAL SOILS AT THE SITE CONSIST OF SASSAFRAS-NEABSCO COMPLEX. SASSAFRAS-NEABSCO SOILS ARE SANDY LOAM, WITH A MEDIUM EROSION POTENTIAL. THE SOIL DRAINAGE IS CLASSIFIED AS MARGINAL DUE TO PERCHED GROUNDWATER ABOVE RESTRICTIVE SOIL OR ROCK LAYERS AND SLOW PERMEABILITY RATES.
7. THE SITE IS LOCATED IN THE TAYLOR RUN WATERSHED.
8. THE SUBJECT PROPERTIES LIE WITHIN A RESOURCE PROTECTION AREA.
9. TOPOGRAPHIC INFORMATION FOR THE SUBJECT SITES IS FROM FIELD SURVEYS PROVIDED BY AERIAL TOPOGRAPHY AND RICE ASSOCIATES SURVEY (SEE EXISTING CONDITIONS SURVEY NOTES).
10. THE BOUNDARY INFORMATION FOR THE SUBJECT SITES IS BASED ON FIELD SURVEYS PROVIDED BY DIGITAL GIS DATA FROM THE CITY OF ALEXANDRIA, WSSI, AND RICE ASSOCIATES (SEE EXISTING CONDITIONS SURVEY NOTES).
11. CONSTRUCTION PERMITS ARE REQUIRED FOR THIS PROJECT. THE APPROVED SITE PLAN MUST BE ATTACHED TO THE PERMIT APPLICATION THAT FULLY DETAILS THE CONSTRUCTION AS WELL AS LAYOUTS AND SCHEMATICS OF THE MECHANICAL, ELECTRICAL, AND PLUMBING SYSTEMS.
12. ALL PUBLIC AND PRIVATE EASEMENTS OR ALL KNOWN PUBLIC AND PRIVATE EASEMENTS, INCLUDING ALL UTILITY, EGRESS, AND CONSERVATION RESTRICTIONS ARE SHOWN. THE APPLICANT SHALL NOT CONSTRUCT ANY PERMANENT STRUCTURES OVER ANY EXISTING OR PROPOSED PUBLIC AND/OR PRIVATE EASEMENTS UNLESS OTHERWISE APPROVED BY THE PLANNING COMMISSION AND CITY OF ALEXANDRIA COUNCIL.
13. ALL NEW CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ALEXANDRIA AND/OR THE VIRGINIA DEPARTMENT OF TRANSPORATION (VDOT) STANDARDS AND SPECIFICATIONS.
14. ALL STREET CUT AND PATCH WORK LOCATED IN PUBLIC RIGHT-OF-WAYS, REQUIRED FOR ANY UTILITY INSTALLATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE CITY OF ALEXANDRIA STANDARDS AND SPECIFICATIONS AND TO THE SATISFACTION OF THE DIRECTOR OF TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES).
15. CONTRACTOR MUST ENSURE THAT THERE IS NO DISTURBANCE ON ADJACENT PROPERTIES WITHOUT RECORDED EASEMENT OR NOTARIZED LETTER OF PERMISSION FROM THE ADJACENT PROPERTY OWNERS.
16. ALL REQUIRED STATE AND FEDERAL PERMITS, WHICH COULD INCLUDE PERMITS FROM THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION (VDCR), VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY (VDEQ), VIRGINIA DEPARTMENT OF HISTORIC RESOURCES (VDHR), UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA), ARMY CORPS OF ENGINEERS AND VIRGINIA MARINE RESOURCES, MUST BE IN PLACE FOR ALL PROJECT CONSTRUCTION AND MITIGATION WORK PRIOR TO RELEASE OF THE FINAL SITE PLAN. THIS INCLUDES THE STATE REQUIREMENT FOR A VIRGINIA STORMWATER MANAGEMENT PROGRAM (VSMP) GENERAL PERMIT FOR DISCHARGES OF STORMWATER FROM CONSTRUCTION ACTIVITIES FOR LAND DISTURBING ACTIVITIES GREATER THAN 2,500. INFORMATION REGARDING THE VSMP GENERAL PERMIT CAN BE FOUND ONLINE AT: http://www.dcr.virginia.gov/soil and water/vsmp.shtml.
17. PERMITS FROM THE CITY OF ALEXANDRIA OFFICE OF ENVIRONMENTAL QUALITY (OEQ), TRANSPORTATION AND ENVIRONMENTAL SERVICES (T&ES), AND BUILDING AND FIRE CODE ADMINISTRATION SHALL BE OBTAINED BY THE APPLICANT, AS REQUIRED AND DOCUMENTED HEREIN. THE CONTRACTOR CAN CONTACT ALEXANDRIA FIRE AND CODE ADMINISTRATION DEPARTMENT AT (703) 838-4644 OR (703) 746-4200 FOR ANY QUESTIONS OR ADDITIONAL INFORMATION.
18. ANY WORK IN THE PUBLIC RIGHT OF WAY SHALL REQUIRE A SEPARATE PERMIT FROM THE DIRECTOR, TRANSPORTATION AND ENVIRONMENTAL SERVICES. THE CONTRACTOR CAN CONTACT THE DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES AT (703) 746-4035 FOR ANY QUESTIONS OR ADDITIONAL INFORMATION.
19. THERE IS NO OBSERVABLE EVIDENCE OF CEMETERIES OR BURIAL GROUNDS ON THIS PROPERTY.
20. A SEPARATE PERMIT IS REQUIRED FOR SIGN CONSTRUCTION.

DEMOLITION NOTES

1. NO DEMOLITION SHALL BEGIN UNTIL ALL EROSION AND SEDIMENT AND TREE PROTECTION CONTROLS ARE IN PLACE AND ARE APPROVED BY AN EROSION AND SEDIMENT CONTROL INSPECTOR OF THE DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES.
2. ALL WORK SHALL BE PERFORMED IN STRICT COMPLIANCE WITH THE MOST CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS, INCLUDING BUT NOT LIMITED TO ENVIRONMENTAL PROTECTION AGENCY (EPA), OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), VIRGINIA OCCUPATIONAL AND SAFETY HEALTH COMPLIANCE PROGRAM (VOSH ENFORCEMENT), VIRGINIA OVERHEAD HIGH VOLTAGE LINE SAFETY ACT, NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS), AND NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY AND HEALTH (NIOSH).
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF WORK WITH REPRESENTATIVE UTILITY COMPANIES AND FOR THE IMPLEMENTATION OF REQUIRED UTILITY-RELATED WORK.
4. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE UPON ENCOUNTERING ANY HAZARDOUS MATERIALS DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL DOCUMENT SAME TO THE OWNER'S REPRESENTATIVE AND OBTAIN DIRECTION AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
5. SHEETING AND SHORING REQUIRED FOR DEEP EXCAVATIONS AND TRENCHES SHALL BE DESIGNED AND SEALED/CERTIFIED BY THE CONTRACTOR OR THE CONTRACTOR'S ENGINEER AND APPROVED BY THE APPROPRIATE AUTHORITIES HAVING JURISDICTION PRIOR TO EXCAVATION AND TRENCHING ACTIVITIES BEING PERFORMED. COMPLY WITH OSHA AND OTHER APPLICABLE SAFETY CODES DURING EXCAVATION AND TRENCHING ACTIVITIES AND WHILE AN EXCAVATION OR TRENCH REMAINS OPEN AT THE PROJECT SITE.
6. PRIOR TO REMOVAL OF MATERIALS OVER EXISTING UTILITY SYSTEMS, THE CONTRACTOR SHALL DOCUMENT AND PHOTOGRAPH EXISTING CONDITIONS AND, IF AT VARIANCE WITH CONDITIONS AS REPRESENTED ON THE PLANS, NOTIFY THE OWNER'S REPRESENTATIVE AND OBTAIN DIRECTIONS AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
7. THE CONTRACTOR SHALL BACKFILL EXCAVATED AREAS WITH APPROVED MATERIALS/ CLEAN FILL AS PER THE REQUIREMENTS OF VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT).
8. PRIOR TO COMMENCING NEW WORK, THE CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING ADJACENT AREAS. ALL ADJACENT AREAS DAMAGED DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE CITY .
9. DURING DEMOLITION AND/OR CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE UPON ENCOUNTERING ANY EXISTING UTILITIES AND/OR UTILITY SYSTEM STRUCTURES NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL DOCUMENT THE SAME AND FORWARD THE INFORMATION TO THE RESIDENT ENGINEER/ OWNER'S REPRESENTATIVE, AND OBTAIN DIRECTION AS TO THE APPROPRIATE ACTION(S) TO BE TAKEN.
10. THE CONTRACTOR OR APPLICANT SHALL WORK WITH THE CITY STAFF TO REUSE THE EXISTING, LEFTOVER, UNUSED, AND/OR DISCARDED BUILDING MATERIALS AS PART OF THE DEMOLITION PROCESS OR THE CONSTRUCTION DEBRIS MUST BE REMOVED TO AN APPROVED LANDFILL

PRESERVATION & PROTECTION OF EXISTING VEGETATION NOTES

1. ALL PLANS ARE TO BE APPROVED BY, AND QUESTION ABOUT PLANNING DETAILS SHOULD BE DIRECTED TO JOHN MARLIN, CITY ARBORIST AT 703-746-5499; JOHN.MARLIN@ALEXANDRIA.GOV.
2. VEGETATION TO BE REMOVED SHALL BE APPROVED BY THE CITY ARBORIST
3. PROVIDE, IMPLEMENT AND FOLLOW A TREE CONSERVATION AND PROTECTION PROGRAM THAT IS DEVELOPED TO THE SATISFACTION OF THE CITY ARBORIST.
4. PROTECTION PROGRAM SHALL BE AUTHORED BY AN ARBORIST CERTIFIED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE.
5. LOCATION AND METHOD FOR PROTECTION AND PRESERVATION OF EXISTING TREES ON ALL PLAN SHEETS INCLUDING DEMOLITION, SEDIMENT AND EROSION CONTROL, SITE PLAN AND LANDSCAPE PLAN
6. PROVIDE PROTECTION OF EXISTING VEGETATION IN COMPLIANCE WITH LANDSCAPE GUIDELINES OF THE CITY.
7. LOCATION AND METHOD FOR PROTECTION AND PRESERVATION OF EXISTING TREES SHALL BE APPROVED IN-FIELD BY THE CITY ARBORIST PRIOR TO COMMENCEMENT OF GROUP DISTURBING ACTIVITIES RCPA ALSO RESERVES THE RIGHT TO CONDUCT THESE APPROVALS
8. CONTRACTOR MUST PROVIDE DOCUMENTATION OF COMMUNICATION WITH THE ADJACENT PROPERTY OWNER(S) VERIFYING NOTIFICATION OF CONSTRUCTION IMPACT, POTENTIAL FOR LOSS, AND AGREED UPON REMEDIAL MEASURES PERTAINING TO THE EXISTING TREE(S) ON ADJACENT PROPERTIES THAT WILL BE AFFECTED BY PROJECT WORK.
9. PROVIDE SPECIFIC CONSTRUCTION STAGING INFORMATION THAT INDICATES THE METHODS, AND PROCEDURES TO BE IMPLEMENTED FOR PROTECTION OF EXISTING ON-SITE AND OFF-SITE VEGETATION.
10. TREE PROTECTION SHALL BE PROVIDED AS INDICATED ON THE PLANS. PROTECTION SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE DRIP LINE OF THE TREES TO BE SAVED. THE CONTRACTOR WILL CONSULT THE SITE INSPECTOR BEFORE THE CONSTRUCTION STARTS. TREE PROTECTION FENCING MUST BE ESTABLISHED AND APPROVED BY THE CITY ARBORIST BEFORE ANY CLEARING OR CONSTRUCTION/DEMOLITION CAN BE STARTED. TO THE EXTENT POSSIBLE ALL TREE PROTECTION SHALL BE INSTALLED AT THE DROP LINE OF THE TREE(S).

RODENT ABATEMENT NOTE

PRIOR TO THE ISSUANCE OF A DEMOLITION PERMIT OR LAND DISTURBANCE PERMIT, A RODENT ABATEMENT PLAN SHALL BE SUBMITTED TO THE CITY OF ALEXANDRIA BUILDING AND FIRE CODE ADMINISTRATION THAT WILL OUTLINE STEPS THAT WILL BE TAKEN TO PREVENT THE SPREAD OF RODENTS FROM THE CONSTRUCTION SITE TO THE SURROUNDING COMMUNITY AND SEWERS. THE CONTRACTOR CAN CONTACT ALEXANDRIA BUILDING AND FIRE CODE ADMINISTRATION DEPARTMENT AT (703) 838-4644 OR (703) 746-4200 FOR ANY QUESTIONS OR ADDITIONAL INFORMATION.

UTILITY WORK NOTES

UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING MINIMUM STANDARDS DESCRIBED IN SECTION 4VAC50-30-40 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) AND ADDITIONAL APPLICABLE PRACTICES FOLLOWED BY THE CITY:

1. ALL PRIVATE UTILITIES SHALL BE LOCATED OUTSIDE OF THE PUBLIC RIGHT-OF-WAY AND PUBLIC UTILITY EASEMENTS UNLESS THE UTILITY OWNERS HAVE FRANCHISE AGREEMENT WITH THE CITY OF ALEXANDRIA; HOWEVER, NO ELECTRIC TRANSFORMERS AND SWITCH GEARS/CONTROL BOXES SHALL BE PLACED IN THE PUBLIC RIGHT OF WAY.
2. ALL THE EXISTING AND PROPOSED PUBLIC AND PRIVATE UTILITIES AND EASEMENTS SHALL BE SHOWN AND A DESCRIPTIVE NARRATION OF VARIOUS UTILITIES SHALL BE PROVIDED ON THE PLAN.
3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN UTILITY SERVICES AT ALL TIMES DURING CONNECTION AND/OR CONSTRUCTION. ANY DISRUPTIONS TO UTILITIES TO REMAIN WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR OR REPLACE IN KIND WITH NO ADDITIONAL EXPENSE TO THE CITY.
4. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
5. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
6. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY AS CONFIRMED BY THE CITY.
7. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ACCORDANCE WITH THE CITY STANDARDS AND SPECIFICATIONS TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
8. SHOULD UTILITY CONSTRUCTION BE PERFORMED AFTER COMPLETING EARTHWORK, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACHIEVING 98 PERCENT OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1557) COMPACTION IN ALL TRENCH BACKFILL.
9. RE-STABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE VIRGINIA REGULATIONS §4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS, VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).
10. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
11. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL CONTROL MEASURES AS NECESSARY TO PREVENT EROSION AND SEDIMENTATION, AS DETERMINED BY THE DIRECTOR OF T&ES, CITY OF ALEXANDRIA.
12. A REMEDIATION PLAN SHALL BE SUBMITTED DETAILING HOW CONTAMINATED SOILS AND/OR GROUNDWATER WILL BE DEALT WITH, INCLUDING PLANS TO REMEDIATE UTILITY CORRIDORS.
13. UTILITY CORRIDORS IN CONTAMINATED SOIL SHALL BE OVER EXCAVATED BY 2 FEET AND BACKFILLED WITH "CLEAN" SOIL.
14. GRADING CAN BE PERFORMED ON INSTALLATION OF UTILITIES.
15. ALL NEW INSTALLATIONS AND/OR REINSTALLATIONS OF UTILITIES SUCH AS ELECTRICAL LINES, GAS PIPES, COMMUNICATION CABLES INCLUDING WATER AND SEWER LATERALS BOTH ON PRIVATE PROPERTY AND IN THE PUBLIC RIGHT-OF-WAY IN THE CITY OF ALEXANDRIA SHALL BE PROVIDED WITH 3" AND 6" WIDE 5 MIL OVERALL THICKNESS DETECTABLE UNDERGROUND WARNING TAPES (DUWT). THE 3" DUWT SHALL BE INSTALLED AT DEPTHS OF 12" TO 18" AND 6" WIDE AT A DEPTH OF 24" SO AS TO MAKE UNDERGROUND INSTALLATIONS EASY TO FIND USING A NON-FERROUS LOCATOR. THE DUWT SHALL BE WITH ALUMINUM BACKING OR SOLID ALUMINUM CORE LAMINATED WITH A PROTECTIVE CLEAR FILM ON BOTH SIDES, SEALING AND PROTECTING THE GRAPHICS FROM UNDERGROUND MOISTURE, ACIDS, ALKALIS, AND OTHER SOIL SUBSTANCES. ALL DUWT TAPES SHALL BE PRINTED IN BLACK INK ON AMERICAN PUBLIC WORKS ASSOCIATION (APWA) APPROVED COLORS TO MEET OR EXCEED INDUSTRY STANDARDS. THE FOLLOWING ARE THE APWA COLOR CODES:

UTILITY CONTACTS

DOMINION ENERGY (MICHAEL SHIPE)	571-203-5242
VERIZON COMMUNICATIONS (BRIAN HARLOW)	703-819-6822
COMCAST (AMY GOAD)	301-625-3407
WASHING GAS (MICHAEL STABLEIN)	703-750-4270
PEPCO	202-833-7500
VIRINIGA AMERICAN WATER (STEVEN CHEN)	703-706-3889
SANITARY SEWER - CITY OF ALEXANDRIA	703-746-4014

COLOR	CODES
RED	CAUTION BURIED ELECTRIC POWER LINES, CABLES, CONDIUTS, AND LIGHTING CABLES
YELLOW	CAUTION GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	CAUTION COMMUNICATIONS, ALARM OR SIGNAL LINES, CABLES, OR CONDUITS
BLUE	CAUTION POTABLE WATER
PURPLE	CAUTION RECLAIMED WATER, IRRIGATION AND SLURRY LINES
GREEN	CAUTION SEWER, DRAIN LINES, AND FORCE MAIN

CONSTRUCTION NOTES

THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK AND FOR ANY DAMAGES WHICH MAY OCCUR BY HIS FAILURE TO LOCATE OR PRESERVE THESE UNDERGROUND UTILITIES. IF DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHOULD ENCOUNTER UTILITIES OTHER THAN THOSE SHOWN ON THE PLANS, HE SHALL IMMEDIATELY NOTIFY THE ENGINEER AND TAKE NECESSARY ACTION AND PROPER STEPS TO PROTECT THE FACILITY AND ASSURE THE CONTINUATION OF SERVICE.

1. THE CONTRACTOR SHALL DIG TEST PITS AS REQUIRED FOLLOWING NOTIFICATION AND MARKING OF ALL EXISTING UTILITIES TO VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES TEST HOLES TO BE PERFORMED AT LEAST 30 DAYS PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES ARE TO BE REPORTED IMMEDIATELY TO THE OWNER AND ENGINEER. REDESIGN AND APPROVAL BY REVIEWING AGENCIES SHALL BE OBTAINED, IF REQUIRED.
2. CONSTRUCTION VEHICLES ACCESS TO THE SITE WILL BE BETWEEN 9 AM AND 2 PM TO AVOID SCHOOL AND RUSH HOUR TRAFFIC.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE OWNER AND THE ENGINEER OF ANY CHANGES OR CONDITIONS ATTACHED TO PERMITS OBTAINED FROM ANY AUTHORITY ISSUING PERMITS.
4. THE CONTRACTOR SHALL VISIT THE SITE AND SHALL VERIFY EXISTING CONDITIONS PRIOR TO STARTING CONSTRUCTION.
5. THE CONTRACTOR SHALL CLEAR THE SITE OF ALL TREES, BUILDINGS, FOUNDATIONS, ETC., WITHIN THE LIMITS OF CONSTRUCTION UNLESS OTHERWISE SPECIFIED, AND SHALL BE RESPONSIBLE FOR ENSURING THAT EXISTING UTILITIES ARE DISCONNECTED.
6. ALL AREAS, ON OR OFF-SITE, WHICH ARE DISTURBED BY THIS CONSTRUCTION AND WHICH ARE NOT PAVED OR BUILT UPON, SHALL BE ADEQUATELY STABILIZED TO CONTROL EROSION AND SEDIMENTATION. THE MINIMUM ACCEPTABLE STABILIZATION SHALL CONSIST OF PERMANENT GRASS, SEED MIXTURE TO BE AS RECOMMENDED BY THE CITY AGENT. ALL SLOPES 3:1 AND GREATER SHALL BE SODDED AND PEGGED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE CITY OF ALEXANDRIA.
7. EXISTING WELLS SHALL BE PERMANENTLY ABANDONED IN ACCORDANCE WITH VIRGINIA STATE WATER CONTROL BOARD (VSWCB) REQUIREMENTS.
8. EXISTING SEPTIC FIELDS SHALL BE ABANDONED IN ACCORDANCE WITH VIRGINIA HEALTH DEPARTMENT STANDARDS AND SPECIFICATIONS.
9. ALL OVER HEAD POLE LINES SHALL BE RELOCATED AS REQUIRED BY THE OWNING UTILITY COMPANIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING ALL ARRANGEMENTS AND COORDINATING ALL WORK REQUIRED FOR THE NECESSARY RELOCATIONS.
10. EXISTING PHYSICAL FEATURES ARE TO REMOVED BY THE CONTRACTOR AS REQUIRED.
11. THE DISTURBED LAND WHERE WORK HAS BEEN COMPLETED MUST BE ADEQUATELY STABILIZED ON A DAILY BASIS. THE OWNER AND/OR CONSTRUCTION ACTIVITY OPERATOR MUST DESIGN, INSTALL, IMPLEMENT, AND MAINTAIN POLLUTION PREVENTION MEASURES TO:
    11.1. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATERS;
    11.2. MINIMIZE THE EXPOSURE OF BUILDING MATERIALS, BUILDING PRODUCTS, CONSTRUCTION WASTES, TRASH, LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE, AND OTHER MATERIALS PRESENT ON-SITE TO PRECIPITATION AND TO STORMWATER;
    11.3. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM SPILLS AND LEAKS AND IMPLEMENT CHEMICAL SPILL AND LEAK PREVENTION AND RESPONSE PROCEDURES; AND
    11.4. PROHIBIT THE DISCHARGE OF FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE.
12. TOPS OF EXISTING STRUCTURES WHICH REMAIN IN USE ARE TO BE ADJUSTED IN ACCORDANCE WITH THE GRADING PLAN. ALL PROPOSED STRUCTURE TOP ELEVATIONS ARE TO BE VERIFIED BY THE CONTRACTOR WITH THE SITE GRADING PLANS. IN CASE OF CONFLICT, THE GRADING PLAN SHALL SUPERSEDE PROFILE ELEVATIONS. MINOR ADJUSTMENTS TO MEET FINISHED GRADE ELEVATIONS, IF REQUIRED, SHALL BE MADE IN THE FIELD WITH THE APPROVAL OF SITE INSPECTOR OF THE DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES.
13. EXISTING CONSTRUCTION SHALL BE REMOVED TO NEAREST JOINT. NEW CONSTRUCTION SHALL BE PROVIDED AS SHOWN AND ANY DAMAGED AREA SHALL BE REPAIRED TO MATCH CONDITIONS EXISTING PRIOR TO CONSTRUCTION.
14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE SURE THAT ANY EXISTING LANDSCAPING WHICH IS TO BE RELOCATED ON THE SITE WILL BE CAREFULLY STORED IN A DESIGNATED AREA BEFORE BEING REPLANTED, COORDINATION WITH THE OWNER FOR MUTUALLY AGREEABLE STORAGE LOCATIONS FOR LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PLANT MATERIAL THAT FOES NOT SURVIVE STORAGE AND REPLANTING.
15. CONSTRUCTION STAKEOUT SHALL BE UNDER THE DIRECT SUPERVISION OF A LICENSED LAND SURVEYOR IN THE COMMONWEALTH OF VIRGINIA.
16. SMOOTH GRADE SHALL BE MAINTAINED FROM THE CENTERLINE OF THE EXISTING ROAD TO THE PROPOSED ENTRANCE AND/OR CURB & GUTTER TO PRECLUDE THE FORMING OF FALSE AND/OR THE PONDING OF WATER ON THE ROADWAY.
17. ALL STRIPPING TO MEET THE REQUIREMENTS OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.
18. ALL EROSION CONTROLS SHALL CONFORM TO THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCHB) AND MUST BE SUBMITTED AND APPROVED BY T&ES.
19. ALL EARTHWORK OPERATIONS ARE TO BE PERFORMED UNDER THE FULL TIME, ON-SITE TESTING IN ACCORDANCE WITH CONSTRUCTION SPECIFICATIONS AND GEOTECHNICAL REPORT REQUIREMENTS.
20. THE CONTRACTOR MUST ENSURE THAT POSITIVE DRAINAGE OCCURS ON SITE TO PREVENT PONDING OR DRAINAGE PROBLEMS ON ADJACENT PROPERTIES.
21. CONTRACTOR SHALL ENSURE ALL DISCHARGES ARE IN ACCORDANCE WITH CITY OF ALEXANDRIA CODE TITLE 5, CHAPTER 6, ARTICLE B.
22. DEWATERING AND OTHER CONSTRUCTION RELATED DISCHARGE LIMITS TO THE SEWER SYSTEM ARE REGULATED BY ALEXRENEW PRETREATMENT. CONTRACTOR IS REQUIRED TO CONTACT ALEXRENEW'S PRETREATMENT COORDINATOR AT 703-721-3500 X2020.
23. CONTRACTOR MUST ENSURE THAT THERE IS NO DISTURBANCE ON ADJACENT PROPERTIES.
24. IT IS THE CONTRACTORS RESPONSIBILITY TO MAINTAIN UTILITY SERVICES AT ALL TIMES DURING CONNECTION AND/OR CONSTRUCTION.
25. THE CONTRACTOR IS RESPONSIBLE WITH ALL TRAFFIC CONTROL DURING CONSTRUCTION. NO SIDE AND/OR CROSS WALK SHALL BE CLOSED DURING CONSTRUCTION. IF ANY SIDE AN/OR CROSS WALKS NEED TO BE CLOSED TO FACILITATE THE CONSTRUCTION THEN THE CONTRACTOR SHALL PROVIDE A SIDE AN/OR CROSS WALK CLOSURE PLAN TO THE SATISFACTION OF THE DIRECTOR OF T&ES, CITY OF ALEXANDRIA.

ENVIRONMENTAL SITE ASSESSMENT NOTES

1. THE MAJORITY OF PROPOSED WORK IS WATER DEPENDENT AND IS LOCATED WITHIN THE RESOURCE PROTECTION AREA. MINOR TEMPORARY IMPACTS TO ISOLATED OVERBANK WETLANDS WILL OCCUR FROM PROPOSED MEASURES. THE CITY DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES, OFFICE OF ENVIRONMENTAL QUALITY MUST BE NOTIFIED IF UNUSUAL OR UNANTICIPATED CONTAMINATION OR UNDERGROUND STORAGE TANKS, DRUMS, AND CONTAINERS ARE ENCOUNTERED AT THE SITE. IF THERE IS ANY DOUBT ABOUT PUBLIC SAFETY OR A RELEASE TO THE ENVIRONMENT, THE ALEXANDRIA FIRE DEPARTMENT MUST BE CONTACTED IMMEDIATELY BY CALLING 911. THE TANK OR CONTAINER'S REMOVAL, ITS CONTENTS, ANY SOIL CONTAMINATION AND RELEASES TO THE ENVIRONMENT WILL BE HANDLED IN ACCORDANCE WITH FEDERAL, STATE, AND CITY REGULATIONS.
2. ALL WELLS TO BE DEMOLISHED IN THIS PROJECT, INCLUDING MONITORING WELLS MUST BE CLOSED IN ACCORDANCE WITH STATE WELL REGULATION. CONTACT JOE FIANDER AND COORDINATE WITH THE ALEXANDRIA HEALTH DEPARTMENT AT 703-838-4400 EXT 255.
3. CONSTRUCTION ACTIVITIES ARE PERMITTED TO OCCUR BETWEEN THE FOLLOWING HOURS:
   - MONDAY THROUGH FRIDAY FROM 8 AM TO 6 PM AND
   - SATURDAYS FROM 10 AM TO 5 PM.
   - NO CONSTRUCTION ACTIVITIES ARE PERMITTED ON SUNDAYS.

   PILE DRIVING IS FURTHER RESTRICTED TO THE FOLLOWING HOURS:
   - MONDAY THROUGH FRIDAY FROM 9 AM TO 6 PM AND
   - SATURDAYS FROM 10 AM TO 4 PM.

RESOURCE PROTECTION AREA NOTES

LEGEND

- PROPERTY BOUNDARY
- 160 — EX. MAJOR CONTOUR
- 161 — EX. MINOR CONTOUR
- LOS — LIMITS OF 2025 SURVEY
- EXISTING WINGWALL
- EXISTING STREAM CENTERLINE
- SD_x — EXISTING STORM SEWER
- SS_x — EXISTING SANITARY SEWER
- WET WET — EXISTING WETLAND
- WUS — EXISTING WATERS OF THE UNITED STATES
- S D — EXISTING MANHOLE
- EXISTING RIPRAP
- EXISTING PEDESTRIAN BRIDGE
- SPECIMEN TREE (30"+)
- SIGNIFICANT TREE (24"-29")
- TREES LESS THAN 24"
- CRITICAL ROOT ZONE
- TREE TO BE REMOVED
- PROPOSED RIP RAP
- 100 YR — EXISTING 100 YEAR WATER SURFACE ELEVATION
- LOD — PROPOSED LIMIT OF DISTURBANCE
- RPA — RESOURCE PROTECTION AREA (100')
- LTS — LIMIT OF TREE SURVEY
- 0+00 — PROPOSED STREAM CENTERLINE
- PROPOSED FENCE SPECIFY FENCE TYPE
- PROPOSED BOULDER CASCADE
- PROPOSED GRAVITY BLOCK WALL
- HVF — CHAIN LINK FENCE
- CONSTRUCTION ACCESS PATH
- SSF SSF — SUPER SILT FENCE
- STOCKPILE/STAGING AREA
- SCE — STABILIZED CONSTRUCTION ENTRAANCE
- FB — FILTER BAG
- PUMP AROUND PRACTICE
- PROPOSED CONCRETE ENCASEMENT
- CONSTRUCTION ACCESS ROAD
- X X — EXISTING FENCE
- MATCHLINE
- TEMPORARY SANDBAG DIVERSION
- 160 — PR. MAJOR CONTOUR
- 161 — PR. MINOR CONTOUR
- RPA — RESOURCE PROTECTION AREA (100')
- TP TP — TREE PLANKING
- TPF TPF — TREE PROTECTION FENCE

SANITARY AND STORMWATER FEATURE IDS

SANITARY SEWER

007531 SANITARY MANHOLE
RIM = 128.53'
18" DIP INV. IN = 117.43' (FROM #50035)
18" RCP INV. OUT = 117.42' (TO S.E.)

500035 SANITARY MANHOLE
RIM = 128.19'
18" DIP INV. IN = NOT VISIBLE (FROM #007756)
18" DIP INV. OUT = NOT VISIBLE (TO #007531)
PIPES OFFSET
B.O.S. = 121.29'

007756 SANITARY MANHOLE
RIM = 130.57'
15" DIP INV. IN = 122.47' (FROM #007529)
18" DIP INV. OUT = 122.42' (TO #007531)

007529 SANITARY MANHOLE
RIM = 132.42'
15" DIP INV. IN = 125.52' (FROM #007530)
15" DIP INV. OUT = 125.50' (TO #500035)

007530 SANITARY MANHOLE
RIM = 136.04'
15" DIP INV. IN = 128.59' (FROM #000041)
15" DIP INV. OUT = 128.54' (TO #007529)

000041 SANITARY MANHOLE
RIM = 145.13'
12" DIP INV. IN = 139.23' (FROM N.E.)
15" DIP INV. IN = 138.08' (FROM #000042)
15" DIP INV. OUT = 137.98' (TO #007530)

000047 SANITARY MANHOLE
RIM = 150.65'
12" DIP INV. IN = 139.85' (FROM NORTH)
12" DIP INV. IN = 139.85' (FROM N.E.)
12" DIP INV. OUT = 139.80' (TO #000041)

000042 SANITARY MANHOLE
RIM = 152.10'
15" DIP INV. IN = 144.25' (FROM #000040)
15" DIP INV. OUT = 144.23' (TO #000041)

000040 SANITARY MANHOLE
RIM = 166.94'
18" PVC (GIS) INV. IN = 150.34' (FROM N.E.)
(PIPE SIZE NOT VISIBLE)
15" RCP INV. IN = 150.12' (FROM S.W.)
15" RCP INV. OUT = 150.09' (TO #000042)
(TRANSITION TO DIP NOT VISIBLE)

STORM SEWER

RA-1 STORM MANHOLE
RIM = 151.14'
21" RCP INV. IN = 142.54' (FROM WEST)
21" RCP INV. OUT = 139.59' (TO RA-2)

RA-2 21" RCP INV. OUT = 133.67' (FROM RA-1)

RA-3 HEADWALL
15" CMP INV. = 138.14' (TO RA-4)

RA-4 ENDWALL
15" CMP INV. = 137.04' (FROM RA-3)

014476 36" CMP INV. = 138.59' (FROM #000030)
(TRANSITION FROM 27" RCP NOT VISIBLE)

000030 STORM MANHOLE
RIM = 153.54'
12" RCP INV. IN = 151.44' (FROM S.E.)
18" RCP INV. IN = 147.84' (FROM S.E.)
27" RCP INV. OUT = 144.94' (TO #014476)
(TRANSITION TO 36" CMP NOT VISIBLE)

000018 STORM MANHOLE
RIM = 150.10'
GIS INV. IN = NOT VISIBLE (FROM N.E.)
18" RCP INV. IN = NOT VISIBLE (FROM #000106)
36" RCP INV. IN = 143.95' (FROM NORTH)
36" RCP INV. OUT = 144.00' (TO #000140)
(STRUCTURE IS SURCHARGED)

000106 CURB DROP INLET
RIM = 149.45'
18" RCP INV. OUT = 144.90' (TO #000018)

000140 ENDWALL (BROKEN)
36" RCP INV. = 141.81' (FROM #000018)

000124 ENDWALL
72" RCP INV. = 148.55' (FROM #000015)

000015 STORM MANHOLE
RIM = 160.04'
15" RCP INV. IN = NOT VISIBLE (FROM S.W.)
72" RCP INV. IN = NOT VISIBLE (FROM N.W.)
72" RCP INV. OUT = NOT VISIBLE (TO #000124)
B.O.S. = 149.44'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.:	23086	
DATE OF PLAN ISSUANCE:		
CONSULTANT PROJECT ID.:	60742359	
DESIGNED BY:	SB, TN	DATE: 10/2025
DRAWN BY:	SB, TN	DATE: 10/2025
CHECKED BY:	BA	DATE: 10/2025
APPROVED BY:	BA	DATE: 10/2025

SEAL:

LEGEND

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: G-03

SCALE: N/A

SHEET: 03 OF 55

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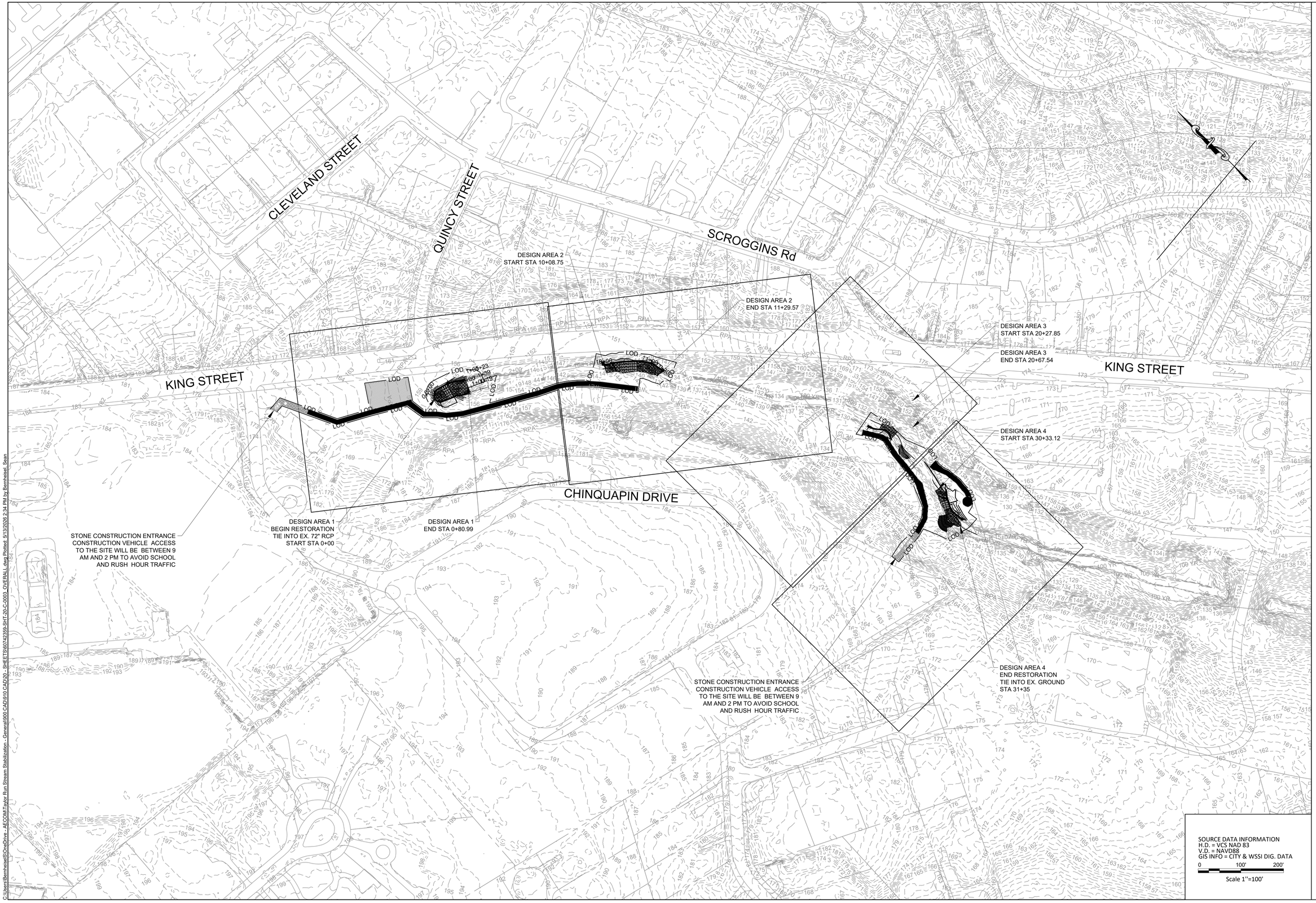

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

DATE	REVISIONS BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

OVERALL SITE PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
O-01
SCALE:
1:100
SHEET:
04 OF 55

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KEY TO SHEETS
1" = 500'

SH 05
SH 06
SH 07
SH 08

KING ST
SCHOOLHOUSE RD
KING ST

QUINCY ST
KING ST
EX. CONC. WALK
REMOVE EXISTING DEBRIS BUILDUP
RIPRAP/CONCRETE DEBRIS TO BE REMOVED AND DISPOSED OFF-SITE
DEMOLISH AND DISPOSE OF EXISTING LEFT WINGWALL
CAMERA POLE NO# 000124
AREA OF DEBRIS BUILDUP
METAL POST
000042
THALWEG
000015
72" RCP
15" DIP
15" RCP
000040
18" PVC (SAGS)
SIGN W/ METAL PLAGARD
MILE MARKER 0.0
EX. 4' DIRT TRAIL
EX. BRICK BUILDING (INDOOR POOL)
RPA
LOS
SS
100 YR
MATCH LINE - SEE SHEET EC-02

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23066
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

EXISTING CONDITIONS AND DEMOLITION PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: EC-01
SCALE: 1:20
SHEET: 05 OF 55

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KING ST

DEMOLISH AND DISPOSE OF EXISTING ENDWALL

CONCRETE DEBRIS TO BE REMOVED

APPROXIMATELY 12 LF OF 12" DIP PIPE EXPOSED IN STREAM

REMOVE AND DISPOSE OF EXISTING WOODY DEBRIS BUILDUP

AREA OF DEBRIS BUILDUP

MILE MARKER 0.1

3' WOODEN RAILING

3.5' WOODEN RAILING

EX. CONC. WALK

CONC. SIDEWALK

EX. 4' DIRT TRAIL

EX. 18' ASP. TRAIL

EX. 4' ASP. TRAIL

THALWEG

MATCH LINE - SEE SHEET EC-01

MATCH LINE - SEE SHEET EC-03

KEY TO SHEETS
1" = 500'

KING ST
SCHOOLHOUSE RD
KING ST
SH 05
SH 06
SH 07
SH 08

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

EXISTING CONDITIONS AND DEMOLITION PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
EC-02
SCALE:
1:20
SHEET:
06 OF 55

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MATCH LINE - SEE SHEET EC-02

MATCH LINE - SEE SHEET EC-04

DEMOLISH EXISTING MANHOLE CONCRETE SKIRT

EXISTING EXPOSED MANHOLE

REMOVE AND DISPOSE OF EXISTING WOODY DEBRIS BUILDUP

KEY TO SHEETS
1" = 500'

SH 05

SH 06

SH 07

SH 08

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

EXISTING CONDITIONS AND DEMOLITION PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
EC-03

SCALE:
N/A

SHEET:
07 OF 55

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MATCH LINE - SEE SHEET EC-03

REMOVE AND DISPOSE OF EXISTING WOODY DEBRIS BUILDUP

APPROXIMATELY 23 LF OF 18" SANITARY DIP PIPE EXPOSED IN STREAM

DEMOLISH 63 LF EXISTING VINYL CLAD RETAINING WALL, DISPOSE OFF-SITE

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

KEY TO SHEETS
1" = 500'

KING ST
SCROGGINS RD
SH 05
SH 06
SH 07
SH 08
KING ST

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

EXISTING CONDITIONS AND DEMOLITION PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
EC-04

SCALE:
N/A

SHEET:
08 OF 55

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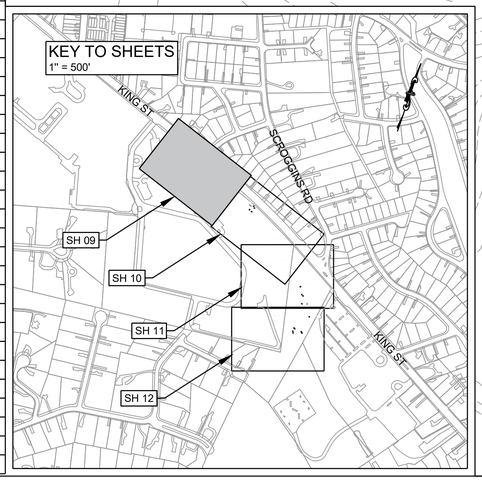
Tree #	Common Name	Scientific Name	Condition	DBH
1	Black locust	*Robinia pseudoacacia*	2	24
2	Black locust	*Robinia pseudoacacia*	4	25
3	White mulberry	*Morus alba*	Dead	22
4	Black locust	*Robinia pseudoacacia*	Dead	22
5	Black locust	*Robinia pseudoacacia*	Dead	22
6	Black locust	*Robinia pseudoacacia*	4	6
7	Black locust	*Robinia pseudoacacia*	2	6
8	Unknown tree	-	Dead	14
9	American elm	*Ulmus americana*	4	7
10	White mulberry	*Morus alba*	Dead	8
11	White mulberry	*Morus alba*	4	12
12	Black locust	*Robinia pseudoacacia*	4	13
13	White mulberry	*Morus alba*	4	10
14	Tree of heaven	*Ailanthus altissima*	4	17
15	Green ash	*Fraxinus pennsylvanica*	4	8
16	Tree of heaven	*Ailanthus altissima*	Dead	13
17	Tree of heaven	*Ailanthus altissima*	4	15
18	Tree of heaven	*Ailanthus altissima*	Dead	15
19	White mulberry	*Morus alba*	4	7
20	Box elder	*Acer negundo*	4	7
21	Box elder	*Acer negundo*	4	7
22	Black cherry	*Prunus serotina*	Dead	9
23	Littleleaf linden	*Tilia cordata*	3	10
24	Black locust	*Robinia pseudoacacia*	3	14
25	Tree of heaven	*Ailanthus altissima*	4	16
26	Black locust	*Robinia pseudoacacia*	4	16
27	Red maple	*Acer rubrum*	3	12
28	Red maple	*Acer rubrum*	3	6
29	Mimosa	*Albizia julibrissin*	4	8
30	American elm	*Ulmus americana*	4	12
31	Box elder	*Acer negundo*	4	8
32	Black locust	*Robinia pseudoacacia*	4	12
33	Unknown tree	-	Dead	8
34	White mulberry	*Morus alba*	4	11
35	White mulberry	*Morus alba*	4	26
36	Black locust	*Robinia pseudoacacia*	3	15
37	Black locust	*Robinia pseudoacacia*	4	13
38	Black locust	*Robinia pseudoacacia*	4	18
39	Sweet cherry	*Prunus avium*	3	7
40	Black locust	*Robinia pseudoacacia*	Dead	12
41	Black locust	*Robinia pseudoacacia*	3	19
42	Black locust	*Robinia pseudoacacia*	3	16
43	American elm	*Ulmus americana*	4	9
44	American holly	*Ilex opaca*	3	6
45	American holly	*Ilex opaca*	3	6
46	Black locust	*Robinia pseudoacacia*	Dead	20
47	Black locust	*Robinia pseudoacacia*	Dead	23
48	Red maple	*Acer rubrum*	4	10
49	Black cherry	*Prunus serotina*	4	22
50	Silver maple	*Acer saccharinum*	3	13
51	Black locust	*Robinia pseudoacacia*	Dead	12
52	Black cherry	*Prunus serotina*	Dead	10
53	White mulberry	*Morus alba*	4	8
304	Slippery elm	*Ulmus rubra*	Dead	11
305	Slippery elm	*Ulmus rubra*	Dead	19
306	Black locust	*Robinia pseudoacacia*	4	23
307	Slippery elm	*Ulmus rubra*	3	7
308	Black locust	*Robinia pseudoacacia*	Dead	19
309	White mulberry	*Morus alba*	4	15
310	Black locust	*Robinia pseudoacacia*	Dead	22
311	White mulberry	*Morus alba*	Dead	16
312	Black locust	*Robinia pseudoacacia*	Dead	24,12
313	White mulberry	*Morus alba*	Dead	10
314	Unknown tree	-	Dead	7,6
317	White mulberry	*Morus alba*	Dead	13,12
318	Unknown tree	-	Dead	11
319	Silver maple	*Acer saccharinum*	4	24
320	Slippery elm	*Ulmus rubra*	Dead	18
321	Silver maple	*Acer saccharinum*	4	6
322	Silver maple	*Acer saccharinum*	4	12
323	Unknown tree	-	Dead	8
324	White mulberry	*Morus alba*	4	10
325	Silver maple	*Acer saccharinum*	4	42
326	Unknown tree	-	Dead	10
327	Black locust	*Robinia pseudoacacia*	Dead	25
328	White mulberry	*Morus alba*	Dead	11,7
329	Unknown tree	-	Dead	7
331	Green ash	*Fraxinus pennsylvanica*	Dead	14
332	Silver maple	*Acer saccharinum*	Dead	15
333	Black cherry	*Prunus serotina*	Dead	21
334	Unknown tree	-	Dead	8
335	White mulberry	*Morus alba*	4	15
336	Unknown tree	-	Dead	12

Tree #	Common Name	Scientific Name	Condition	DBH
337	Unknown tree	-	Dead	11
338	Silver maple	*Acer saccharinum*	4	24
339	Unknown tree	-	Dead	10
340	White mulberry	*Morus alba*	Dead	12
341	Norway maple	*Acer platanoides*	Dead	14
342	Silver maple	*Acer saccharinum*	4	38
343	Mulberry	*Morus sp.*	Dead	16
344	Black walnut	*Juglans nigra*	4	18
345	Slippery elm	*Ulmus rubra*	3	8
346	Black locust	*Robinia pseudoacacia*	Dead	14
347	Unknown snag	-	Dead	9
348	Black locust	*Robinia pseudoacacia*	Dead	14
349	Unknown snag	-	Dead	9
350	Unknown snag	-	Dead	9
351	Slippery elm	*Ulmus rubra*	4	13
352	Black locust	*Robinia pseudoacacia*	Dead	19
353	White mulberry	*Morus alba*	4	13
354	Unknown snag	-	Dead	6
355	Black cherry	*Prunus serotina*	4	20
356	Unknown snag	-	Dead	8
357	Unknown snag	-	Dead	12
358	Unknown snag	-	Dead	13
359	Unknown snag	-	Dead	9
360	Unknown snag	-	Dead	9
361	Norway maple	*Acer platanoides*	4	11
362	White mulberry	*Morus alba*	Dead	9
363	Unknown snag	-	Dead	9
364	Unknown snag	-	Dead	9
365	Black cherry	*Prunus serotina*	4	24
366	Unknown tree	-	Dead	9
367	Black locust	*Robinia pseudoacacia*	4	22
368	Green ash	*Fraxinus pennsylvanica*	Dead	26
369	Silver maple	*Acer saccharinum*	3	12
370	Black cherry	*Prunus serotina*	4	10
371	White mulberry	*Morus alba*	4	16
372	Norway maple	*Acer platanoides*	Dead	8
373	Unknown snag	-	Dead	13
374	Unknown tree	-	Dead	11
375	Slippery elm	*Ulmus rubra*	4	14
395	Unknown tree	-	Dead	11

NOTES:
1. TREES LISTED IN BOLD WITHIN THE TREE TABLE WERE DESIGNATED BY THE CONSENSUS BUILDING GROUP (CBG) AS TREES TO PRESERVE. LABELS FOR THESE TREES ARE UNDERLINED WITHIN THE PLAN VIEW.
2. TREES ARE TO BE TRIMMED ALONG THE ACCESS PATH AND STOCKPILE AREAS TO ALLOW FOR EQUIPMENT AND VEHICLE CLEARANCE WHERE NECESSARY.
3. ALL TREES TO BE REMOVED SHALL BE FLUSH CUT WITH STUMPS AND ROOTS LEFT IN PLACE FOR STABILIZATION AND HABITAT UNLESS THE AREA REQUIRES GRADING.
4. TO REDUCE SOIL COMPACTION FOLLOWING CONSTRUCTION, THE TEMPORARY ACCESS PATH AND ALL STOCKPILE AREAS SHALL BE SURFACED WITH 8-12" OF MULCH AND TIMBER DECK MATTING. AFTER CONSTRUCTION, DECK MATS WILL BE REMOVED AND STOCKPILE AREAS WILL BE ROTOTILLED AND SEEDED WITH RIPARIAN, POLLINATOR MEADOW, AND OR TURF GRASS SEED MIX (ADD PER THE APPROVED PLANTING PLAN).
5. ALL ASH TREES SHALL BE CHIPPED AND THEN DISPOSED OF OFF-SITE WITH ANY OTHER CHIPPED MATERIAL.
6. IT IS ASSUMED THAT ALL TREES WITHIN THE LIMITS OF DISTURBANCE WILL NOT BE REMOVED. PRIOR TO CONSTRUCTION, THE LIMITS OF DISTURBANCE (LOD) SHALL BE WALKED BY WSSI, CONTRACTOR, AND CITY ARBORIST TO CONFIRM TREE REMOVAL. IN THE EVENT THAT THE CONTRACTOR BELIEVES A TREE WITHIN THE LOD COULD BE SAVED, THE CONTRACTOR SHALL CONTACT WETLAND STUDIES AND SOLUTIONS, INC. AND HAVE THE CITY DETERMINE IF THE TREE SHOULD BE SAVED OR REMOVED.
7. THE CONTRACTOR WILL IDENTIFY WHICH TREES HAVE POTENTIAL FOR DAMAGE DUE TO CONSTRUCTION ACTIVITIES. THESE TREES WILL BE PLANKED PER TRUNK ARMORING DETAIL ON SHEET ESC-06. THE CITY MAY REQUEST FOR ADDITIONAL TREES TO BE PLANKED AT THEIR DISCRETION.



SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

DATE	REVISIONS BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

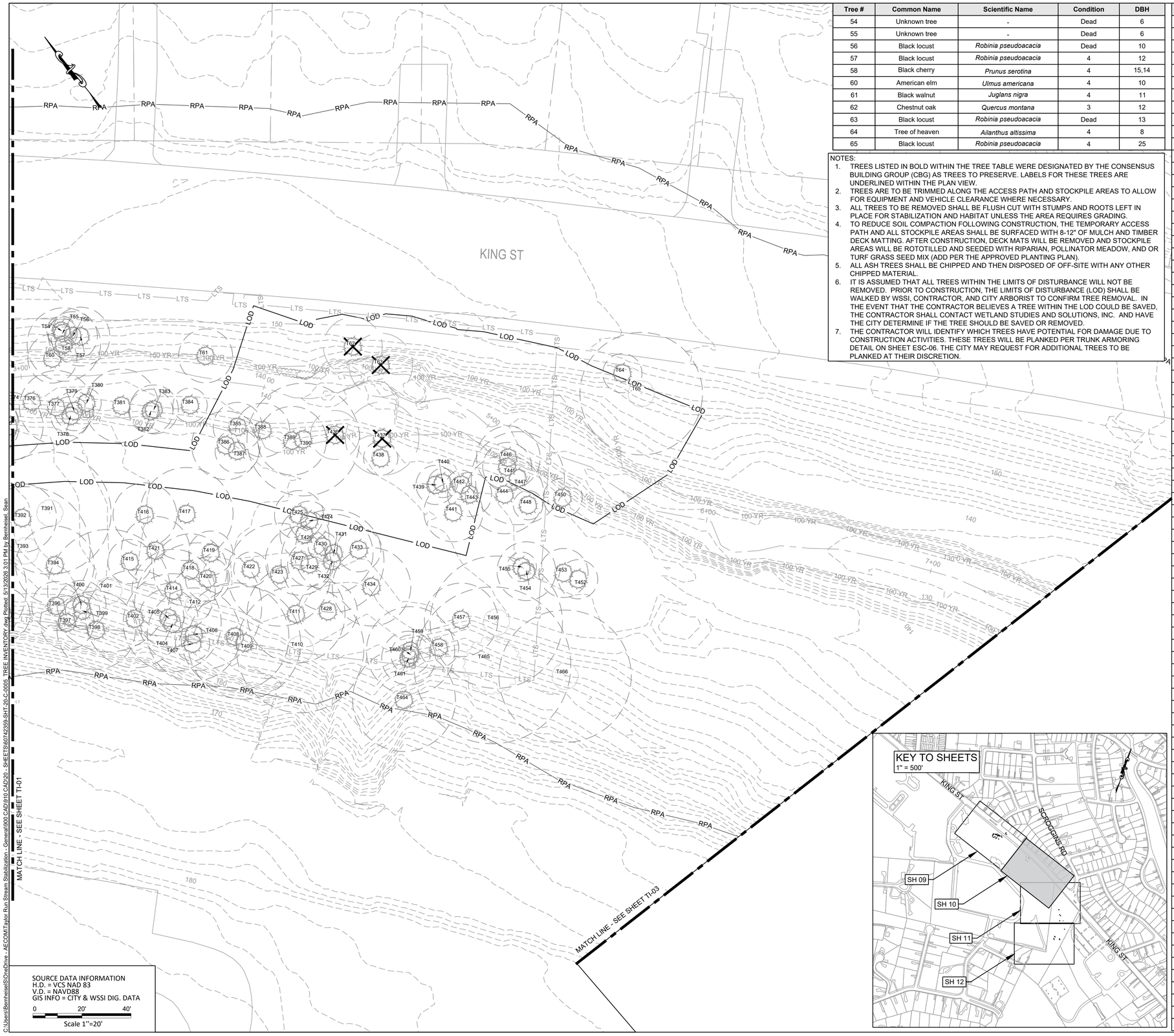
SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: TI-01
SCALE: 1:20
SHEET: 09 OF 55

C:\Users\BernhiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\800 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0005_TREE INVENTORY.dwg Plotted: 5/13/2026 2:57 PM by Bernhisel, Sean



Tree #	Common Name	Scientific Name	Condition	DBH
54	Unknown tree	-	Dead	6
55	Unknown tree	-	Dead	6
56	Black locust	*Robinia pseudoacacia*	Dead	10
57	Black locust	*Robinia pseudoacacia*	4	12
58	Black cherry	*Prunus serotina*	4	15,14
60	American elm	*Ulmus americana*	4	10
61	Black walnut	*Juglans nigra*	4	11
62	Chestnut oak	*Quercus montana*	3	12
63	Black locust	*Robinia pseudoacacia*	Dead	13
64	Tree of heaven	*Ailanthus altissima*	4	8
65	Black locust	*Robinia pseudoacacia*	4	25

NOTES:

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7. THE CONTRACTOR WILL IDENTIFY WHICH TREES HAVE POTENTIAL FOR DAMAGE DUE TO CONSTRUCTION ACTIVITIES. THESE TREES WILL BE PLANKED PER TRUNK ARMORING DETAIL ON SHEET ESC-06. THE CITY MAY REQUEST FOR ADDITIONAL TREES TO BE PLANKED AT THEIR DISCRETION.

Tree #	Common Name	Scientific Name	Condition	DBH
376	Black locust	*Robinia pseudoacacia*	Dead	19
377	Black locust	*Robinia pseudoacacia*	Dead	15
378	Sweet cherry	*Prunus avium*	Dead	8
379	Unknown snag	-	Dead	8
380	Green ash	*Fraxinus pennsylvanica*	4	6
381	Silver maple	*Acer saccharinum*	4	15
382	White mulberry	*Morus alba*	Dead	9
383	White mulberry	*Morus alba*	Dead	10
384	Silver maple	*Acer saccharinum*	4	7
385	Black cherry	*Prunus serotina*	4	10
386	Slippery elm	*Ulmus rubra*	4	14
387	Unknown snag	-	Dead	9
388	Norway maple	*Acer platanoides*	Dead	11
389	Black cherry	*Prunus serotina*	4	14
390	Black locust	*Robinia pseudoacacia*	4	23
391	American sycamore	*Platanus occidentalis*	3	25
392	Silver maple	*Acer saccharinum*	4	14
393	Silver maple	*Acer saccharinum*	4	26
394	Silver maple	*Acer saccharinum*	3	16
396	Sassafras	*Sassafras albidum*	4	10
397	Sassafras	*Sassafras albidum*	3	11
398	Red maple	*Acer rubrum*	3	16
399	Sassafras	*Sassafras albidum*	3	7
400	Sassafras	*Sassafras albidum*	3	10
401	Tulip poplar	*Liriodendron tulipifera*	4	25
402	Tulip poplar	*Liriodendron tulipifera*	Dead	20,20
404	Tulip poplar	*Liriodendron tulipifera*	3	20
405	Tulip poplar	*Liriodendron tulipifera*	3	12
406	Tulip poplar	*Liriodendron tulipifera*	3	19
407	Red maple	*Acer rubrum*	4	7
408	Tulip poplar	*Liriodendron tulipifera*	3	22
409	Tulip poplar	*Liriodendron tulipifera*	4	23
410	Tulip poplar	*Liriodendron tulipifera*	4	26
411	Maple	*Acer sp.*	4	20
412	Tulip poplar	*Liriodendron tulipifera*	4	26,23
414	Tulip poplar	*Liriodendron tulipifera*	Dead	17
415	Silver maple	*Acer saccharinum*	3	9
416	Slippery elm	*Ulmus rubra*	Dead	13
417	Silver maple	*Acer saccharinum*	4	19
418	Silver maple	*Acer saccharinum*	Dead	15
419	Red maple	*Acer rubrum*	4	9
420	Silver maple	*Acer saccharinum*	4	9
421	Slippery elm	*Ulmus rubra*	4	14
422	Green ash	*Fraxinus pennsylvanica*	Dead	7
423	Silver maple	*Acer saccharinum*	4	21
424	Slippery elm	*Ulmus rubra*	4	8
425	Slippery elm	*Ulmus rubra*	4	10
426	Slippery elm	*Ulmus rubra*	4	10
427	Silver maple	*Acer saccharinum*	4	14
428	Unknown snag	-	Dead	12
429	Red maple	*Acer rubrum*	4	9
430	Slippery elm	*Ulmus rubra*	4	6
431	Silver maple	*Acer saccharinum*	3	16
432	Silver maple	*Acer saccharinum*	4	21
433	Silver maple	*Acer saccharinum*	4	9
434	Unknown tree	-	Dead	16
436	Unknown tree	-	Dead	10
437	Slippery elm	*Ulmus rubra*	4	15
438	Willow oak	*Quercus alba*	3	7
439	American elm	*Ulmus americana*	4	8
440	Black cherry	*Prunus serotina*	Dead	6
441	Black locust	*Robinia pseudoacacia*	Dead	12
442	Unknown snag	-	Dead	6
443	White mulberry	*Morus alba*	4	9
444	Black cherry	*Prunus serotina*	Dead	16
445	Unknown tree	-	Dead	10
446	Red maple	*Acer rubrum*	4	13
447	Slippery elm	*Ulmus rubra*	4	19
448	Unknown tree	-	Dead	6
450	Red maple	*Acer rubrum*	4	8
452	American elm	*Ulmus americana*	Dead	8
453	Slippery elm	*Ulmus rubra*	4	10
454	Slippery elm	*Ulmus rubra*	Dead	12
455	American elm	*Ulmus americana*	Dead	6
456	Tulip poplar	*Liriodendron tulipifera*	3	27
457	Red maple	*Acer rubrum*	4	15
458	American beech	*Fagus grandifolia*	3	8
459	American beech	*Fagus grandifolia*	3	18
460	American beech	*Fagus grandifolia*	3	8
461	Unknown snag	-	Dead	11
464	Unknown snag	-	Dead	21
466	Black oak	*Quercum velutina*	3	27
465	Chestnut oak	*Quercus montana*	2	32

NOT FOR CONSTRUCTION

REVISIONS		
BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

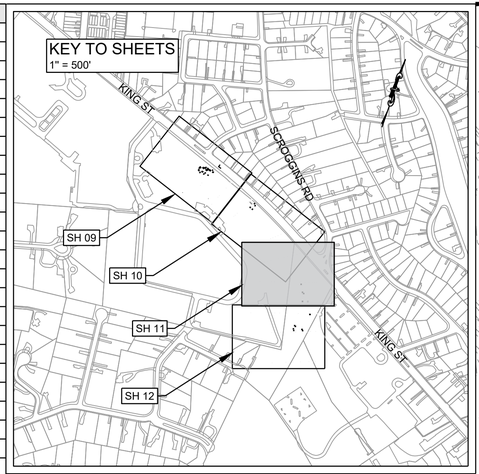
TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
TI-02
SCALE:
1:20
SHEET:
10 OF 55

C:\Users\BernheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\610 CAD\20 - SHEETS\60742359-SHT-20-C-0005_TREE INVENTORY.dwg Plotted: 5/13/2026 3:01 PM by Bernheisel, Sean

Tree #	Common Name	Scientific Name	Condition	DBH
131	Chestnut oak	*Quercus montana*	Dead	30
134	Chestnut oak	*Quercus montana*	Dead	22
135	Common hackberry	*Celtis occidentalis*	Dead	6
136	Tulip poplar	*Liriodendron tulipifera*	3	28
137	Unknown tree	-	Dead	11
138	**Tulip poplar**	***Liriodendron tulipifera***	**3**	**35**
139	**American elm**	***Ulmus americana***	**3**	**7**
141	**Tulip poplar**	***Liriodendron tulipifera***	**3**	**20,16**
142	**Green ash**	***Fraxinus pennsylvanica***	**Dead**	**11**
143	**Green ash**	***Fraxinus pennsylvanica***	**Dead**	**16**
144	Red maple	*Acer rubrum*	3	7
145	Red maple	*Acer rubrum*	3	9
146	American elm	*Ulmus americana*	4	7
147	American elm	*Ulmus americana*	4	8
148	Tulip poplar	*Liriodendron tulipifera*	2	19
149	American elm	*Ulmus americana*	3	6
150	Tulip poplar	*Liriodendron tulipifera*	3	14
151	Tulip poplar	*Liriodendron tulipifera*	3	9
583	Red maple	*Acer rubrum*	1	44
584	Red maple	*Acer rubrum*	3	6,14
585	Red maple	*Acer rubrum*	3	14
586	American holly	*Ilex opaca*	3	6
587	Black cherry	*Prunus serotina*	Dead	8
588	Scarlet oak	*Quercus coccinea*	2	24
589	Tulip poplar	*Liriodendron tulipifera*	3	34
590	Tulip poplar	*Liriodendron tulipifera*	3	14
591	Tulip poplar	*Liriodendron tulipifera*	1	44
592	White oak	*Quercus alba*	1	21
593	Hickory species	*Carex sp.*	3	11
594	Tulip poplar	*Liriodendron tulipifera*	2	24
595	Red maple	*Acer rubrum*	3	7
596	Red maple	*Acer rubrum*	3	15
597	Tulip poplar	*Liriodendron tulipifera*	3	29
598	Red maple	*Acer rubrum*	3	14
599	Red maple	*Acer rubrum*	3	19
600	Red maple	*Acer rubrum*	3	15
601	Red maple	*Acer rubrum*	Dead	13
602	Red maple	*Acer rubrum*	3	13,8,7
603	Red maple	*Acer rubrum*	3	16
604	Red maple	*Acer rubrum*	3	26
605	Red maple	*Acer rubrum*	3	12
606	Unknown tree	-	Dead	6
607	Tulip poplar	*Liriodendron tulipifera*	3	12
608	**Red maple**	***Acer rubrum***	**3**	**20**
609	**Red maple**	***Acer rubrum***	**3**	**16**
610	Red maple	*Acer rubrum*	Dead	6
611	Red maple	*Acer rubrum*	3	15
612	Black locust	*Robinia pseudoacacia*	Dead	15
613	**Tulip poplar**	***Liriodendron tulipifera***	**3**	**17**
614	Red maple	*Acer rubrum*	3	18
615	Maple	*Acer sp.*	4	7
620	Red maple	*Acer rubrum*	3	12
621	Red maple	*Acer rubrum*	3	15
622	Red maple	*Acer rubrum*	Dead	8
623	Tulip poplar	*Liriodendron tulipifera*	4	25
624	Red maple	*Acer rubrum*	3	14
625	Willow oak	*Quercus alba*	Dead	37
627	Red maple	*Acer rubrum*	3	7
628	Red maple	*Acer rubrum*	3	8
629	Tulip poplar	*Liriodendron tulipifera*	1	21,28,42
630	Unknown tree	-	Dead	7
631	Black cherry	*Prunus serotina*	3	19
632	Red maple	*Acer rubrum*	3	10
633	Red maple	*Acer rubrum*	3	9
634	Black cherry	*Prunus serotina*	Dead	16



NOTES:
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MATCH LINE - SEE SHEET TI-02

MATCH LINE - SEE SHEET TI-04

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: __BA__ DATE: 10/2025
APPROVED BY: __BA__ DATE: 10/2025

SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

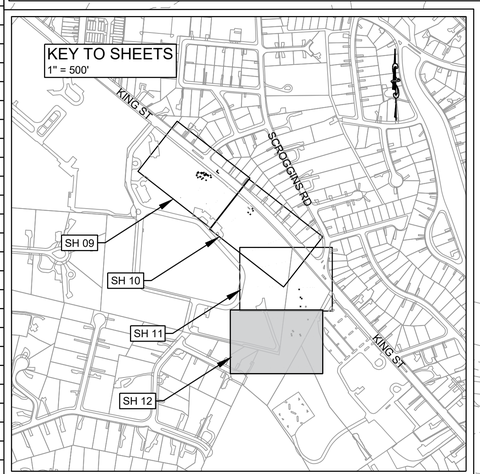
DRAWING: TI-03
SCALE: N/A
SHEET: 11 OF 55

C:\Users\BenheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0005_TREE INVENTORY.dwg Plotted: 5/13/2026 3:06 PM by Benheisel, Sean

Tree #	Common Name	Scientific Name	Condition	DBH
152	Tulip poplar	*Liriodendron tulipifera*	2	17
153	Tulip poplar	*Liriodendron tulipifera*	3	11
154	Red maple	*Acer rubrum*	3	18
155	Tulip poplar	*Liriodendron tulipifera*	2	42
156	Honeylocust	*Gleditsia triacanthos*	Dead	8
157	Tulip poplar	*Liriodendron tulipifera*	2	7
158	Eastern cottonwood	*Populus deltoides*	3	28
159	American elm	*Ulmus americana*	3	6
160	American elm	*Ulmus americana*	3	10
161	Black locust	*Robinia pseudoacacia*	4	17
162	Tulip poplar	*Liriodendron tulipifera*	3	18
163	White mulberry	*Morus alba*	4	7
164	Unknown tree	-	Dead	15
165	Tulip poplar	*Liriodendron tulipifera*	3	14
166	Tulip poplar	*Liriodendron tulipifera*	2	20
167	Unknown tree	-	Dead	6
168	Slippery elm	*Ulmus rubra*	3	6
169	Tulip poplar	*Liriodendron tulipifera*	3	20
170	Red maple	*Acer rubrum*	2	7
171	Slippery elm	*Ulmus rubra*	3	9
172	Slippery elm	*Ulmus rubra*	3	6
173	American sycamore	*Platanus occidentalis*	2	22
174	Red maple	*Acer rubrum*	2	7
175	Black cherry	*Prunus serotina*	4	6
176	Red maple	*Acer rubrum*	3	6
177	Black cherry	*Prunus serotina*	Dead	16
178	Red maple	*Acer rubrum*	3	8
179	Red maple	*Acer rubrum*	2	10
180	Red maple	*Acer rubrum*	2	12
181	Tulip poplar	*Liriodendron tulipifera*	2	6
182	Red maple	*Acer rubrum*	2	11
183	Red maple	*Acer rubrum*	3	8
184	Black cherry	*Prunus serotina*	Dead	19
185	Tulip poplar	*Liriodendron tulipifera*	2	6
186	Red maple	*Acer rubrum*	3	6
187	Tulip poplar	*Liriodendron tulipifera*	3	19
188	Red maple	*Acer rubrum*	Dead	18
189	Unknown tree	-	4	7
616	Black locust	*Robinia pseudoacacia*	Dead	11
617	Red maple	*Acer rubrum*	3	17
618	Black locust	*Robinia pseudoacacia*	Dead	8
619	**Black cherry**	***Prunus serotina***	**4**	**14**
635	Sassafras	*Sassafras albidum*	Dead	8
636	Tulip poplar	*Liriodendron tulipifera*	2	28,30
637	Common persimmon	*Diospyros virginiana*	3	17
638	Red maple	*Acer rubrum*	3	16
639	Red maple	*Acer rubrum*	3	18
640	Red maple	*Acer rubrum*	3	17
641	Red maple	*Acer rubrum*	Dead	17
642	Red maple	*Acer rubrum*	3	9,15
643	Tulip poplar	*Liriodendron tulipifera*	Dead	19
644	Tulip poplar	*Liriodendron tulipifera*	2	24,31,24
645	Red maple	*Acer rubrum*	3	24
646	**White oak**	***Quercus alba***	**3**	**14**
647	**Hickory species**	***Carya sp.***	**3**	**8,6**
648	**Post oak**	***Quercus stellata***	**3**	**14**
649	Southern red oak	*Quercus falcata*	2	27
650	Slippery elm	*Ulmus rubra*	3	7
651	Red maple	*Acer rubrum*	3	7
652	Tulip poplar	*Liriodendron tulipifera*	Dead	32,13
653	Slippery elm	*Ulmus rubra*	3	8
654	Unknown tree	-	Dead	6
655	White oak	*Quercus alba*	Dead	6
656	Black gum	*Nyssa sylvatica*	3	12
657	Red maple	*Acer rubrum*	3	14
658	Tulip poplar	*Liriodendron tulipifera*	Dead	46
659	Red maple	*Acer rubrum*	Dead	9
660	Red maple	*Acer rubrum*	3	11
661	Southern red oak	*Quercus falcata*	3	12
662	Tulip poplar	*Liriodendron tulipifera*	3	6
663	Virginia pine	*Pinus virginiana*	Dead	23
664	Black cherry	*Prunus serotina*	3	10
665	Red maple	*Acer rubrum*	3	7
666	Tulip poplar	*Liriodendron tulipifera*	2	24
667	Red maple	*Acer rubrum*	3	13
668	Sweet gum	*Liquidambar styraciflua*	4	8
669	Sassafras	*Sassafras albidum*	Dead	12
670	Virginia pine	*Pinus virginiana*	Dead	18
671	White oak	*Quercus alba*	3	12
672	Tulip poplar	*Liriodendron tulipifera*	1	26
673	Slippery elm	*Ulmus rubra*	3	7
674	Tulip poplar	*Liriodendron tulipifera*	3	7
675	Red maple	*Acer rubrum*	3	7

MATCH LINE - SEE SHEET TI-03

NOTES:
1. TREES LISTED IN BOLD WITHIN THE TREE TABLE WERE DESIGNATED BY THE CONSENSUS BUILDING GROUP (CBG) AS TREES TO PRESERVE. LABELS FOR THESE TREES ARE UNDERLINED WITHIN THE PLAN VIEW.
2. TREES ARE TO BE TRIMMED ALONG THE ACCESS PATH AND STOCKPILE AREAS TO ALLOW FOR EQUIPMENT AND VEHICLE CLEARANCE WHERE NECESSARY.
3. ALL TREES TO BE REMOVED SHALL BE FLUSH CUT WITH STUMPS AND ROOTS LEFT IN PLACE FOR STABILIZATION AND HABITAT UNLESS THE AREA REQUIRES GRADING.
4. TO REDUCE SOIL COMPACTION FOLLOWING CONSTRUCTION, THE TEMPORARY ACCESS PATH AND ALL STOCKPILE AREAS SHALL BE SURFACED WITH 8-12" OF MULCH AND TIMBER DECK MATTING. AFTER CONSTRUCTION, DECK MATS WILL BE REMOVED AND STOCKPILE AREAS WILL BE ROTOTILLED AND SEEDED WITH RIPARIAN, POLLINATOR MEADOW, AND OR TURF GRASS SEED MIX (ADD PER THE APPROVED PLANTING PLAN).
5. ALL ASH TREES SHALL BE CHIPPED AND THEN DISPOSED OF OFF-SITE WITH ANY OTHER CHIPPED MATERIAL.
6. IT IS ASSUMED THAT ALL TREES WITHIN THE LIMITS OF DISTURBANCE WILL NOT BE REMOVED. PRIOR TO CONSTRUCTION, THE LIMITS OF DISTURBANCE (LOD) SHALL BE WALKED BY WSSI, CONTRACTOR, AND CITY ARBORIST TO CONFIRM TREE REMOVAL. IN THE EVENT THAT THE CONTRACTOR BELIEVES A TREE WITHIN THE LOD COULD BE SAVED, THE CONTRACTOR SHALL CONTACT WETLAND STUDIES AND SOLUTIONS, INC. AND HAVE THE CITY DETERMINE IF THE TREE SHOULD BE SAVED OR REMOVED.
7. THE CONTRACTOR WILL IDENTIFY WHICH TREES HAVE POTENTIAL FOR DAMAGE DUE TO CONSTRUCTION ACTIVITIES. THESE TREES WILL BE PLANKED PER TRUNK ARMORING DETAIL ON SHEET ESC-06. THE CITY MAY REQUEST FOR ADDITIONAL TREES TO BE PLANKED AT THEIR DISCRETION.



Tree #	Common Name	Scientific Name	Condition	DBH
676	Tulip poplar	*Liriodendron tulipifera*	3	6
677	Red maple	*Acer rubrum*	3	8
679	Black gum	*Nyssa sylvatica*	3	8,9
680	Red maple	*Acer rubrum*	3	9
1001	Red maple	*Acer rubrum*	2	21
1002	Willow oak	*Quercus alba*	2	11
1004	American elm	*Ulmus americana*	3	8
1006	American elm	*Ulmus americana*	3	23
1087	Red maple	*Acer rubrum*	2	24
1109	Black gum	*Nyssa sylvatica*	3	12
1110	Black cherry	*Prunus serotina*	3	6
1111	Sassafras	*Sassafras albidum*	3	46
1115	American elm	*Ulmus americana*	2	8
1116	American elm	*Ulmus americana*	2	8
1117	Tulip poplar	*Liriodendron tulipifera*	3	47
1118	Black cherry	*Prunus serotina*	4	10
1119	Sweet gum	*Liquidambar styraciflua*	3	8
1120	American elm	*Ulmus americana*	2	7
1121	Red maple	*Acer rubrum*	1	13
1122	River Berch	*Betula nigra*	3	21
1123	American elm	*Ulmus americana*	1	10
1150	Black cherry	*Prunus serotina*	4	17
1157	Maple	*Acer sp.*	4	12

Tree #	Common Name	Scientific Name	Condition	DBH
1162	Red maple	*Acer rubrum*	1	18
1163	Black cedar	*Juniperus nigra*	4	16
1173	American elm	*Ulmus americana*	4	9
1174	Sweet gum	*Liquidambar styraciflua*	2	11
1176	Red maple	*Acer rubrum*	1	9
1177	Tulip poplar	*Liriodendron tulipifera*	2	8
1178	American elm	*Ulmus americana*	2	16
1179	American elm	*Ulmus americana*	2	15
1180	Swamp white oak	*Quercus bicolor*	1	14
1181	Black locust	*Robinia pseudoacacia*	4	17
1182	American elm	*Ulmus americana*	4	10
1183	American elm	*Ulmus americana*	3	11
1184	American elm	*Ulmus americana*	1	28
1185	American elm	*Ulmus americana*	3	7
1186	Willow oak	*Quercus alba*	1	51
1187	Red maple	*Acer rubrum*	1	9

Tree #	Common Name	Scientific Name	Condition	DBH
1188	Black gum	*Nyssa sylvatica*	4	10
1189	Black gum	*Nyssa sylvatica*	4	10
1190	American elm	*Ulmus americana*	1	28
1191	Honey or Black locust spa.	-	3	18
1192	American elm	*Ulmus americana*	3	7
1193	Red maple	*Acer rubrum*	3	15
1194	Tulip poplar	*Liriodendron tulipifera*	1	32
1195	Red maple	*Acer rubrum*	1	8 | 13
1196	Tulip poplar	*Liriodendron tulipifera*	1	8
1197	White oak	*Quercus alba*	1	13
1198	Swamp white oak	*Quercus bicolor*	2	35
1199	American elm	*Ulmus americana*	3	12

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

TREE INVENTORY

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
TI-04

SCALE:
N/A

SHEET:
12 OF 55

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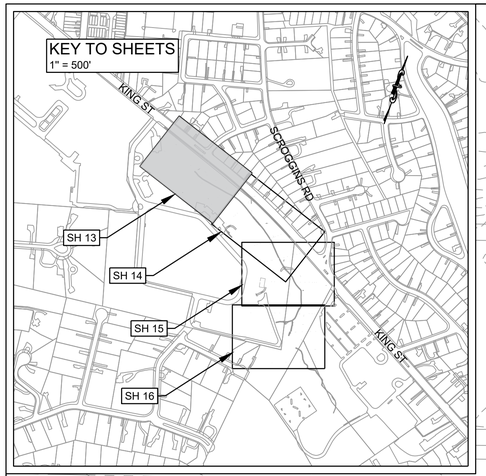

QUINCY ST

KING ST

PROPOSED GRAVITY BLOCK WALL
RET WALL LB 1

PROPOSED 72 LF METAL
RAILING

PROPOSED BOULDER CASCADE

EX. CONC. WALK

PROPOSED VDOT
CLASS III RIPRAP
PLUNGE POOL 657 SF

LEVEL

PROPOSED CAST-IN-PLACE WINGWALL TO MATCH
EXISTING RIGHT WINGWALL SKEW AND TO MEET
GRAVITY BLOCK WALL ELEVATION

PROPOSED CAST-IN-PLACE WINGWALL MODIFICATION
TO MEET GRAVITY BLOCK WALL ELEVATION

PROPOSED
67 LF METAL
RAILING

PROPOSED GRAVITY BLOCK WALL
RET WALL RB 1

1,357 SF VDOT CLASS III
RIPRAP PLACEMENT

EX. 3' DIRT TRAIL

MATCH LINE - SEE SHEET PC-02

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

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ALEXANDRIA, VIRGINIA 22314

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SEAL:

PROPOSED CONDITIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
PC-01
SCALE:
1:20
SHEET:
13 OF 55

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KING ST

PROPOSED 335 SF VDOT CLASS I RIPRAP PLACEMENT

PROPOSED PRECAST VIRGINIA ENDWALL SEE SHEET DE-02 FOR DIMENSIONS

PROPOSED GRAVITY BLOCK WALL RET WALL LB 2

PROPOSED BOULDER CASCADE

PROPOSED 126 LF METAL RAILING

PROPOSED ARMOURED UTILITY PROTECTION WITH PIPE ENCASEMENT SEE SHEET DE-01

PROPOSED 1,099 SF VDOT CLASS III RIPRAP

MATCH LINE - SEE SHEET PC-01

MATCH LINE - SEE SHEET PC-03

EX. 4' DIRT TRAIL

EX. 18' ASP. TRAIL

EX. 4' ASP. TRAIL

KEY TO SHEETS
1" = 500'

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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APPROVED BY: BA DATE: 10/2025

SEAL:

PROPOSED CONDITIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
PC-02
SCALE:
1:20
SHEET:
14 OF 55

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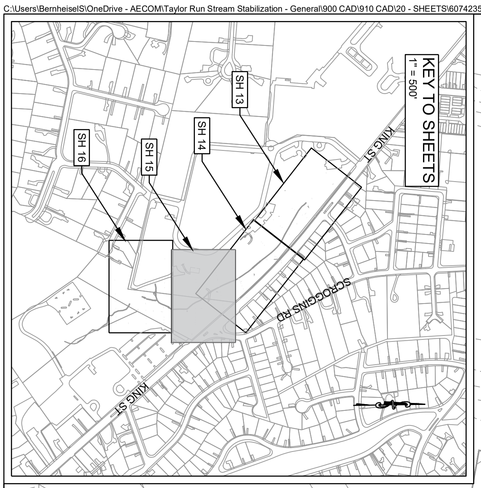

MATCH LINE - SEE SHEET 16
MATCH LINE - SEE SHEET 14

PROPOSED REALIGNMENT OF THALWEG
GRADE AT 2V:1H AND SEED
535 SF PROPOSED VDOT CLASS II RIP RAP
PROPOSED 88 LF METAL RAILING
SANITARY SEWER MANHOLE 132.42 RIM
PROPOSED GRAVITY BLOCK WALL RET WALL RB 2

SOURCE DATA INFORMATION
HORIZ = NAD83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

Scale 1"=20'
0 20' 40'

NOT FOR CONSTRUCTION

DRAWING: PC-03
SCALE: N/A
SHEET: 15 OF 55

PROPOSED CONDITIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

SEAL:

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

REVISIONS
DATE BY DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

MATCH LINE - SEE SHEET 15

PROPOSED ARMOURED UTILITY PROTECTION WITH PIPE ENCASEMENT SEE SHEET DE-01

258 SF PROPOSED CLASS I RIPRAP PLACEMENT

ROCK PACK

PROPOSED GRAVITY BLOCK WALL RET WALL LB 3

PROPOSED 80 LF METAL RAILING

GRADE AROUND TREE TO KEEP CURRENT BASE ELEVATION

SANITARY SEWER MANHOLE 128.19' RIM

PROPOSED BOULDER CASCADE

887 SF PROPOSED VDOT CLASS III RIPRAP PLACEMENT

KEY TO SHEETS
1" = 500'

KING ST
SCROGGINS RD
SH 13
SH 14
SH 15
SH 16
KING ST

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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SEAL:

PROPOSED CONDITIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
PC-04

SCALE:
N/A

SHEET:
16 OF 55

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GRADING NOTES

1. PROPOSED CONTOURS ARE INTENDED TO DEPICT OVERALL GRADING CONCEPT. EXISTING AND PROPOSED CONDITIONS CONTOURS ARE SHOWN AT 1-FT C.I. DUE TO IRREGULARITY OF ROCK SHAPES, CONTOURS DEPICTING POOL GRADING WITHIN STRUCTURES ARE APPROXIMATE.

2. TREE PROTECTION FENCE SHALL BE PLACED AROUND ALL AREAS OF TREES TO BE PRESERVED ADJACENT TO THE LIMITS OF CLEARING AND GRADING.

3. IT IS ASSUMED THAT ALL TREES WITHIN THE LIMITS OF CLEARING WILL NOT BE REMOVED. PRIOR TO CONSTRUCTION THE LIMITS OF DISTURBANCE (LOD) SHALL BE WALKED BY THE DESIGN TEAM AND CITY STAFF ALONG WITH THE CONTRACTOR TO CONFIRM TREE REMOVAL. IN THE EVENT THAT THE CONTRACTOR BELIEVES A TREE WITHIN THE LOD COULD BE SAVED, THE CONTRACTOR SHALL CONTACT THE DESIGN TEAM AND HAVE THE PROJECT ENGINEER AND CITY ARBORIST DETERMINE IF THE TREE SHOULD BE SAVED OR REMOVED.

4. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE LIMITS OF DISTURBANCE SHALL BE MARKED ON SITE FOR REVIEW WITH THE CITY ARBORIST AND THE CONTRACTOR. ADJUSTMENTS MAY BE MADE WHERE POSSIBLE TO PRESERVE ADDITIONAL CRITICAL ROOT ZONE TO IMPROVE THE SURVIVABILITY OF TREES SHOWN TO BE SAVED. THE LOD SHOULD BE CLEARLY MARKED ON THE SITE WITH A CONTINUOUS LINE OF FLAGGING.

5. REFER TO THE GEOMETRY PLAN FOR TRAVERSE LOCATIONS AND ELEVATIONS.

6. ALL FILL MATERIAL SHALL BE APPROVED BY SITE GEOTECHNICAL ENGINEER. IN THE EVENT THAT SUITABLE FILL MATERIAL IS NOT AVAILABLE ON-SITE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPORT SUITABLE FILL MATERIAL.

7. ALL PLACED FILL MATERIAL SHALL BE COMPACTED WITH THE TRACK HOE BUCKET TO A REASONABLE COMPACTION AS DETERMINED BY THE SITE ENGINEER/CITY INSPECTOR (TYPICALLY 80-85%).

8. FOLLOWING CONSTRUCTION, ALL GRADES (OUTSIDE OF SPECIFIED STABILIZATION AREAS) SHALL BE RETURNED TO EXISTING CONDITIONS AND ANY OTHER DAMAGE TO EXISTING STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR. BRIDGES ARE TO BE REPLACED IN KIND

9. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT)

10. CALL ALEXANDRIA ARCHAEOLOGY IMMEDIATELY (703-746-4399) IF ANY BURIED STRUCTURAL REMAINS (WALL FOUNDATIONS, WELLS, PRIVIES, CISTERNS, ETC.) OR CONCENTRATIONS OF ARTIFACTS ARE DISCOVERED DURING DEVELOPMENT. WORK MUST CEASE IN THE AREA OF THE DISCOVERY UNTIL A CITY ARCHAEOLOGIST COMES TO THE SITE AND RECORDS THE FINDS. THE LANGUAGE NOTED ABOVE SHALL BE INCLUDED ON ALL FINAL SITE PLAN SHEETS INVOLVING ANY GROUND DISTURBING ACTIVITIES.

11. THE APPLICANT SHALL NOT ALLOW ANY METAL DETECTION AND/OR ARTIFACT COLLECTION TO BE CONDUCTED ON THE PROPERTY, UNLESS AUTHORIZED BY ALEXANDRIA ARCHAEOLOGY. FAILURE TO COMPLY SHALL RESULT IN PROJECT DELAYS. THE LANGUAGE NOTED ABOVE SHALL BE INCLUDED ON ALL FINAL SITE PLAN SHEETS INVOLVING ANY GROUND DISTURBING ACTIVITIES.

12. ENSURE ALL DISCHARGES ARE IN ACCORDANCE WITH CITY OF ALEXANDRIA CODE TITLE 5, CHAPTER 6, ARTICLE B.

13. DEWATERING AND OTHER CONSTRUCTION RELATED DISCHARGE LIMITS TO THE SEWER SYSTEM ARE REGULATED BY ALEXRENEW PRETREATMENT. ENGINEER/OWNER IS REQUIRED TO CONTACT ALEXRENEW'S PRETREATMENT COORDINATOR AT 703-721-3500X2020

14. CONTRACTOR SHALL FOLLOW VIRGINIA WORK ZONE PROTECTION MANUAL GUIDELINES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUBMIT MAINTENANCE OF TRAFFIC PLANS ALONG WITH THE PERMIT APPLICATION.

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

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DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

GRADING NOTES

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GN-01

SCALE:
N/A

SHEET:
17 OF 55

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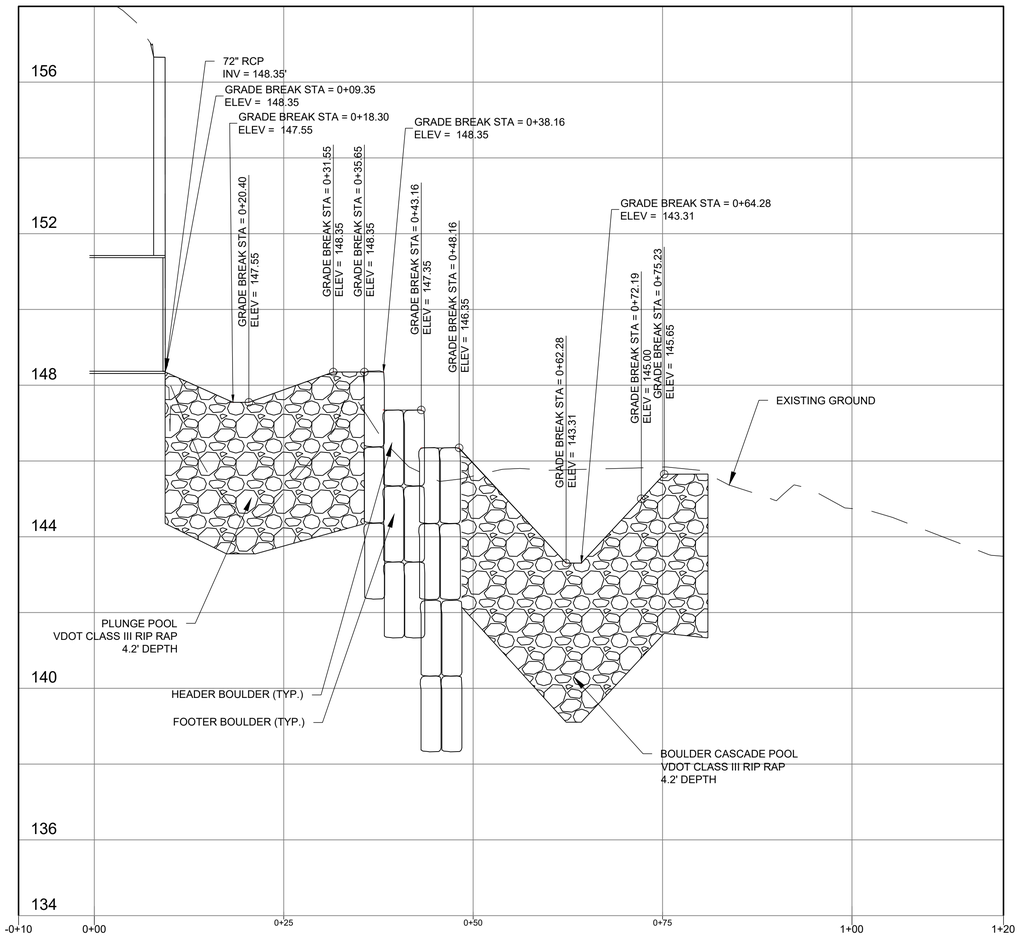

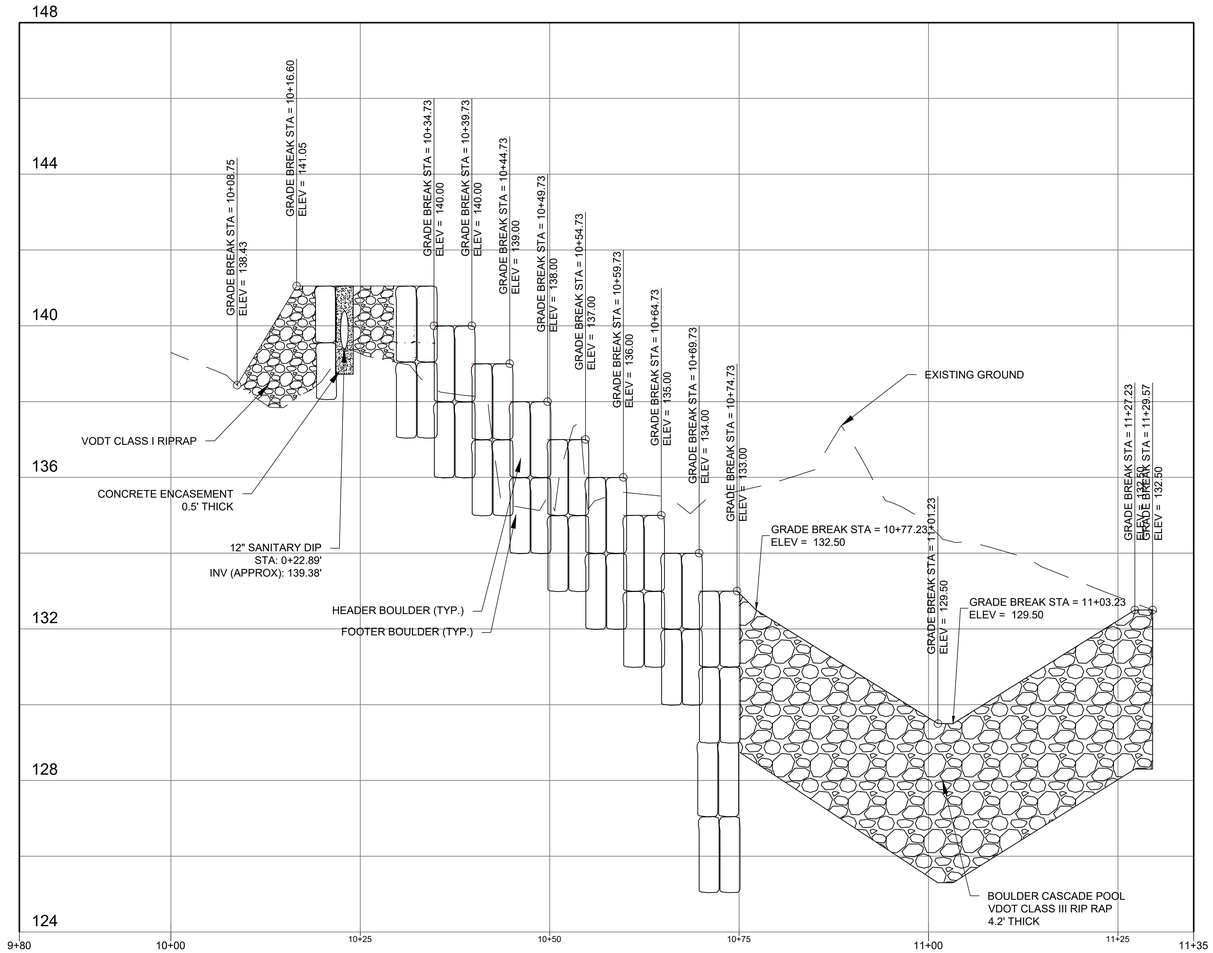

1 DESIGN AREA 1 PROFILE STA -0+10-1+20

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 2 0 2 4
SCALE IN FEET 1" = 2'

2 DESIGN AREA 2 PROFILE STA 9+80-11+35

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 2 0 2 4

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
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301 KING STREET, ROOM 4100
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REVISIONS		
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APPROVED BY: BA DATE: 10/2025

SEAL:

LONGITUDINAL PROFILE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: LP-01
SCALE: N/A
SHEET: 18 OF 55

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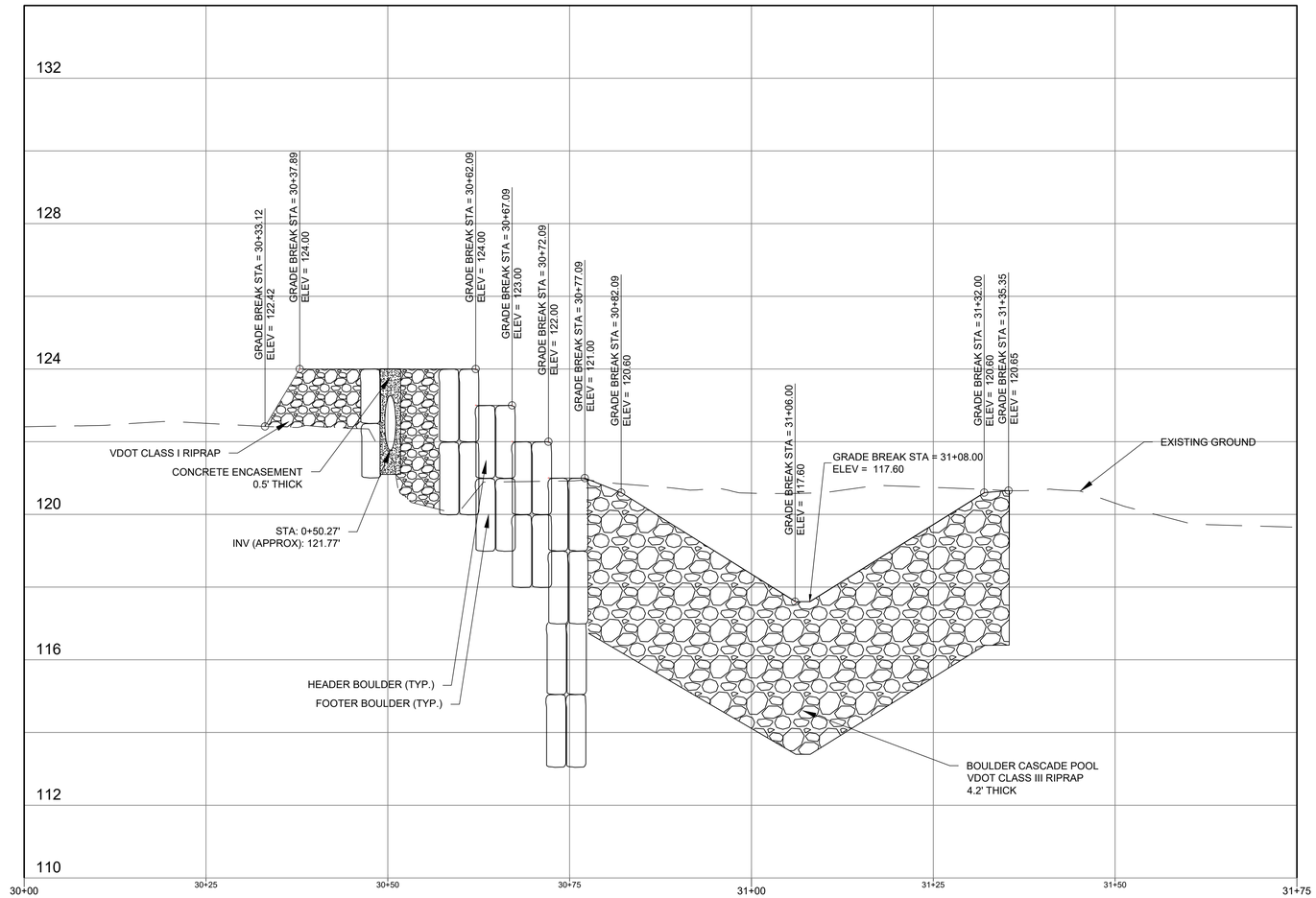

3 DESIGN AREA 4 PROFILE STA 20+00-21+75

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL — 10 0 10 20 — SCALE IN FEET 1" = 10'

VERTICAL — 2 0 2 4 — SCALE IN FEET 1" = 2'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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SEAL:

LONGITUDINAL PROFILE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: LP-02
SCALE: N/A
SHEET: 19 OF 55

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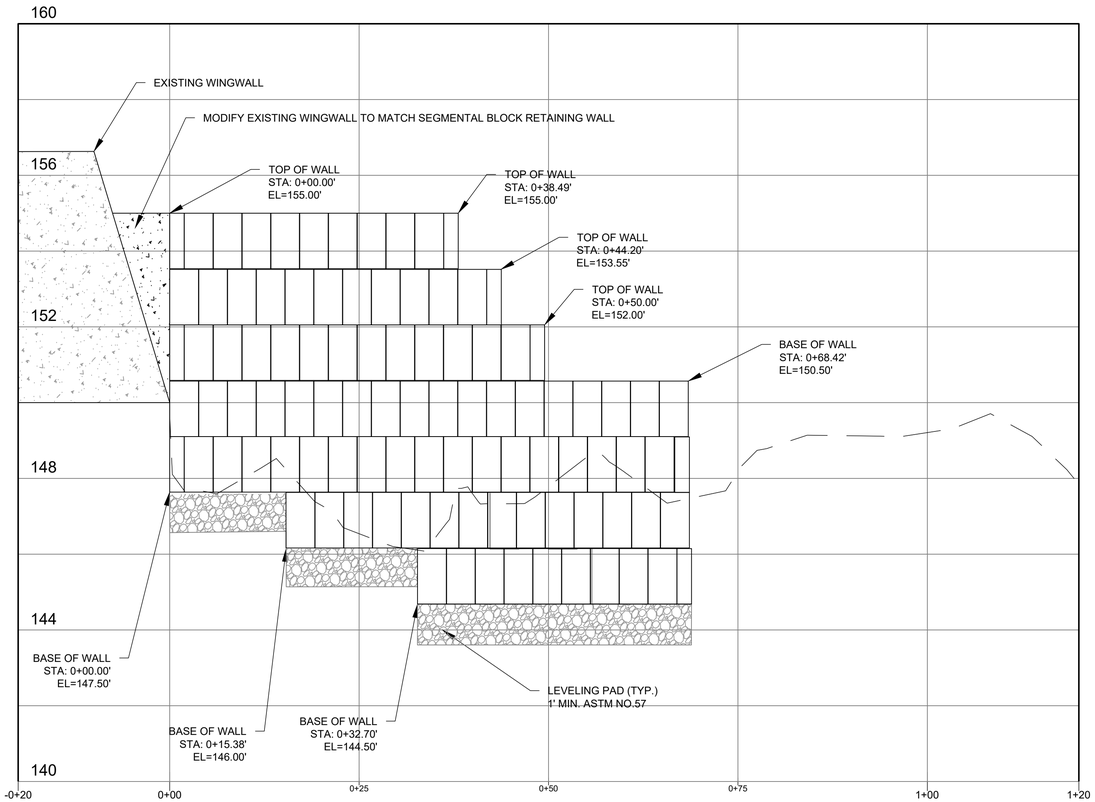
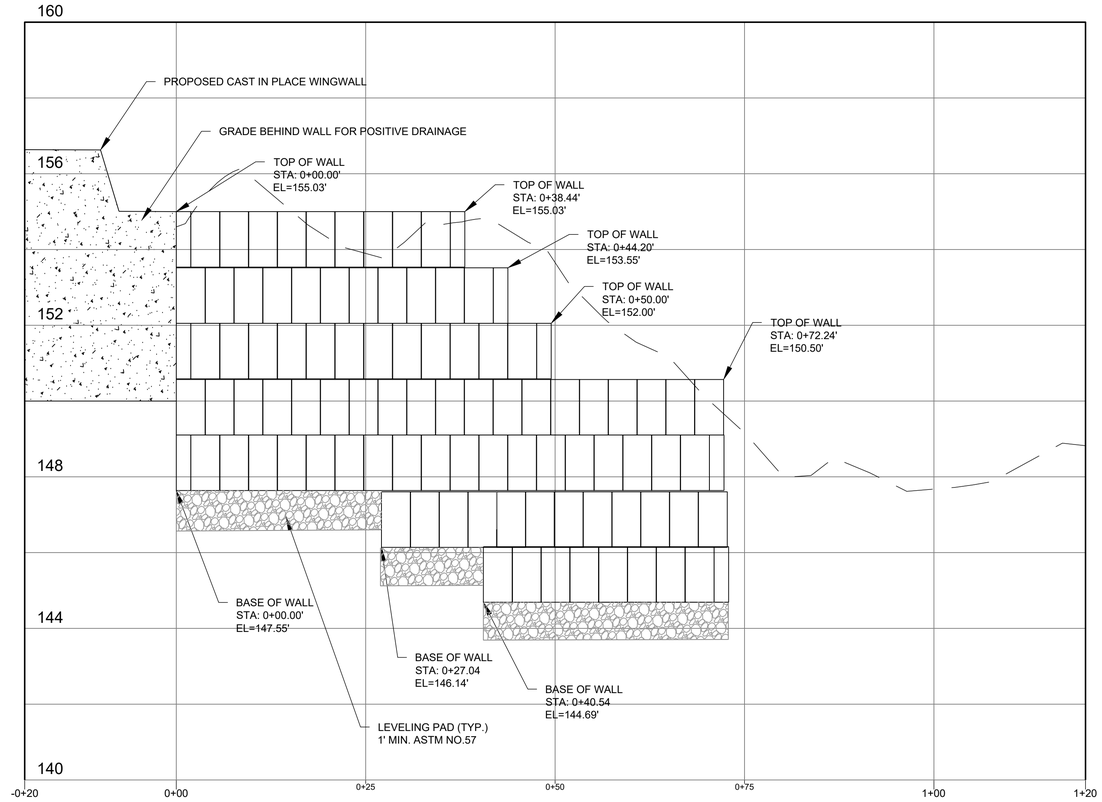


4 GRAVITY BLOCK WALL LB 1 PROFILE STA: -0+10-1+00

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 2 0 2 4
SCALE IN FEET 1" = 2'



5 GRAVITY BLOCK WALL RB 1 PROFILE STA: -0+10-1+00

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 10'

HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 2 0 2 4
SCALE IN FEET 1" = 2'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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CHECKED BY: BA_ DATE: 10/2025
APPROVED BY: BA_ DATE: 10/2025

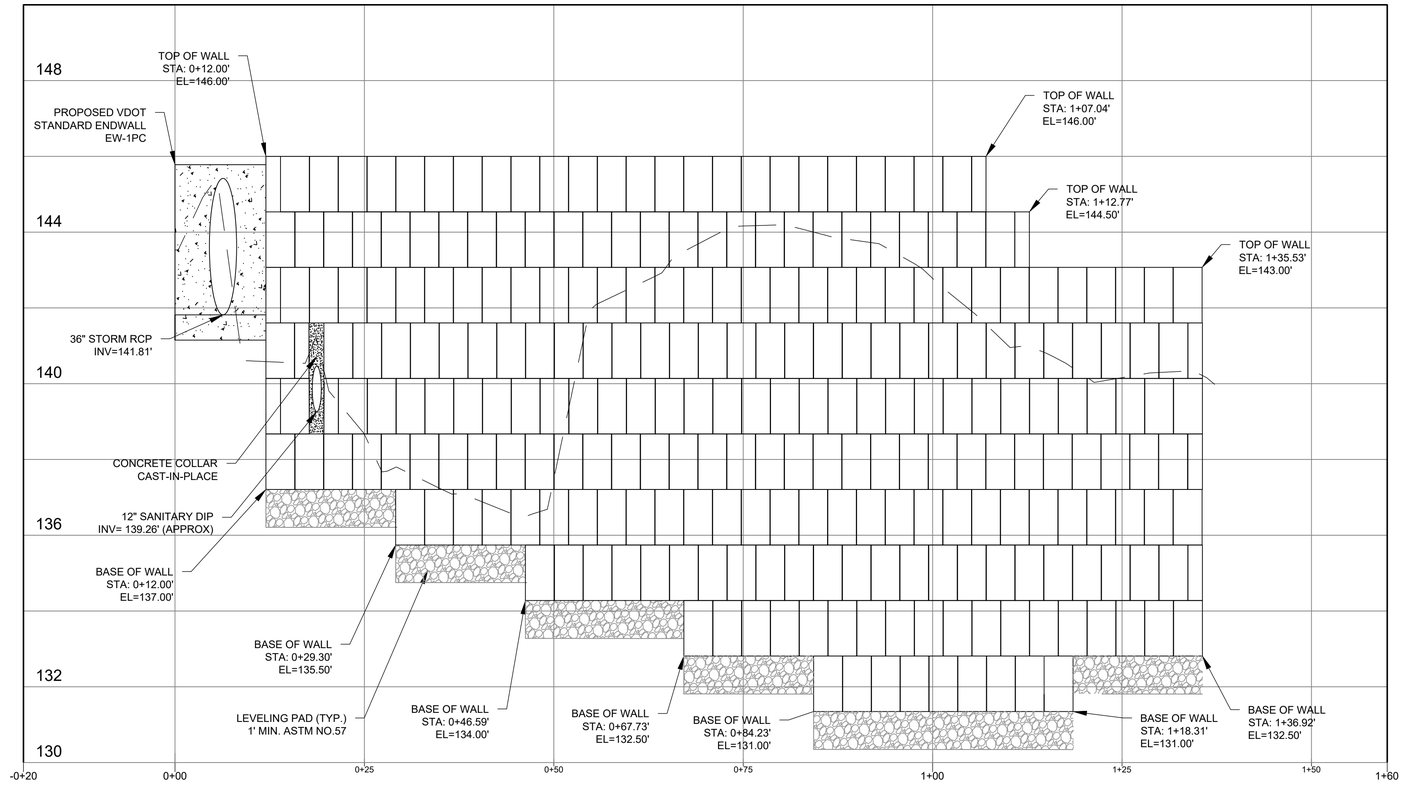
SEAL:

LONGITUDINAL PROFILE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: LP-03
SCALE: N/A
SHEET: 20 OF 55

C:\Users\BernheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\000 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0008_PROFILES.dwg Plotted: 5/13/2026 3:30 PM by Bernheisel, Sean



6 GRAVITY BLOCK WALL LB 2 PROFILE STA: -0+20-1+60

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL

10 0 10 20

SCALE IN FEET 1" = 10'

VERTICAL

2 0 2 4

SCALE IN FEET 1" = 2'

NOT FOR CONSTRUCTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

DESCRIPTION	BY	DATE
REVISIONS		

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

SEAL:

LONGITUDINAL PROFILE

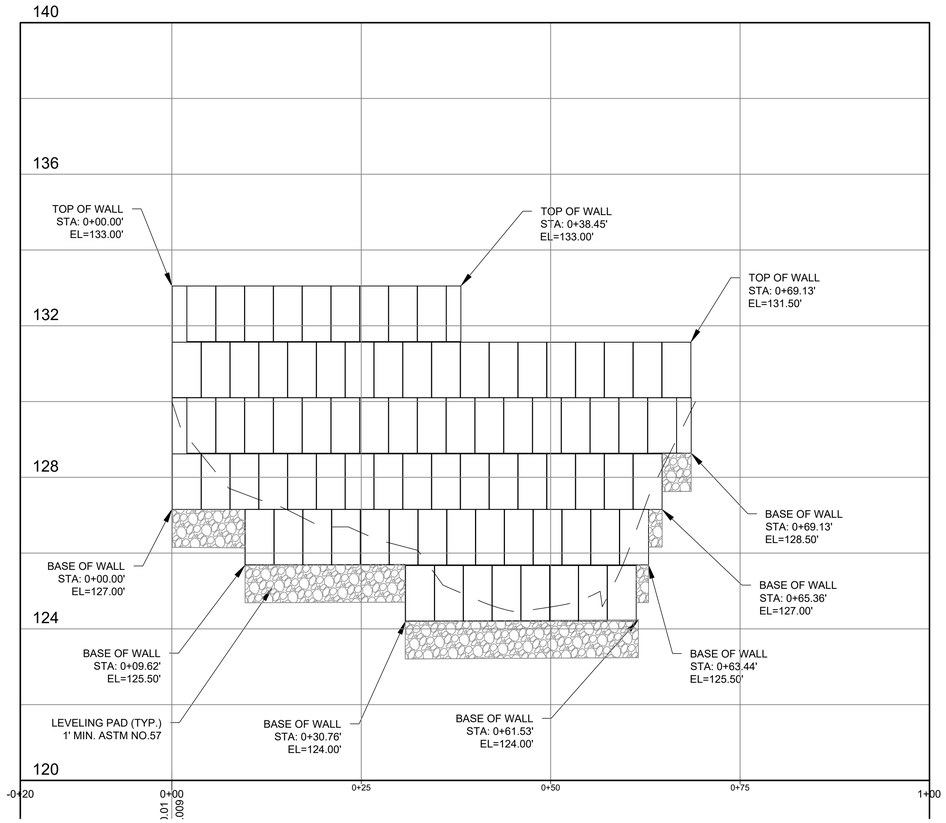
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
LP-04

SCALE:
N/A

SHEET:
21 OF 55

C:\Users\Bemhetsel\S\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0008_PROFILES.dwg Plotted: 5/13/2026 3:39 PM by Bemhetsel, Sean

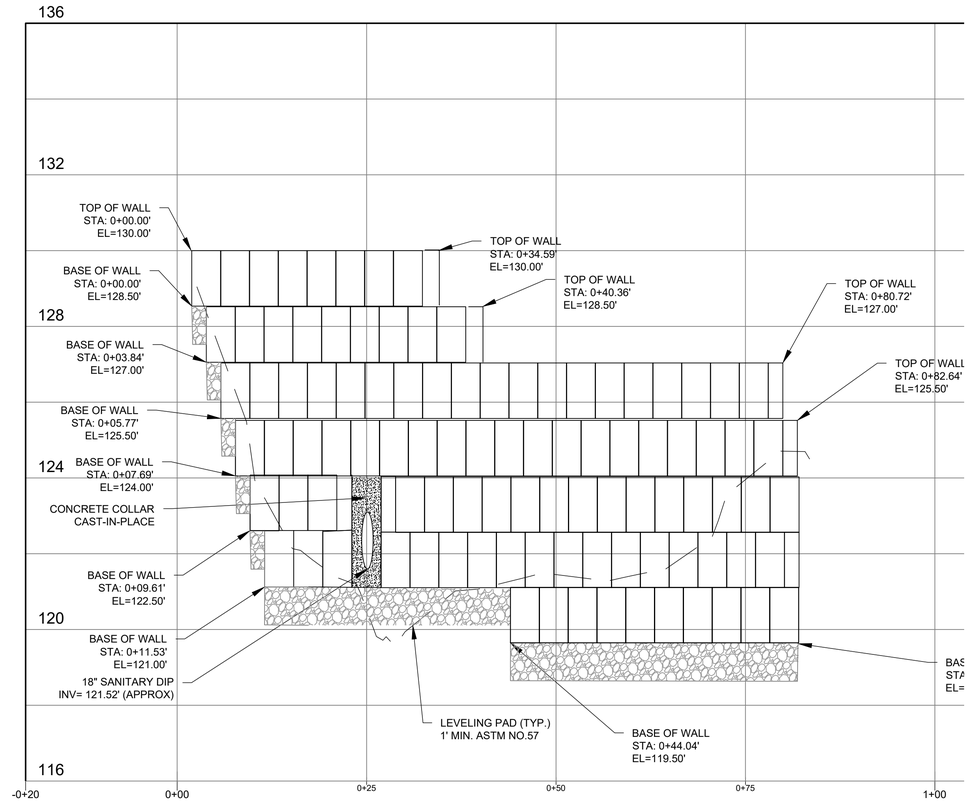


7 GRAVITY BLOCK WALL RB 2 PROFILE STA: -0+20-1+00

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL — 10 0 10 20 — SCALE IN FEET 1" = 10'

VERTICAL — 2 0 2 4 — SCALE IN FEET 1" = 2'



8 GRAVITY BLOCK WALL LB 3 PROFILE STA: -0+20-1+00

SCALE: HORIZONTAL 1" = 10'; VERTICAL 1" = 2'

HORIZONTAL — 10 0 10 20 — SCALE IN FEET 1" = 10'

VERTICAL — 2 0 2 4 — SCALE IN FEET 1" = 2'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

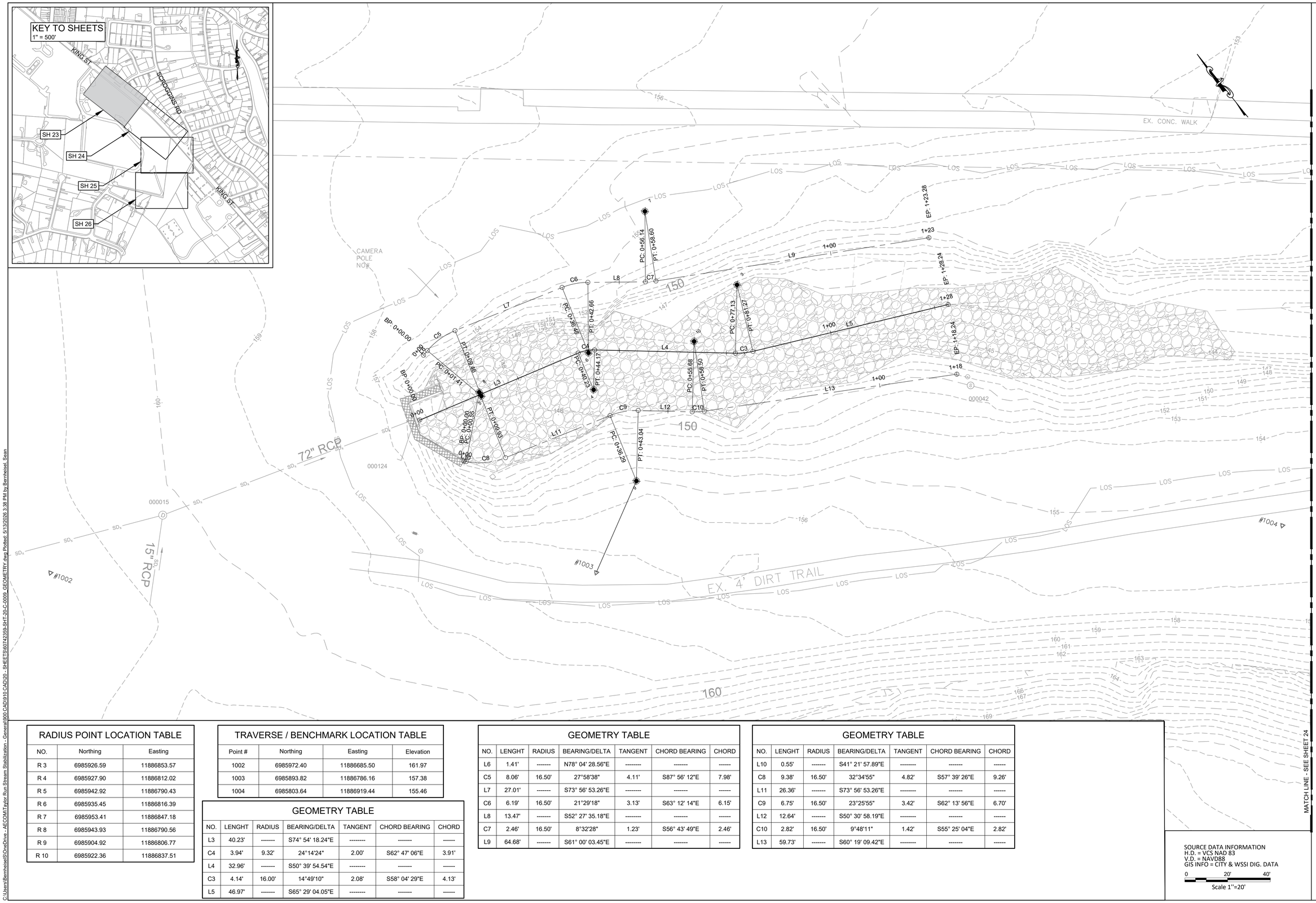
SEAL:

LONGITUDINAL PROFILE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: LP-05
SCALE: N/A
SHEET: 22 OF 55

C:\Users\BernheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\000 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0008 PROFILES.dwg Plotted: 5/13/2026 3:30 PM by Bernheisel, Sean



RADIUS POINT LOCATION TABLE

NO.	Northing	Easting
R 3	6985926.59	11886853.57
R 4	6985927.90	11886812.02
R 5	6985942.92	11886790.43
R 6	6985935.45	11886816.39
R 7	6985953.41	11886847.18
R 8	6985943.93	11886790.56
R 9	6985904.92	11886806.77
R 10	6985922.36	11886837.51

TRAVERSE / BENCHMARK LOCATION TABLE

Point #	Northing	Easting	Elevation
1002	6985972.40	11886685.50	161.97
1003	6985893.82	11886786.16	157.38
1004	6985803.64	11886919.44	155.46

GEOMETRY TABLE

NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L3	40.23'	-------	S74° 54' 18.24"E	--------	-------	------
C4	3.94'	9.32'	24°14'24"	2.00'	S62° 47' 06"E	3.91'
L4	32.96'	-------	S50° 39' 54.54"E	--------	-------	------
C3	4.14'	16.00'	14°49'10"	2.08'	S58° 04' 29"E	4.13'
L5	46.97'	-------	S65° 29' 04.05"E	--------	-------	------

GEOMETRY TABLE

NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L6	1.41'	-------	N78° 04' 28.56"E	--------	-------	------
C5	8.06'	16.50'	27°58'38"	4.11'	S87° 56' 12"E	7.98'
L7	27.01'	-------	S73° 56' 53.26"E	--------	-------	------
C6	6.19'	16.50'	21°29'18"	3.13'	S63° 12' 14"E	6.15'
L8	13.47'	-------	S52° 27' 35.18"E	--------	-------	------
C7	2.46'	16.50'	8°32'28"	1.23'	S56° 43' 49"E	2.46'
L9	64.68'	-------	S61° 00' 03.45"E	--------	-------	------

GEOMETRY TABLE

NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L10	0.55'	-------	S41° 21' 57.89"E	--------	-------	------
C8	9.38'	16.50'	32°34'55"	4.82'	S57° 39' 26"E	9.26'
L11	26.36'	-------	S73° 56' 53.26"E	--------	-------	------
C9	6.75'	16.50'	23°25'55"	3.42'	S62° 13' 56"E	6.70'
L12	12.64'	-------	S50° 30' 58.19"E	--------	-------	------
C10	2.82'	16.50'	9°48'11"	1.42'	S55° 25' 04"E	2.82'
L13	59.73'	-------	S60° 19' 09.42"E	--------	-------	------

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1''=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

DATE	REVISIONS BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

GEOMETRY PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GEO-01
SCALE:
1:10
SHEET:
23 OF 55

C:\Users\Bernheisel\SSOneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0009_GEOMETRY.dwg Plotted: 5/13/2026 3:38 PM by Bernheisel, Sean

RADIUS POINT LOCATION TABLE		
NO.	Northing	Easting
R		
R 11	6985635.08	11887145.74
R 13	6985715.18	11887149.56
R 14	6985683.12	11887138.54
R 15	6985695.67	11887172.04
R 16	6985665.90	11887157.21
R 17	6985657.24	11887164.57
R 18	6985648.32	11887172.02
R 19	6985639.31	11887176.01

TRAVERSE / BENCHMARK LOCATION TABLE			
Point #	Northing	Easting	Elevation
1005	6985736.92	11887048.02	146.74
1006	6985633.55	11887114.64	144.27
1007	6985544.22	11887195.72	141.76

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L14	34.73'	-------	S50° 50' 34.28"E	---------	-------	------
L15	28.62'	-------	S47° 39' 27.62"E	---------	-------	------
L16	22.07'	-------	S47° 39' 42.39"E	---------	-------	------
C11	23.91'	35.00'	39°08'11"	12.44'	S28° 05' 37"E	23.44'
L17	20.87'	-------	S8° 31' 31.71"E	---------	-------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L45	34.59'	-------	S51° 04' 38.09"E	---------	-------	------
C13	0.18'	16.00'	0°38'36"	0.09'	S51° 23' 56"E	0.18'
L20	11.17'	-------	S51° 43' 14.25"E	---------	-------	------
C14	1.29'	16.00'	4°36'12"	0.64'	S49° 25' 08"E	1.29'
L21	16.01'	-------	S47° 07' 02.22"E	---------	-------	------
C15	0.16'	16.00'	0°33'29"	0.08'	S47° 23' 47"E	0.16'
L25	9.08'	-------	S47° 40' 31.08"E	---------	-------	------
C16	2.04'	16.00'	7°18'17"	1.02'	S44° 01' 22"E	2.04'
L26	11.36'	-------	S40° 22' 13.71"E	---------	-------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
C17	0.14'	16.00'	0°29'42"	0.07'	S40° 07' 23"E	0.14'
L24	11.62'	-------	S39° 52' 31.72"E	---------	-------	------
C18	4.47'	16.00'	16°00'23"	2.25'	S31° 52' 20"E	4.46'
L23	9.85'	-------	S23° 52' 09.02"E	---------	-------	------
C19	3.84'	16.00'	13°45'28"	1.93'	S16° 59' 25"E	3.83'
L22	21.44'	-------	S10° 06' 41.36"E	---------	-------	------

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1''=20'

NOT FOR CONSTRUCTION

REVISIONS BY	DATE	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

GEOMETRY PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GEO-02
SCALE:
1:10
SHEET:
24 OF 55

C:\Users\BernhetselSOneDrive - AECOM\Taylor Run Stream Stabilization - General\000 CAD\010 CAD\20 - SHEETS\60742359-SHT-20-C-0009_GEOMETRY.dwg Plotted: 5/13/2026 3:43 PM by Bernhetsel, Sean

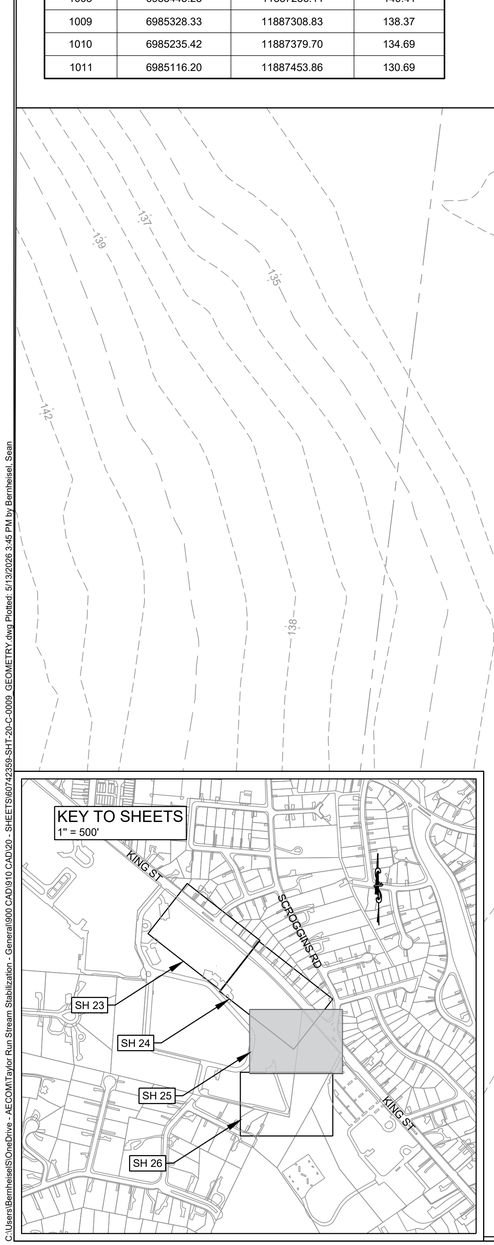
MATCH LINE - SEE SHEET 24

RADIUS POINT LOCATION TABLE		
NO.	Northing	Easting
R 20	6985181.43	11887465.51
R 21	6985144.83	11887453.44
R 22	6985140.70	11887453.48
R 23	6985160.17	11887434.52
R 24	6985194.53	11887495.84
R 25	6985084.40	11887501.67
R 26	6985123.64	11887442.94

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L27	12.47'	-------	S27° 44' 36.79"E	--------	-------	------
C20	2.83'	16.00'	10°08'00"	1.42'	S32° 48' 37"E	2.83'
L28	21.48'	-------	S37° 52' 37.02"E	--------	-------	------
C21	10.44'	16.00'	37°22'50"	5.41'	S19° 11' 12"E	10.25'
L29	4.13'	-------	S0° 29' 47.08"E	--------	-------	------
C22	9.69'	16.00'	34°40'56"	5.00'	S16° 50' 41"W	9.54'
L30	8.10'	-------	S34° 11' 09.19"W	--------	-------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L31	9.12'	-------	S17° 28' 46.68"E	--------	-------	------
C24	4.01'	35.00'	6°33'46"	2.01'	S20° 45' 40"E	4.01'
L32	6.40'	-------	S24° 02' 32.42"E	--------	-------	------
C23	6.75'	35.00'	11°03'17"	3.39'	S18° 30' 54"E	6.74'
L33	37.49'	-------	S12° 59' 15.10"E	--------	-------	------
C26	23.88'	35.00'	39°05'51"	12.43'	S6° 33' 40"W	23.42'
L34	9.39'	-------	S26° 06' 35.74"W	--------	-------	------
C25	17.37'	35.00'	28°26'17"	8.87'	S11° 53' 27"W	17.19'
L35	28.04'	-------	S2° 19' 41.61"E	--------	-------	------

TRAVERSE / BENCHMARK LOCATION TABLE			
Point #	Northing	Easting	Elevation
1008	6985445.23	11887256.11	140.41
1009	6985328.33	11887308.83	138.37
1010	6985235.42	11887379.70	134.69
1011	6985116.20	11887453.86	130.69



MATCH LINE - SEE SHEET 26

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA
0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

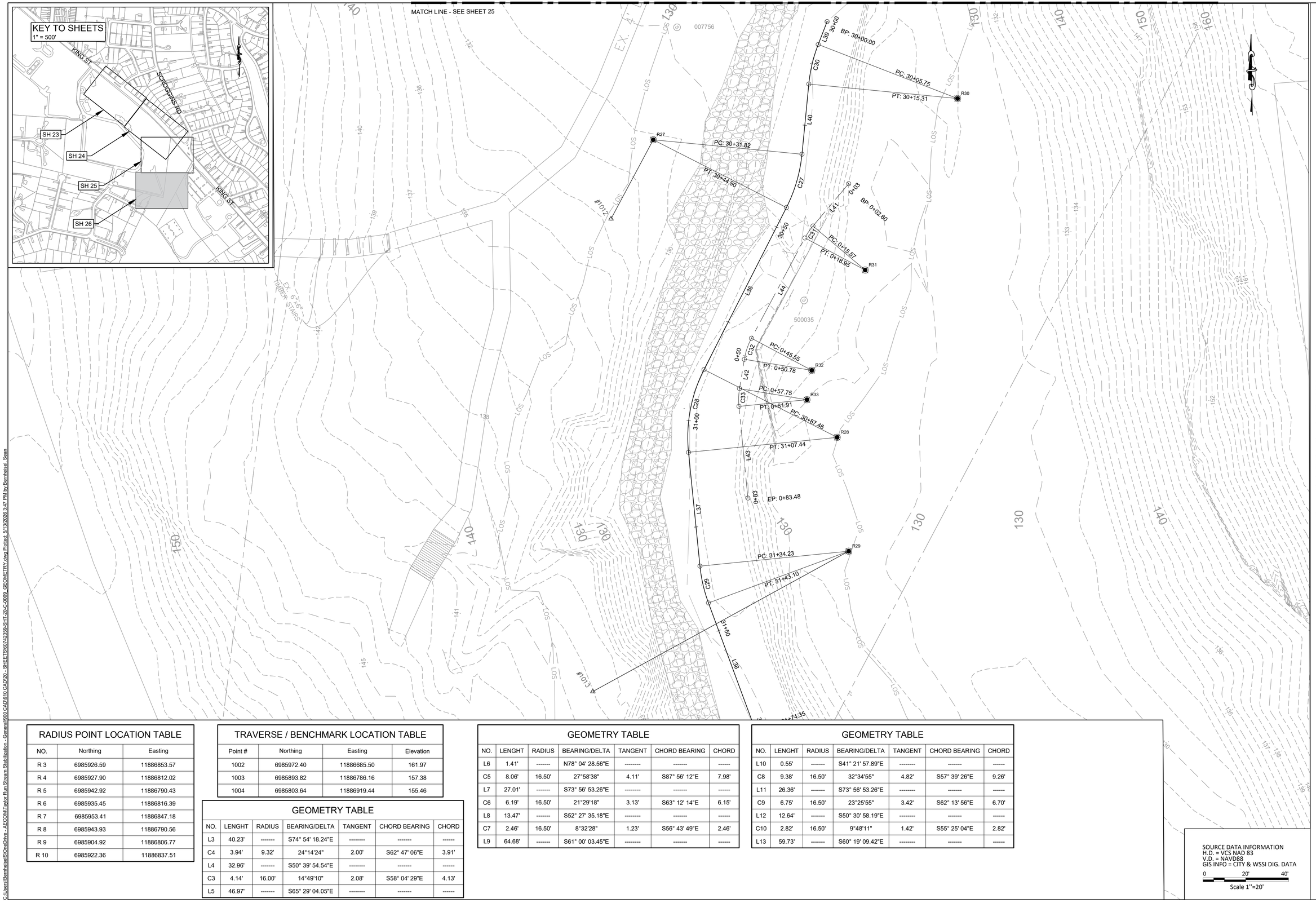
GEOMETRY PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GEO-03
SCALE:
N/A
SHEET:
25 OF 55

C:\Users\BernhetselSOneDrive - AECOM\Taylor Run Stream Stabilization - General\000 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0009_GEOMETRY.dwg Plotted: 5/13/2026 3:45 PM by Bernhetsel, Sean

MATCH LINE - SEE SHEET 25



RADIUS POINT LOCATION TABLE		
NO.	Northing	Easting
R 3	6985926.59	11886853.57
R 4	6985927.90	11886812.02
R 5	6985942.92	11886790.43
R 6	6985935.45	11886816.39
R 7	6985953.41	11886847.18
R 8	6985943.93	11886790.56
R 9	6985904.92	11886806.77
R 10	6985922.36	11886837.51

TRAVERSE / BENCHMARK LOCATION TABLE			
Point #	Northing	Easting	Elevation
1002	6985972.40	11886685.50	161.97
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1004	6985803.64	11886919.44	155.46

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
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C4	3.94'	9.32'	24°14'24"	2.00'	S62° 47' 06"E	3.91'
L4	32.96'	--------	S50° 39' 54.54"E	--------	--------	------
C3	4.14'	16.00'	14°49'10"	2.08'	S58° 04' 29"E	4.13'
L5	46.97'	--------	S65° 29' 04.05"E	--------	--------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L6	1.41'	--------	N78° 04' 28.56"E	--------	--------	------
C5	8.06'	16.50'	27°58'38"	4.11'	S87° 56' 12"E	7.98'
L7	27.01'	--------	S73° 56' 53.26"E	--------	--------	------
C6	6.19'	16.50'	21°29'18"	3.13'	S63° 12' 14"E	6.15'
L8	13.47'	--------	S52° 27' 35.18"E	--------	--------	------
C7	2.46'	16.50'	8°32'28"	1.23'	S56° 43' 49"E	2.46'
L9	64.68'	--------	S61° 00' 03.45"E	--------	--------	------

GEOMETRY TABLE						
NO.	LENGHT	RADIUS	BEARING/DELTA	TANGENT	CHORD BEARING	CHORD
L10	0.55'	--------	S41° 21' 57.89"E	--------	--------	------
C8	9.38'	16.50'	32°34'55"	4.82'	S57° 39' 26"E	9.26'
L11	26.36'	--------	S73° 56' 53.26"E	--------	--------	------
C9	6.75'	16.50'	23°25'55"	3.42'	S62° 13' 56"E	6.70'
L12	12.64'	--------	S50° 30' 58.19"E	--------	--------	------
C10	2.82'	16.50'	9°48'11"	1.42'	S55° 25' 04"E	2.82'
L13	59.73'	--------	S60° 19' 09.42"E	--------	--------	------

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
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CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

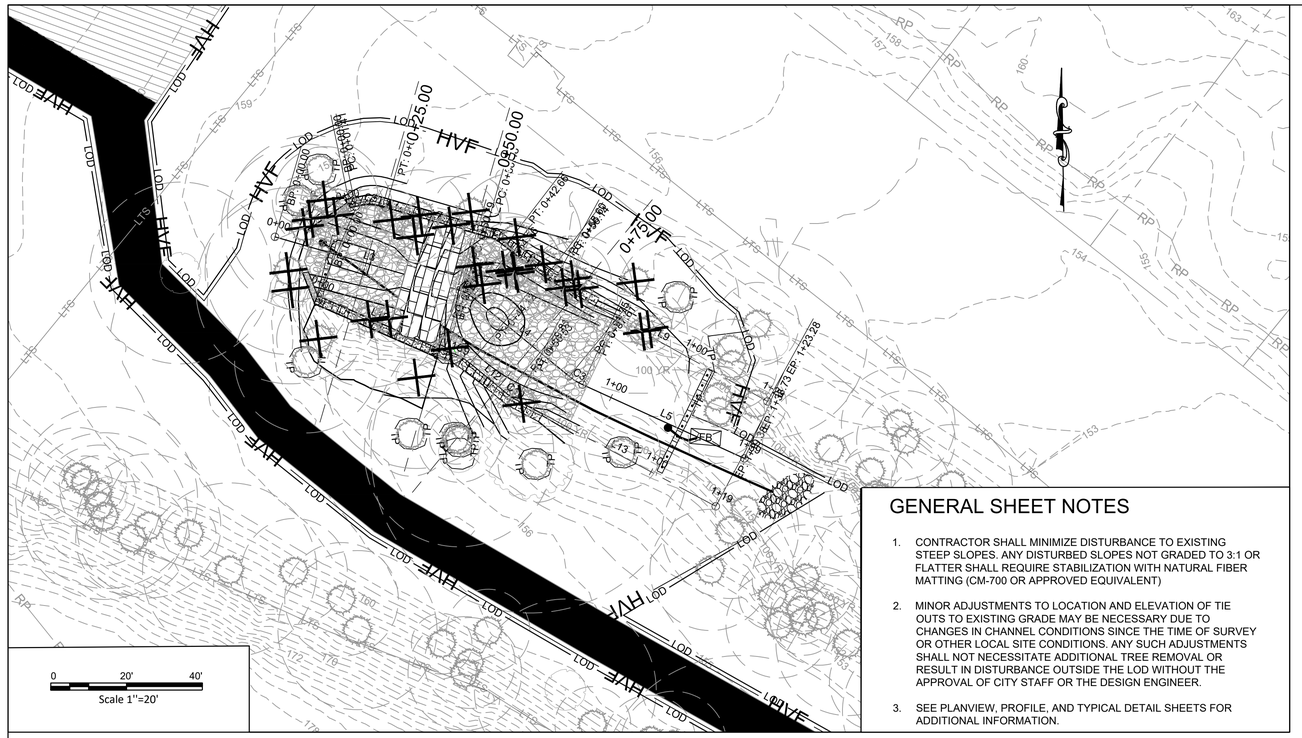
SEAL:

GEOMETRY PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
GEO-04
SCALE:
N/A
SHEET:
26 OF 55

C:\Users\Bernheisel.Sean\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0009_GEOMETRY.dwg Plotted: 5/13/2026 3:47 PM by Bernheisel, Sean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LTS
RP
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0+50.00
0+75.00
PT: 0+42.68
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PC: 1+00.00
PT: 1+08.38
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PT: 1+42.68
PC: 1+50.00
PT: 1+58.38
PC: 1+75.00
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PC: 2+50.00
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PT: 2+92.68
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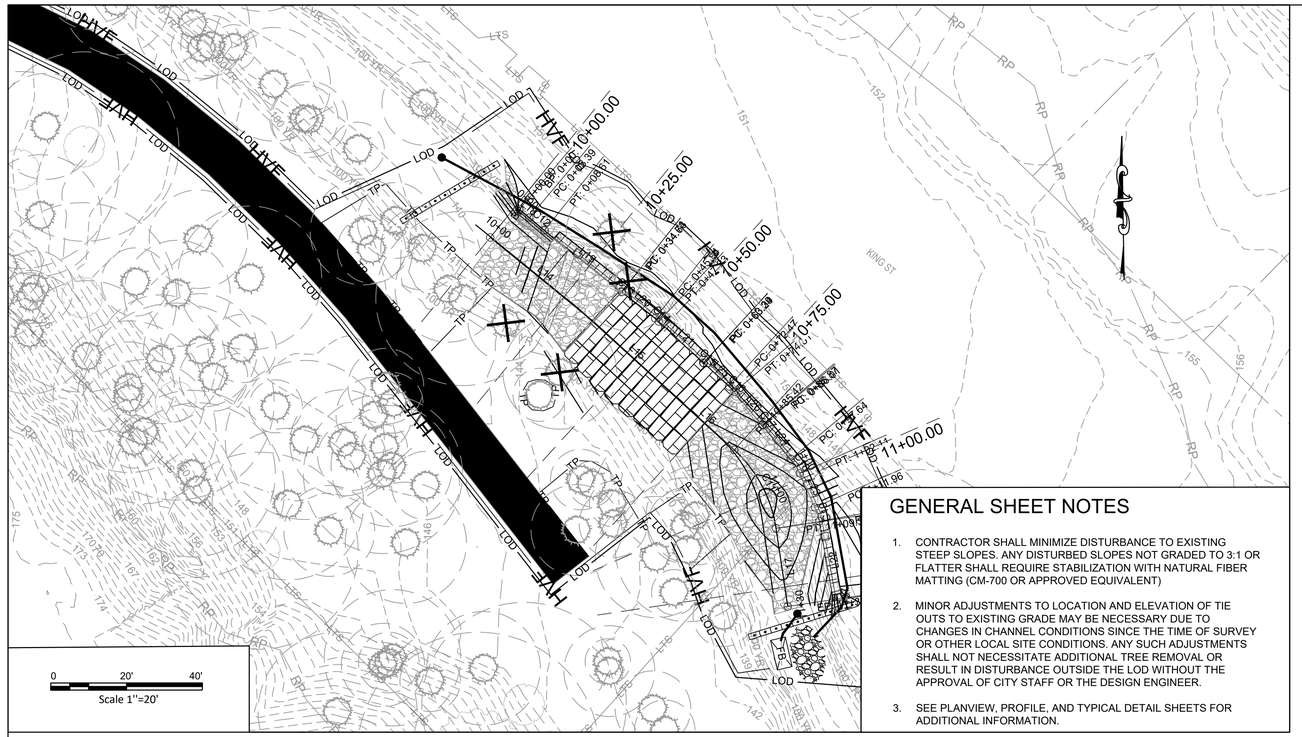
PT:

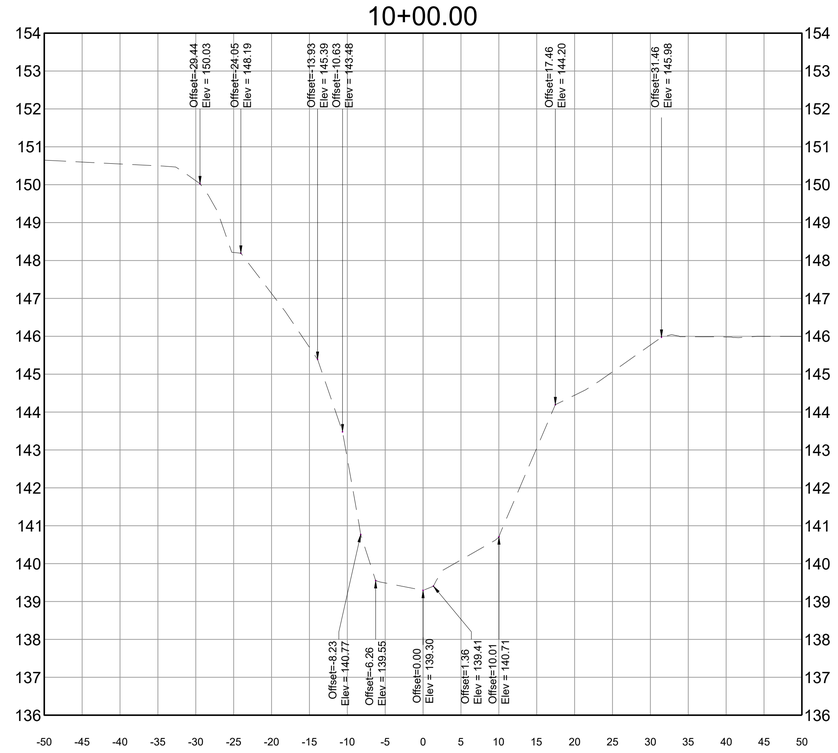


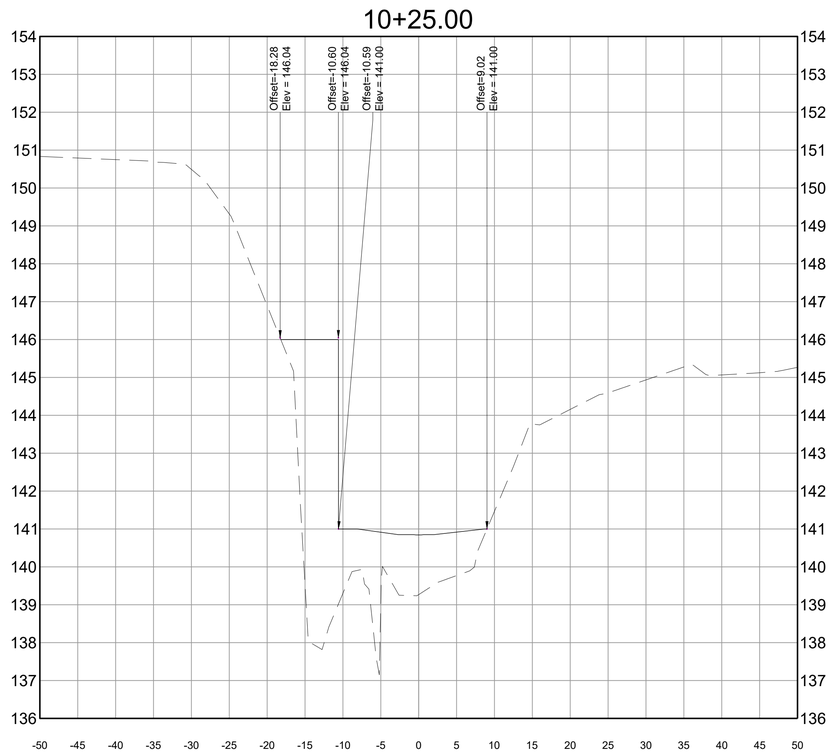
GENERAL SHEET NOTES

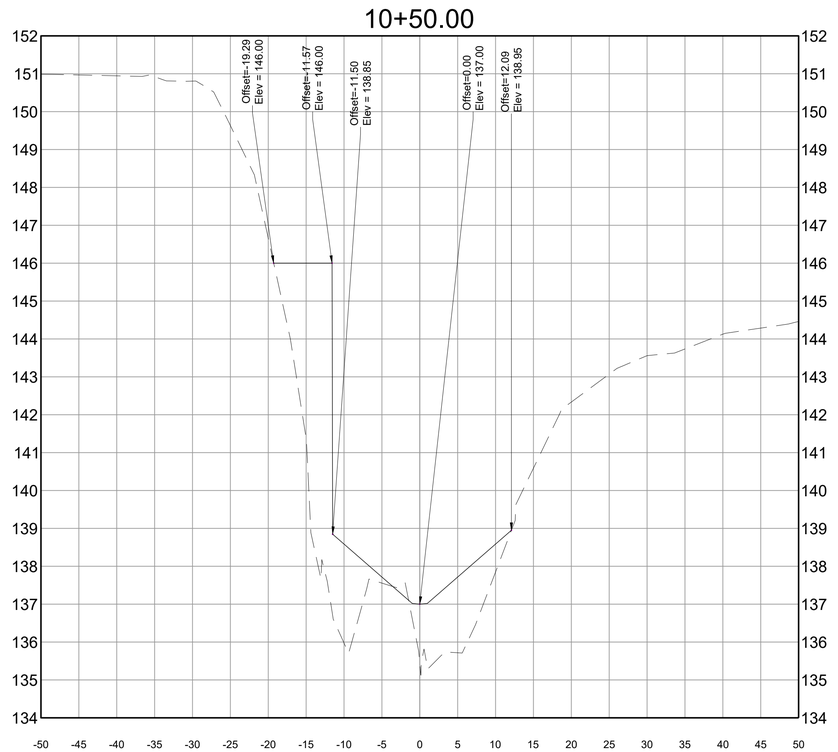
1. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT)
2. MINOR ADJUSTMENTS TO LOCATION AND ELEVATION OF TIE OUTS TO EXISTING GRADE MAY BE NECESSARY DUE TO CHANGES IN CHANNEL CONDITIONS SINCE THE TIME OF SURVEY OR OTHER LOCAL SITE CONDITIONS. ANY SUCH ADJUSTMENTS SHALL NOT NECESSITATE ADDITIONAL TREE REMOVAL OR RESULT IN DISTURBANCE OUTSIDE THE LOD WITHOUT THE APPROVAL OF CITY STAFF OR THE DESIGN ENGINEER.
3. SEE PLANVIEW, PROFILE, AND TYPICAL DETAIL SHEETS FOR ADDITIONAL INFORMATION.

HORIZONTAL
10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL
1 0 1 2
SCALE IN FEET 1" = 2'







NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359

DESIGNED BY:	SB, TN	DATE: 10/2025
DRAWN BY:	SB, TN	DATE: 10/2025
CHECKED BY:	BA	DATE: 10/2025
APPROVED BY:	BA	DATE: 10/2025

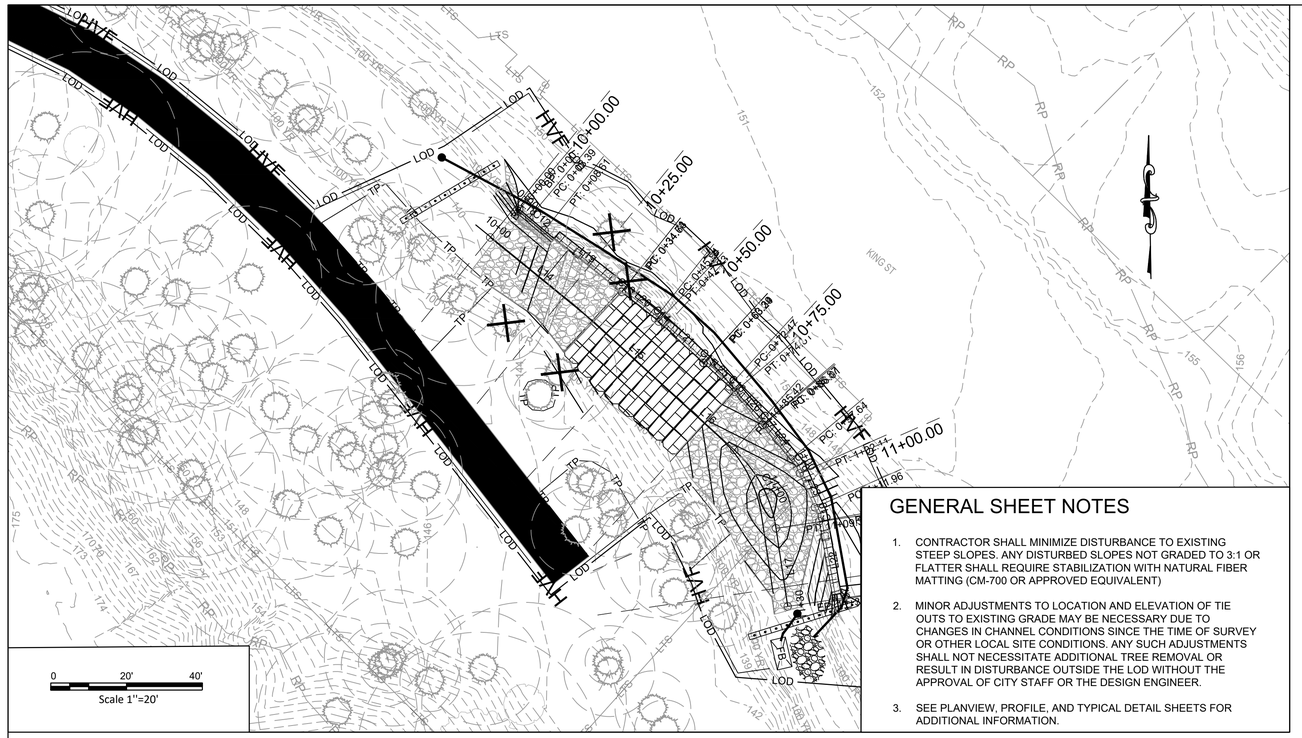
SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: CS-02
SCALE: 1:10
SHEET: 28 OF 55

C:\Users\BernheiselSO\OneDrive - AECOM\Taylor Run Stream Stabilization - General\000 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0010_SECTIONS.dwg Plotted: 5/13/2026 3:45 PM by Bernheisel, Sean



GENERAL SHEET NOTES

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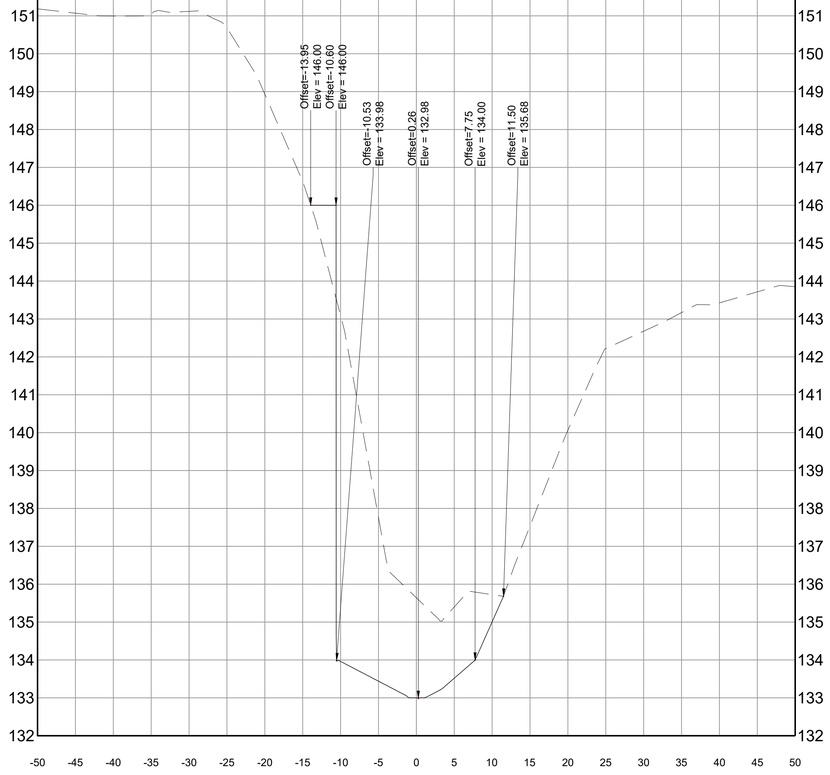
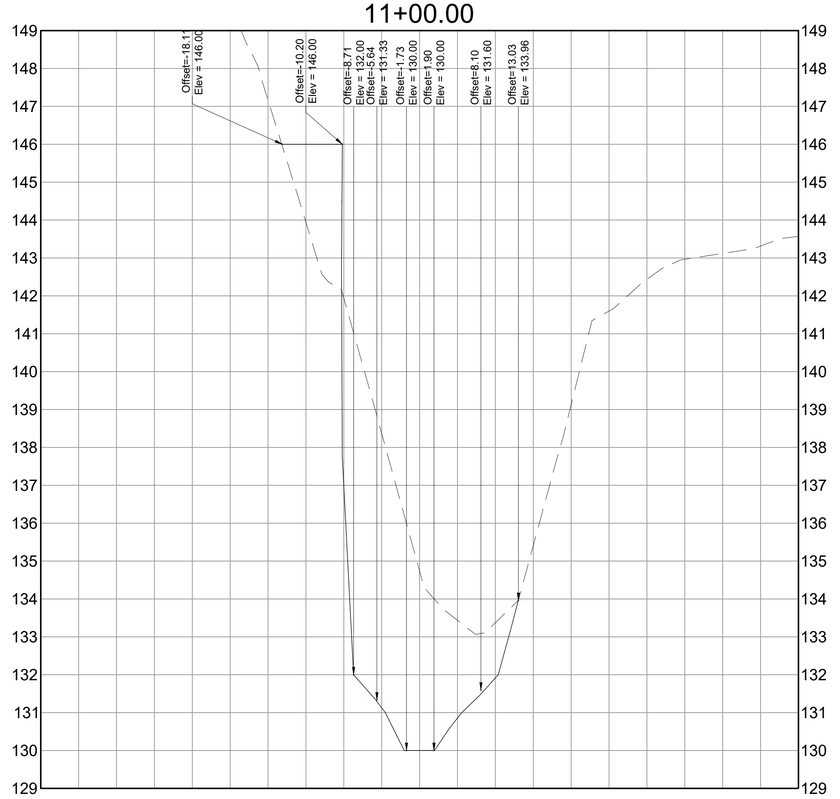
HORIZONTAL — SCALE IN FEET 1" = 10'

VERTICAL — SCALE IN FEET 1" = 2'





NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

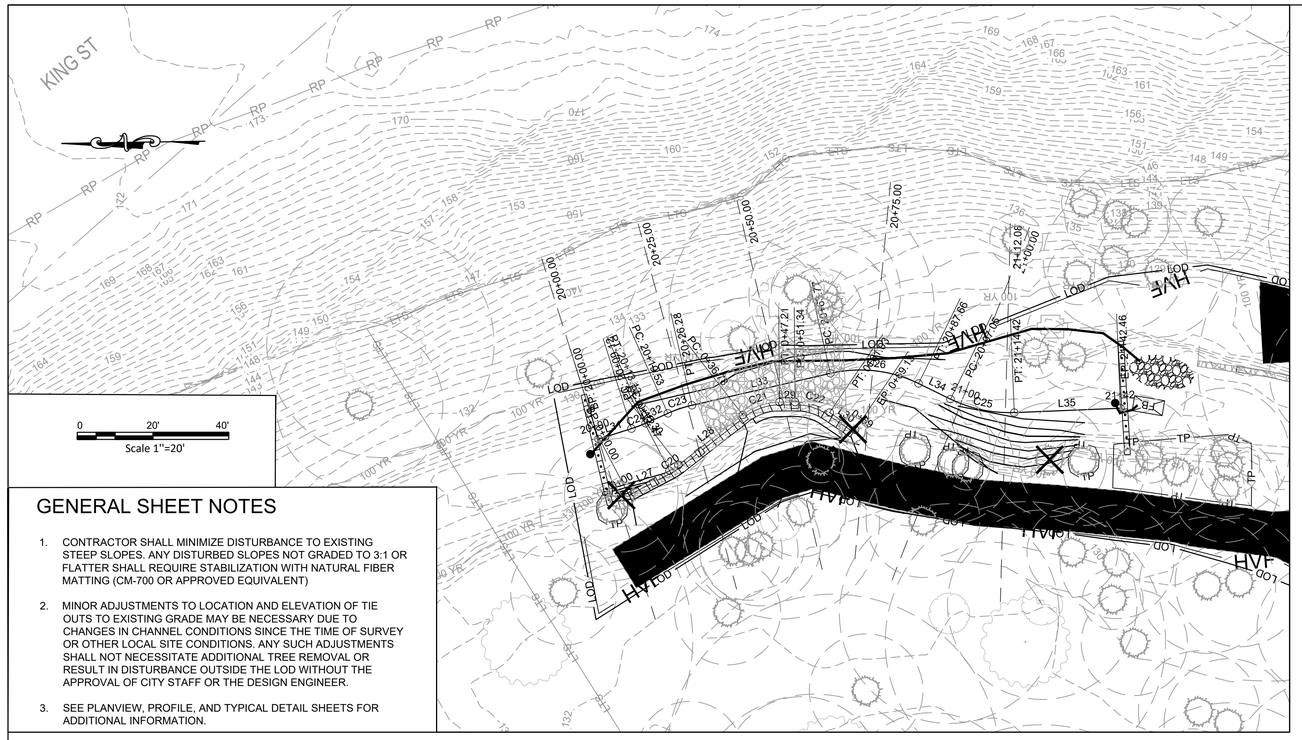
SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: CS-03
SCALE: 1:10
SHEET: 29 OF 55

C:\Users\BenheiselSt\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0010_SECTIONS.dwg Plotted: 5/13/2026 3:49 PM by Benheisel, Sean


KING ST
0
20'
40'
Scale 1"=20'
LOD
HVE
HVAH
HVF
TP
L27
L28
L29
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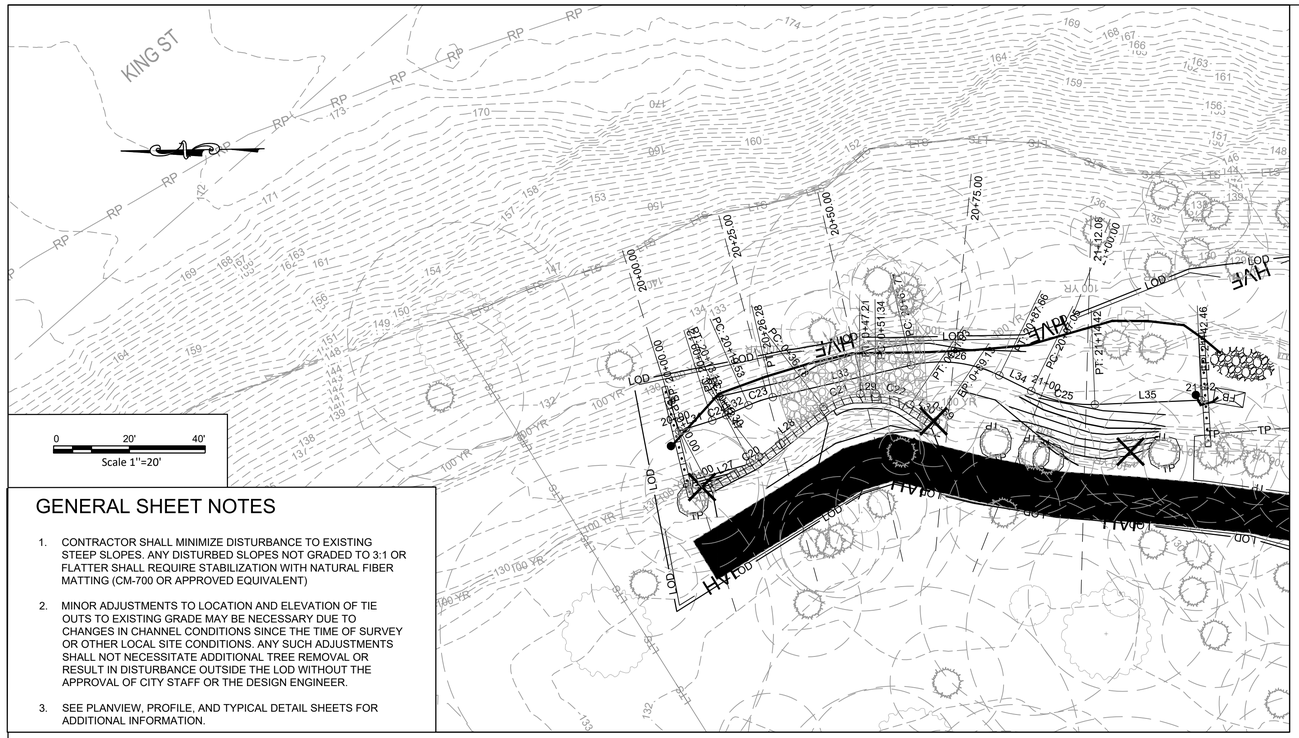

GENERAL SHEET NOTES

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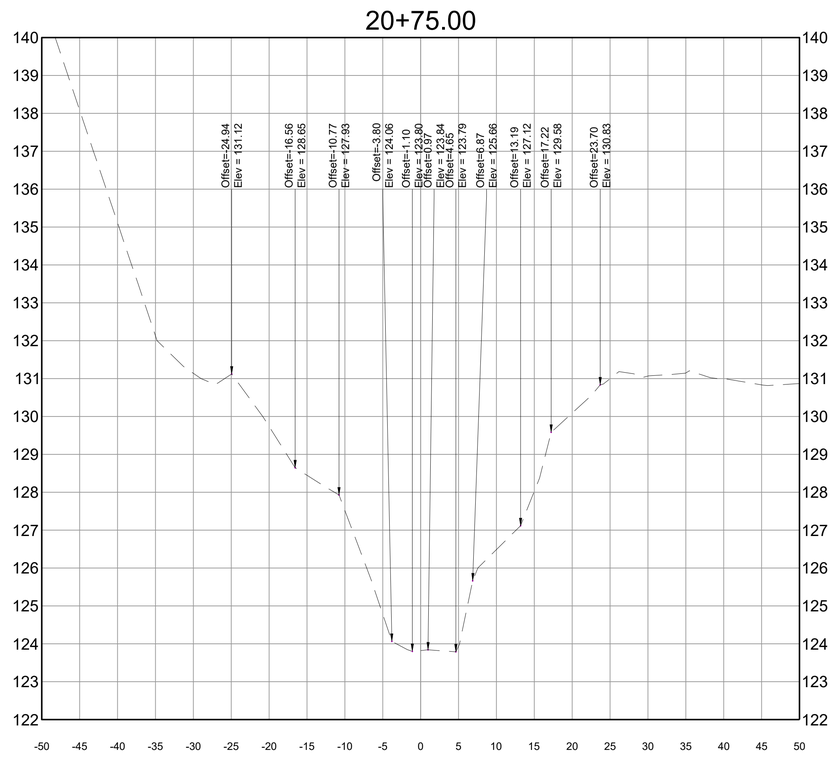
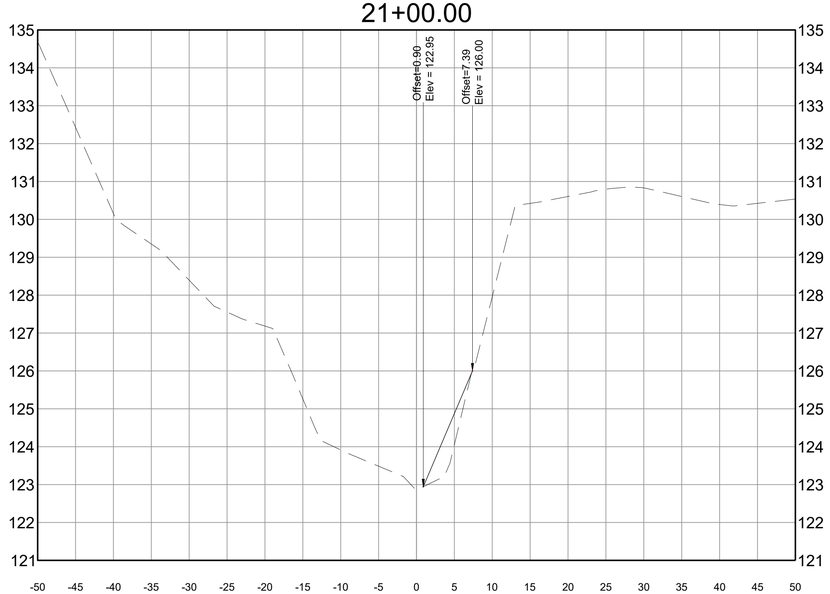
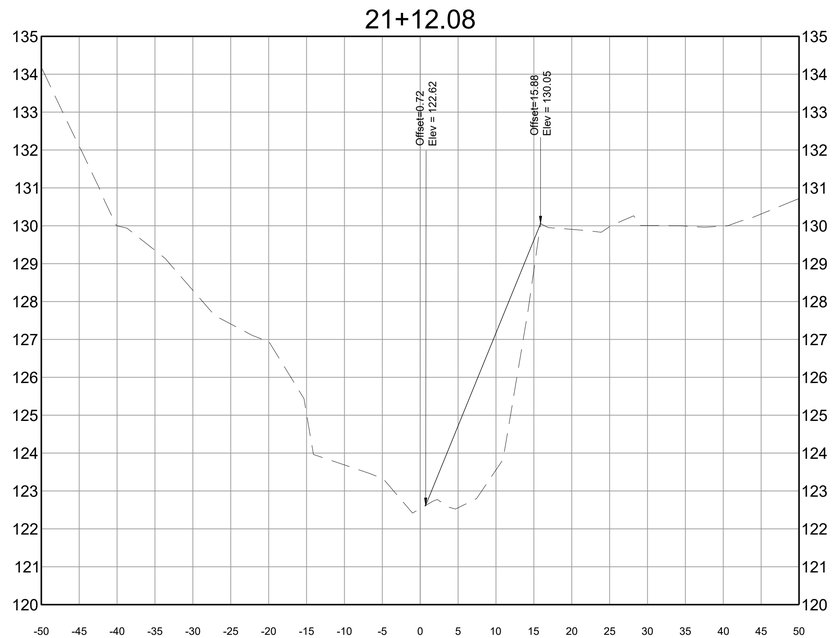
HORIZONTAL
10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL
1 0 1 2
SCALE IN FEET 1" = 2'







NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: CS-05
SCALE: 1:10
SHEET: 31 OF 55

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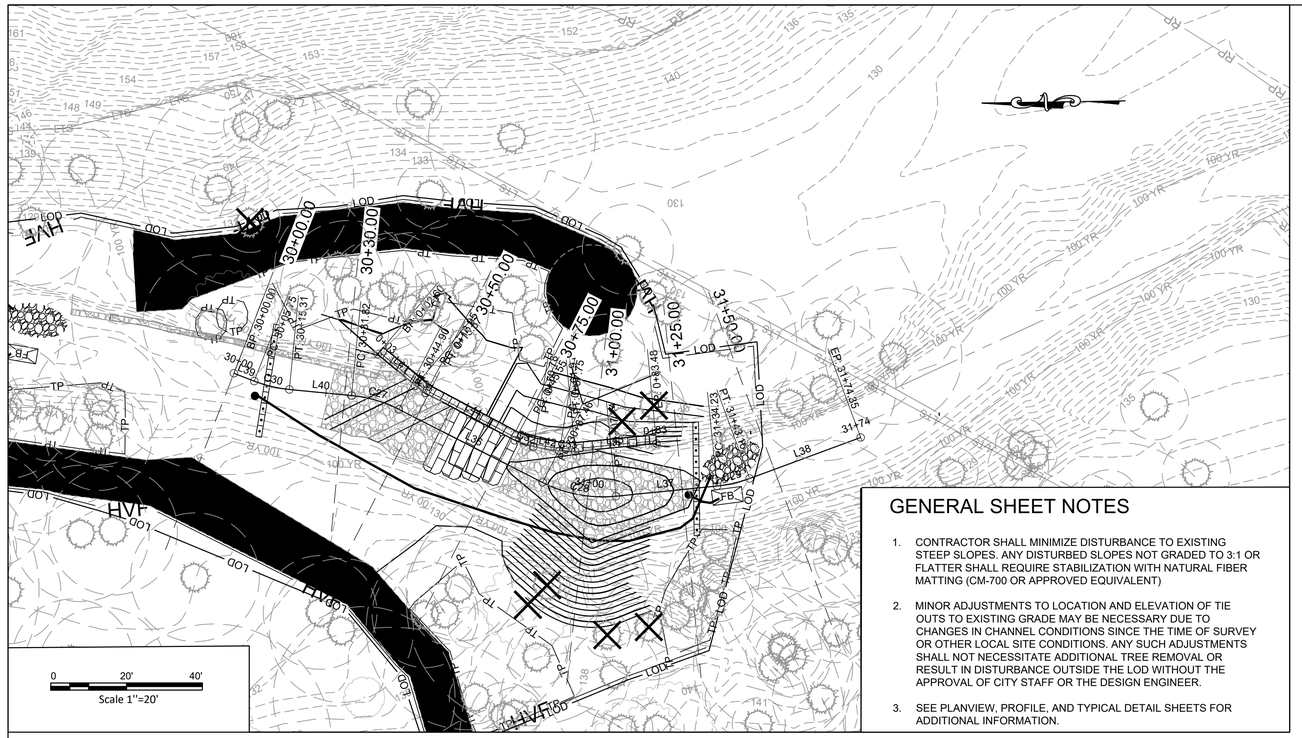

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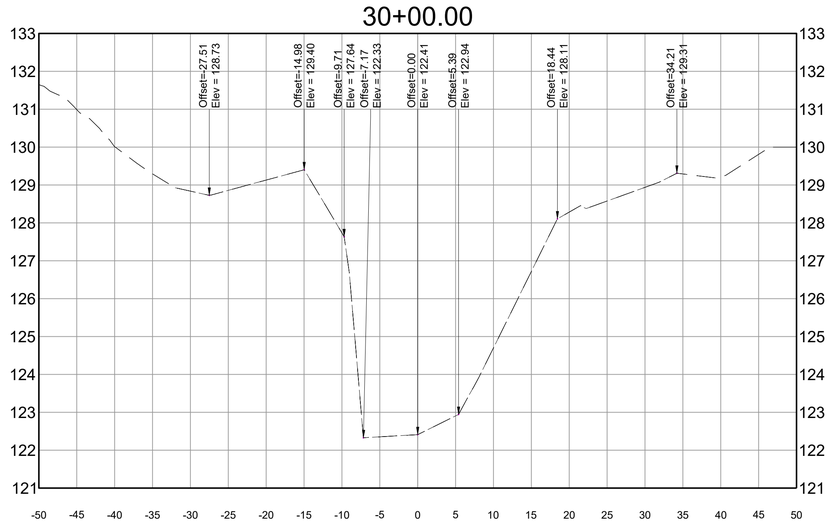
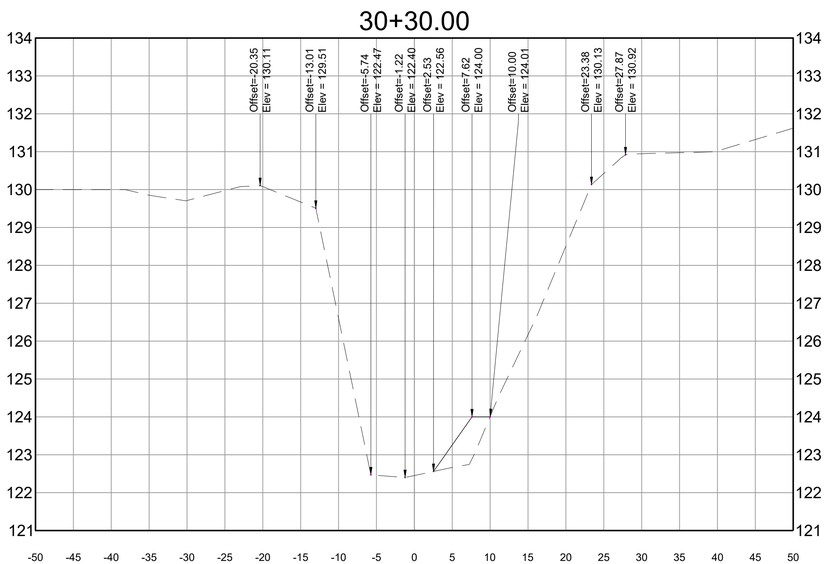
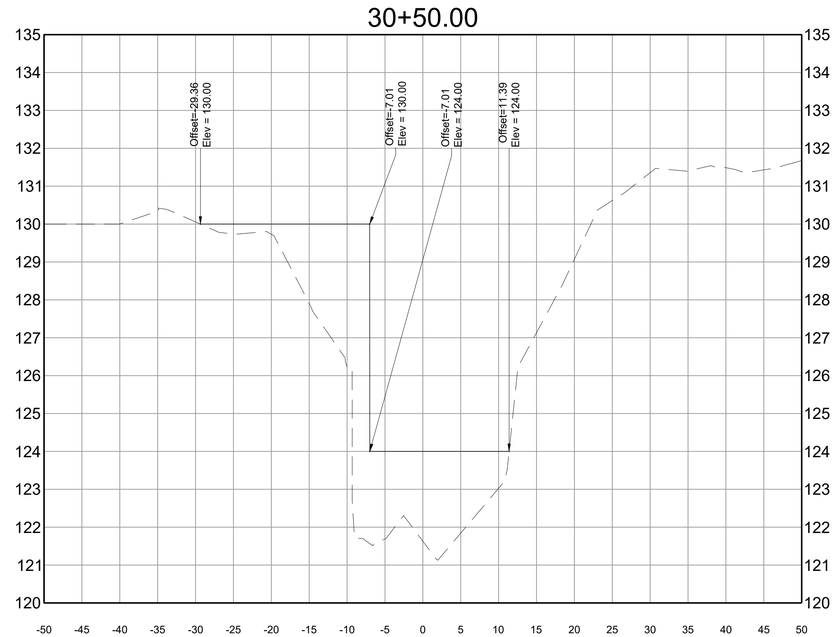
HORIZONTAL
10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL
1 0 1 2
SCALE IN FEET 1" = 2'







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CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
CS-06
SCALE:
1:10
SHEET:
32 OF 55

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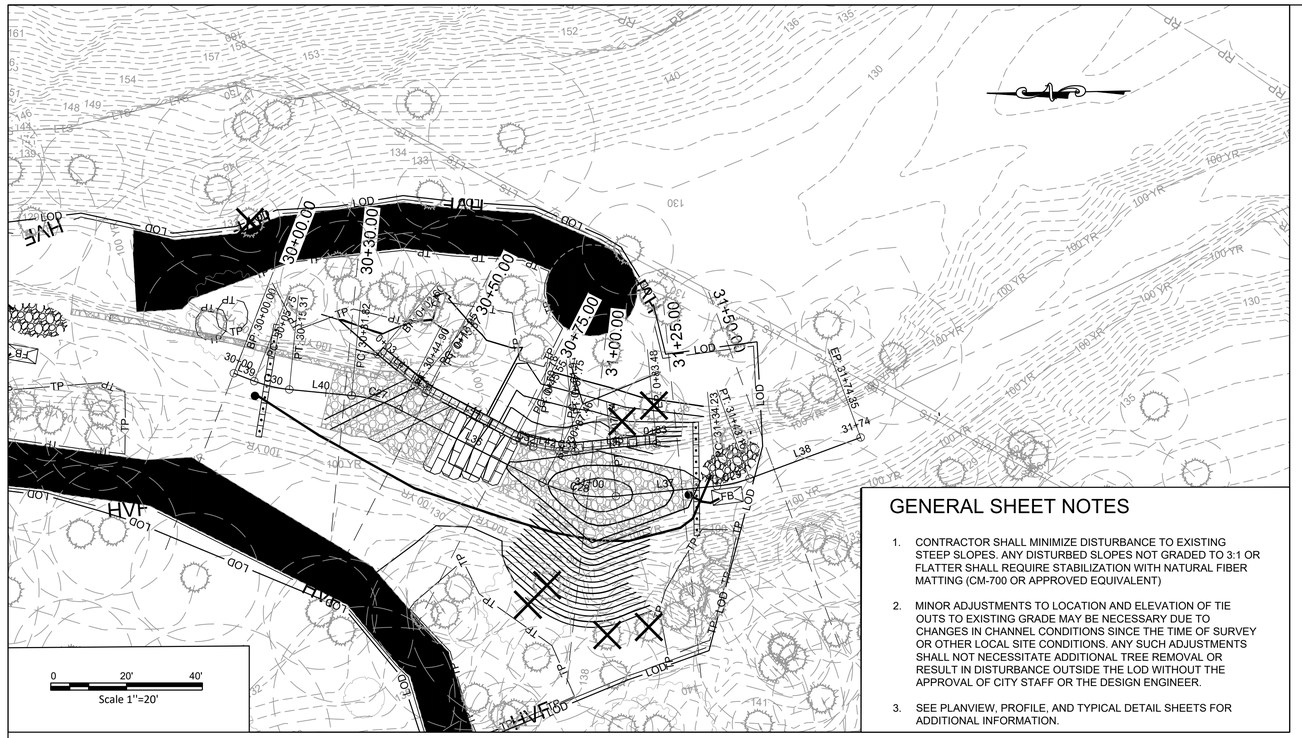

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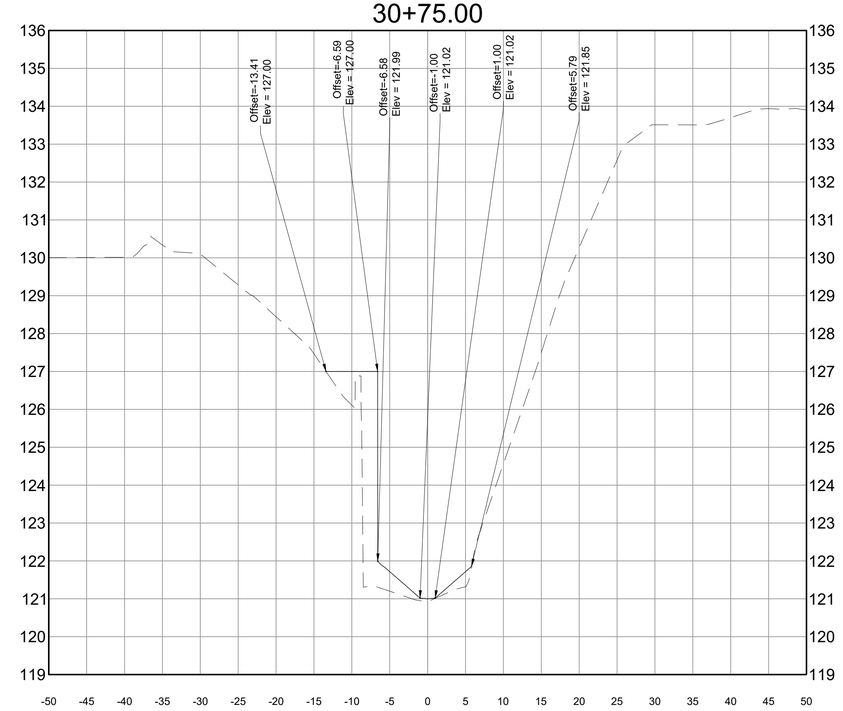
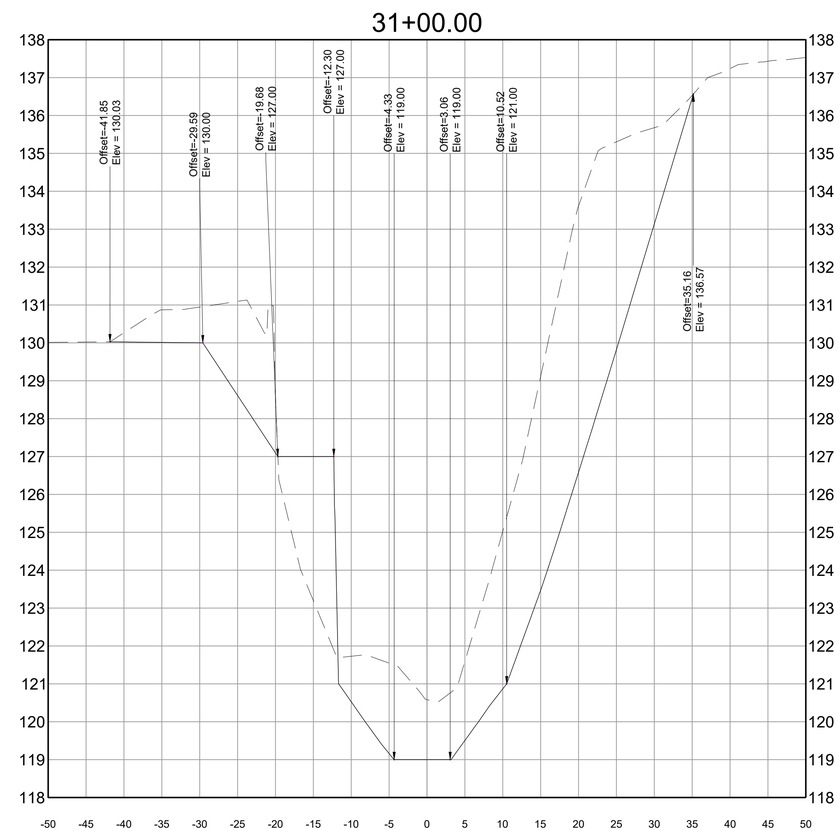
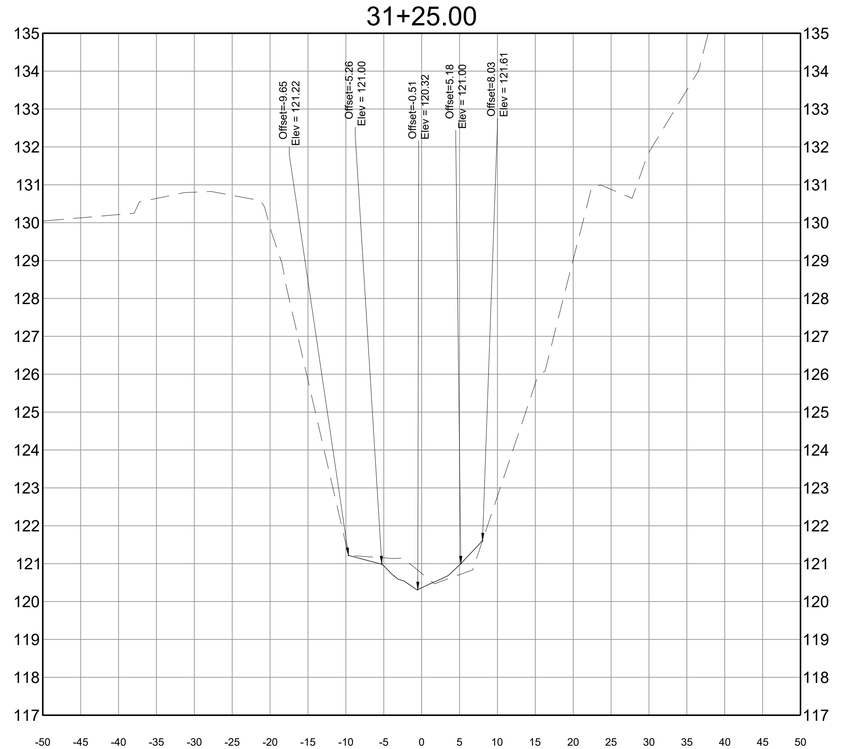
HORIZONTAL 10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL 1 0 1 2
SCALE IN FEET 1" = 2'







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CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CROSS SECTIONS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: CS-07
SCALE: 1:10
SHEET: 33 OF 55

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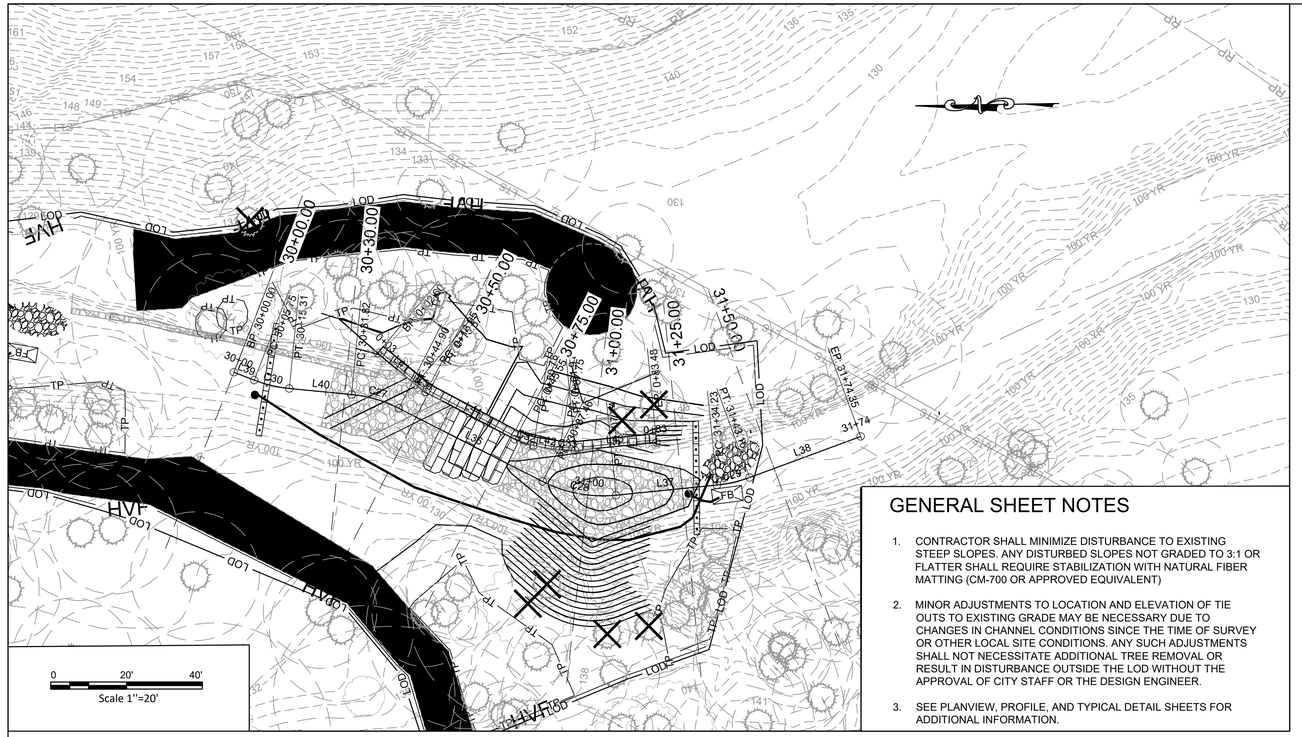

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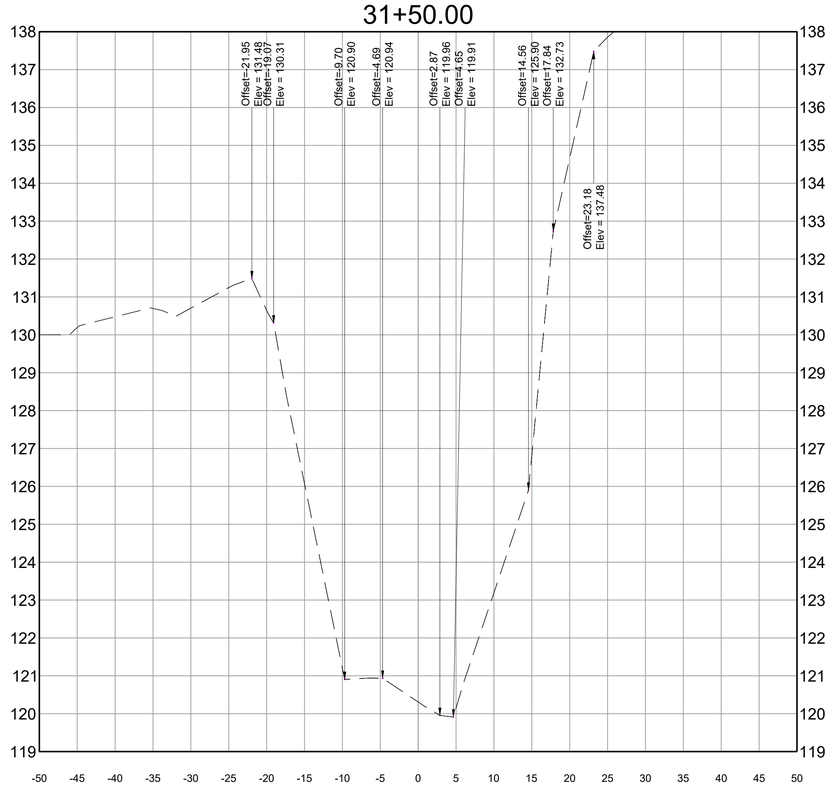
HORIZONTAL
10 0 10 20
SCALE IN FEET 1" = 10'

VERTICAL
1 0 1 2
SCALE IN FEET 1" = 2'



NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CROSS SECTIONES

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
CS-08
SCALE:
1:10
SHEET:
34 OF 55

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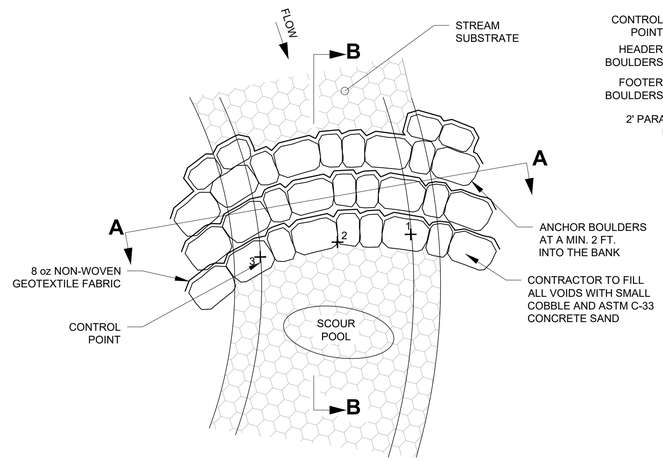
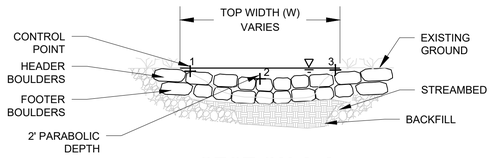
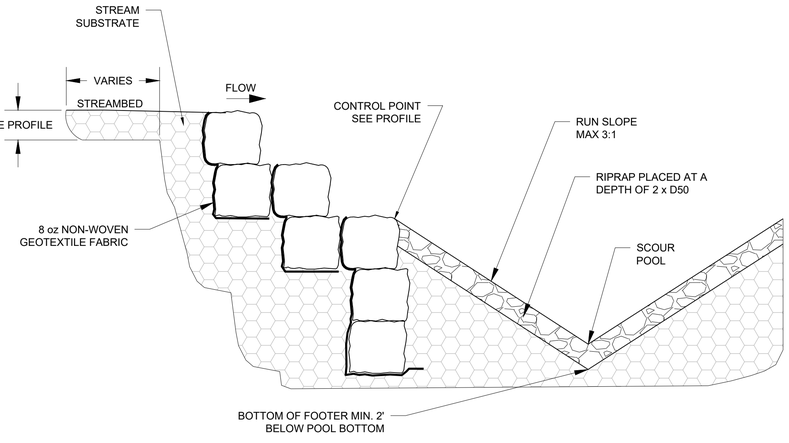
POINT	STATION	OFFSET	NORTHING	EASTING	ELEV.	DESCRIPTION
		DESIGN AREA 1				
1	0+37.85	-15.58'	6985955.478	11886806.45	150.54'	Left Tie
2	0+38.18	0.00'	6985940.416	11886802.44	148.54'	Invert
3	0+38.35	14.84'	6985926.115	11886798.47	150.54'	Right Tie
4	0+42.84	-15.59'	6985954.099	11886811.24	149.54'	Left Tie
5	0+43.16	0.00'	6985939.03	11886807.22	147.54'	Invert
6	0+43.44	15.51'	6985924.059	11886803.17	149.54'	Right Tie
7	0+47.83	-15.60'	6985952.719	11886816.04	148.54'	Left Tie
8	0+48.17	0.00'	6985937.637	11886812.03	146.54'	Invert
9	0+48.44	16.17'	6985922.034	11886807.79	148.54'	Right Tie
		DESIGN AREA 2				
10	10+39.78	-11.12'	6985699.91	11887143.07	142.00'	Left Tie
11	10+39.73	0.00'	6985691.725	11887135.54	140.00'	Invert
12	10+74.95	11.53'	6985659.484	11887153.81	135.00'	Right Tie
13	10+44.79	-11.47'	6985696.797	11887147.01	141.00'	Left Tie
14	10+44.73	0.00'	6985688.357	11887139.24	139.00'	Invert
15	10+69.67	11.50'	6985663.056	11887149.93	136.00'	Right Tie
16	10+49.79	-11.63'	6985693.542	11887150.81	140.00'	Left Tie
17	10+49.73	0.00'	6985684.989	11887142.93	138.00'	Invert
18	10+64.67	11.50'	6985666.425	11887146.23	137.00'	Right Tie
19	10+54.79	-11.58'	6985690.147	11887154.47	139.00'	Left Tie
20	10+54.73	0.00'	6985681.621	11887146.63	137.00'	Invert
21	10+59.68	11.50'	6985669.786	11887142.54	138.00'	Right Tie
22	10+59.80	-11.54'	6985686.737	11887158.15	138.00'	Left Tie
23	10+59.73	0.00'	6985678.254	11887150.33	136.00'	Invert
24	10+54.67	11.50'	6985673.159	11887138.84	139.00'	Right Tie
25	10+64.75	-11.53'	6985683.39	11887161.8	137.00'	Left Tie
26	10+64.73	0.00'	6985674.886	11887154.02	135.00'	Invert
27	10+49.67	11.50'	6985676.527	11887135.15	140.00'	Right Tie
28	10+69.75	-11.50'	6985680	11887165.48	136.00'	Left Tie
29	10+69.74	0.03'	6985671.488	11887157.71	134.00'	Invert
30	10+44.68	11.50'	6985679.893	11887131.45	141.00'	Right Tie
31	10+75.06	-11.34'	6985676.314	11887169.3	135.00'	Left Tie
32	10+74.73	0.01'	6985668.144	11887161.41	133.00'	Invert
33	10+39.67	11.50'	6985683.266	11887127.75	142.00'	Right Tie
		DESIGN AREA 4				
34	30+62.00	-6.82'	6984929.729	11887452.2	126.00'	Left Tie
35	30+62.09	0.00'	6984932.742	11887446.08	124.00'	Invert
36	30+62.19	10.59'	6984937.458	11887436.59	126.00'	Right Tie
37	30+67.02	-6.74'	6984925.292	11887449.86	125.00'	Left Tie
38	30+67.09	0.00'	6984928.286	11887443.81	123.00'	Invert
39	30+67.09	9.27'	6984932.49	11887435.55	125.00'	Right Tie
40	30+72.01	-6.65'	6984920.889	11887447.51	124.00'	Left Tie
41	30+72.09	0.00'	6984923.83	11887441.54	122.00'	Invert
42	30+72.09	7.21'	6984927.098	11887435.12	124.00'	Right Tie
43	30+77.00	-6.60'	6984916.461	11887445.2	123.00'	Left Tie
44	30+77.10	0.05'	6984919.385	11887439.23	121.00'	Invert
45	30+77.09	6.01'	6984922.1	11887433.92	123.00'	Right Tie



PLAN VIEW



SECTION A-A



SECTION B-B

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS		
DATE	BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

STRUCTURE STAKEOUT

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
ST-01

SCALE:
N/A

SHEET:
35 OF 55

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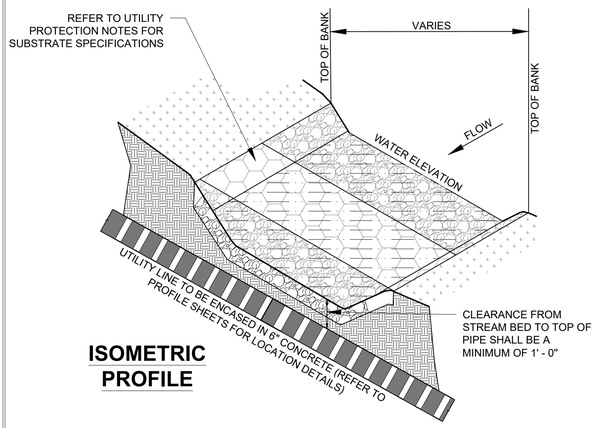
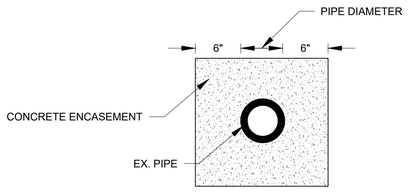


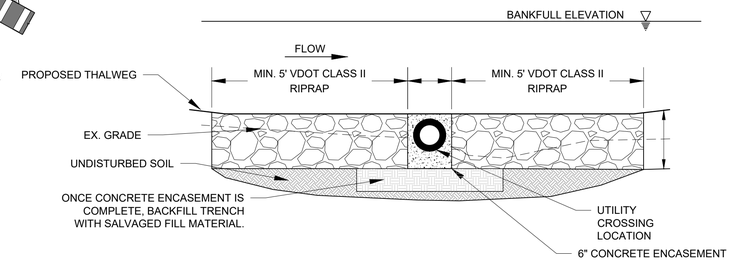
ISOMETRIC PROFILE

NOTES:

1. CONTRACTOR SHALL VERIFY UTILITIES HAVE BEEN MARKED.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR COST OF ANY DAMAGES TO UTILITIES CAUSED BY THE CONSTRUCTION, AND WILL BE REQUIRED TO PERFORM REPAIRS AT THE COUNTY'S REQUEST.
3. STREAM SUBSTRATE SHALL BE USED AS FILL MATERIAL TO RAISE THE EXISTING GRADE TO THE ELEVATION SPECIFIED IN PROFILE SHEETS.
4. CLASS II RIPRAP AND STREAM SUBSTRATE MIX SHALL BE PLACED TO THE SPRINGLINE OF THE CROSSING PIPE.
5. CONCRETE ENCASEMENT SHALL EXTEND A MINIMUM OF 5 FEET BEYOND THE TOP OF BANK ON THE LEFT AND RIGHT. THE CONCRETE ENCASEMENT SHALL START AND END WITHIN 1 FOOT OF THE NEAREST PIPE JOINT.
6. CONCRETE USED FOR THE ENCASEMENT SHALL BE 2500 P.S.I. OR GREATER.



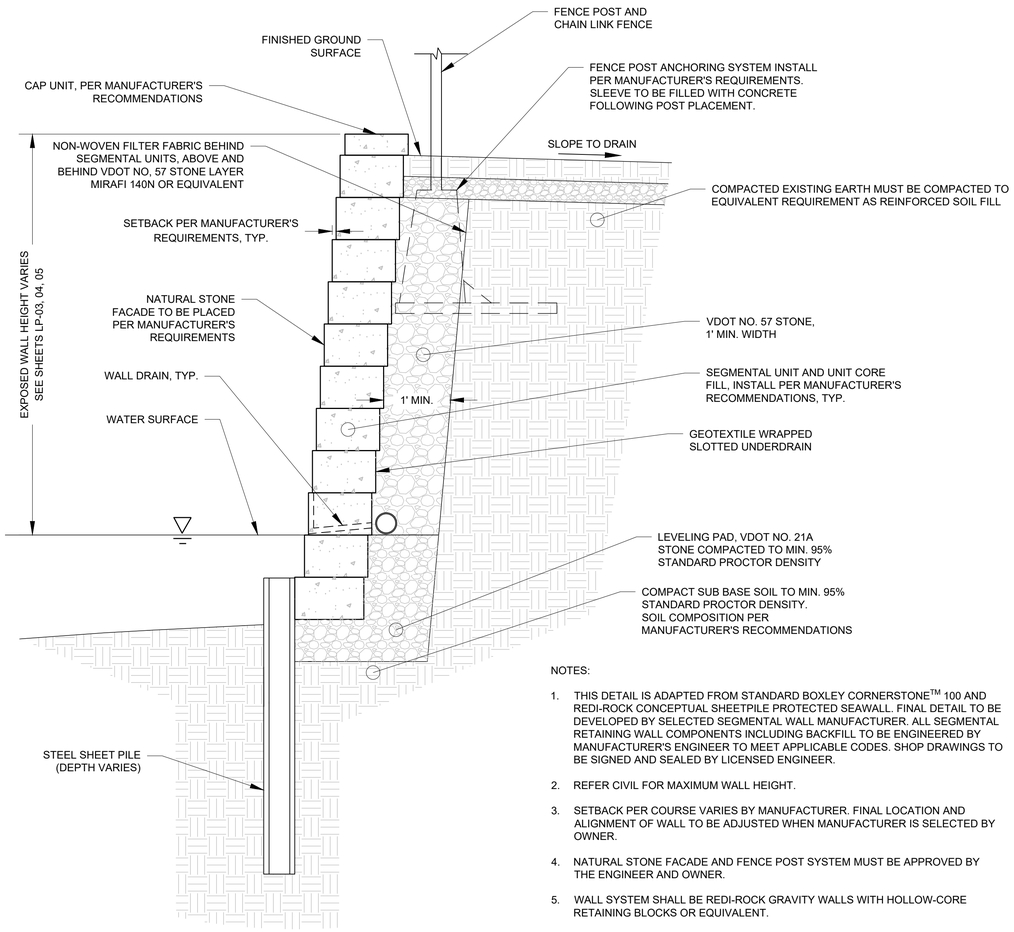
END VIEW



CROSS SECTION VIEW

1 DE-01 ARMOURED UTILITY PROTECTION - WITH PIPE ENCASEMENT

NOT TO SCALE

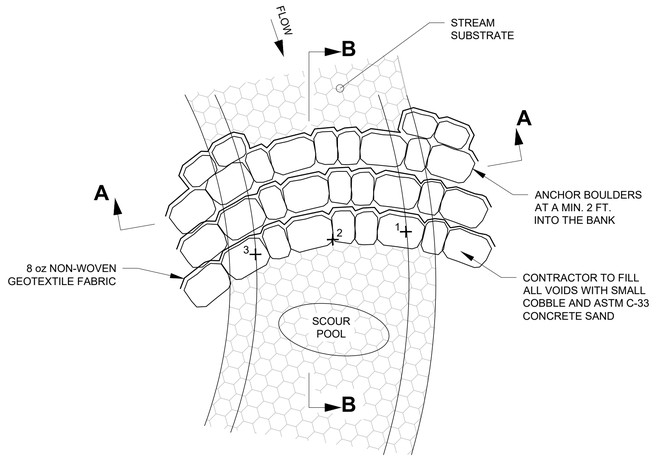


NOTES:

1. THIS DETAIL IS ADAPTED FROM STANDARD BOXLEY CORNERSTONE™ 100 AND REDI-ROCK CONCEPTUAL SHEETPILE PROTECTED SEAWALL. FINAL DETAIL TO BE DEVELOPED BY SELECTED SEGMENTAL WALL MANUFACTURER. ALL SEGMENTAL RETAINING WALL COMPONENTS INCLUDING BACKFILL TO BE ENGINEERED BY MANUFACTURER'S ENGINEER TO MEET APPLICABLE CODES. SHOP DRAWINGS TO BE SIGNED AND SEALED BY LICENSED ENGINEER.
2. REFER CIVIL FOR MAXIMUM WALL HEIGHT.
3. SETBACK PER COURSE VARIES BY MANUFACTURER. FINAL LOCATION AND ALIGNMENT OF WALL TO BE ADJUSTED WHEN MANUFACTURER IS SELECTED BY OWNER.
4. NATURAL STONE FACADE AND FENCE POST SYSTEM MUST BE APPROVED BY THE ENGINEER AND OWNER.
5. WALL SYSTEM SHALL BE REDI-ROCK GRAVITY WALLS WITH HOLLOW-CORE RETAINING BLOCKS OR EQUIVALENT.

2 DE-01 GRAVITY BLOCK WALL

NOT TO SCALE

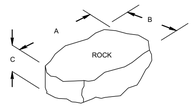


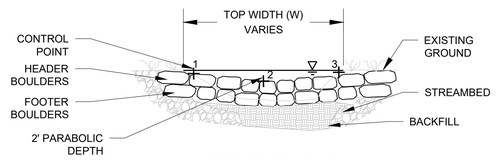
PLAN VIEW

NOTES:

1. BOULDERS THAT DO NOT MEET THE SIZE REQUIREMENTS OUTLINED IN THE SPECIFICATIONS WITHIN 3 INCHES FOR ANY PARAMETER MUST BE APPROVED FOR USE BY THE PROJECT ENGINEER.
2. CONTROL POINT ELEVATIONS ARE MEASURED AS NOTED IN SECTION A-A. CONTROL POINTS ARE PERPENDICULAR TO CHANNEL BANKS. THE CONTRACTOR SHALL BE SURE TO MAINTAIN A PARABOLIC CHANNEL SHAPE WHILE MAINTAINING CONTROL POINT ELEVATIONS. SEE SHEET ST-01 FOR DETAILS.
3. WHEN BOULDERS ARE UNABLE TO BE SILLED INTO THE BANK DUE TO PROXIMITY TO SEGMENTAL BLOCK RETAINING WALLS, THE CONTRACTOR SHALL WORK WITH THE SELECTED MANUFACTURER TO DETERMINE APPROPRIATE METHOD TO RETAIN CASCADE STABILITY, WHETHER BY POCKET KEYING, GROUT, OR SIMILAR. THE CONTRACTOR SHALL COMPACT SUBGRADE BELOW THE CASCADE TO ENSURE SETTLING DOES NOT AFFECT BOULDER CASCADE.

Boulder Sizing Table					
	Min. Density, pcf	A-Axis (Length), feet	B-Axis (Width), feet	C-Axis (Height), feet	Min. Number of Flat Sides
Header	165	2.0 - 3.0	2.0 - 3.0	1.5 - 2.0	1
Footer	165	2.0 - 3.0	2.0 - 3.0	1.5 - 2.0	2

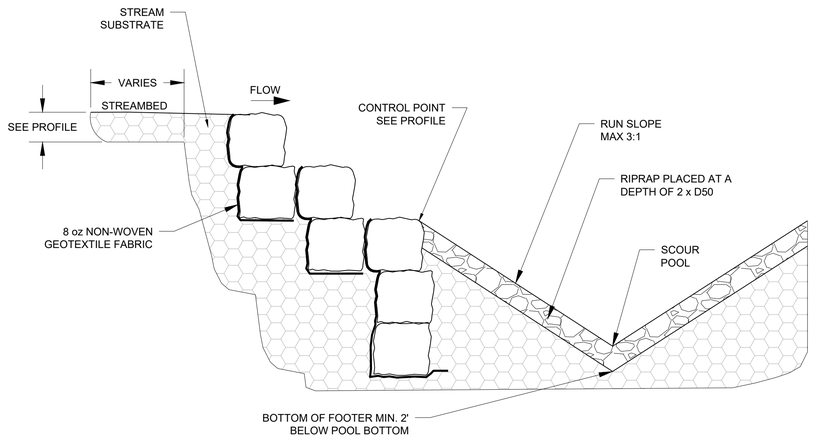




SECTION A-A

3 DE-01 BOULDER CASCADE

NOT TO SCALE



SECTION B-B

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.:	23086
DATE OF PLAN ISSUANCE:	
CONSULTANT PROJECT ID.:	60742359
DESIGNED BY: SB, TN	DATE: 10/2025
DRAWN BY: SB, TN	DATE: 10/2025
CHECKED BY: BA	DATE: 10/2025
APPROVED BY: BA	DATE: 10/2025

SEAL:

CONSTRUCTION DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: DE-01

SCALE: N/A

SHEET: 36 OF 55

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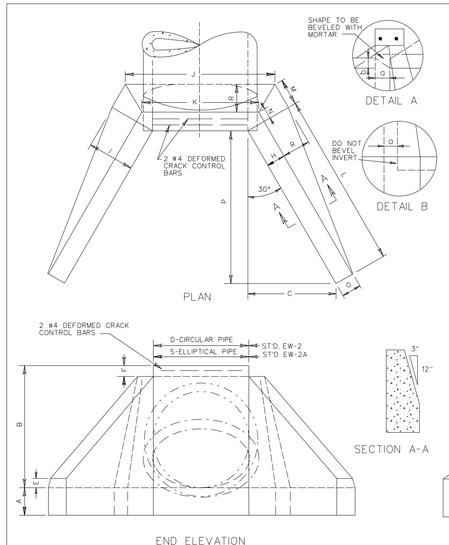
2016 ROAD & BRIDGE STANDARDS

EW-2, 2A



NOTES:

1. FOR TABLE OF DIMENSIONS AND VOLUMES FOR CIRCULAR PIPES (STANDARD EW-2) SEE SHEET 2 OF 3.
2. FOR TABLE OF DIMENSIONS AND VOLUMES FOR ELLIPTICAL PIPES (STANDARD EW-2A) SEE SHEET 3 OF 3.
3. THIS ITEM MAY BE PRECAST OR CAST IN PLACE.
4. ON SHALLOW FILLS, WHERE ENDWALLS ARE 1' OR LESS BELOW SHOULDER LINE, THE TOP OF THE ENDWALL SHALL BE CONSTRUCTED PARALLEL TO THE GRADE OF ROAD.
5. ALL CAST IN PLACE CONCRETE TO BE CLASS A3. FOR PRECAST SEE SHEETS 101.06 AND 101.07.
6. IN NO CASE SHALL TOP OF ENDWALL PROJECT ABOVE FILL SLOPE, DITCH SLOPE, OR SHOULDER.
7. THIS STANDARD TO BE USED WITH STRAIGHT CROSSINGS AND SKEW ANGLES TO 15°.
8. COST OF BARS FOR CRACK CONTROL TO BE INCLUDED IN PRICE PER BID PER CUBIC YARD CONCRETE.
9. HEADWALL TO BE BEVELED IN ALL AREAS EXCEPT WHERE A CONFLICT WITH INVERT AND WINGWALLS OCCUR.
10. BEVEL EDGE IS REQUIRED ON THE HEADWALL AT THE INLET END OF THE CULVERT (WHERE THE FLOW ENTERS THE CULVERT). HEADWALL AT THE OUTLET END OF THE CULVERT MAY BE EITHER SQUARE EDGE OR BEVEL EDGE.
11. ¾" CHAMFER MAY BE PROVIDED ON ALL EDGES AT MANUFACTURER'S OPTION.

SPECIFICATION REFERENCE	STANDARD ENDWALL FOR PIPE CULVERTS 42" - 96" CIRCULAR AND 60" x 38" - 106" x 68" ELLIPTICAL PIPES VIRGINIA DEPARTMENT OF TRANSPORTATION	VDOT ROAD AND BRIDGE STANDARDS REVISION DATE / SHEET 1 OF 3
105 302		101.03

2016 ROAD & BRIDGE STANDARDS

2016 ROAD & BRIDGE STANDARDS

EW-2

TABLE OF DIMENSIONS AND CONCRETE VOLUMES PER ENDWALL
FOR 42" - 96" CIRCULAR PIPE CULVERTS

DIAMETER OF PIPE CULVERTS

	DIMENSION	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	DIMENSION
FOR 1½:1 FILL SLOPE	A	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	A
	B	4'-9½"	5'-4"	5'-10½"	6'-5"	6'-11½"	7'-6"	8'-0½"	8'-7"	9'-2¼"	9'-9¾"	B
	C	3'-3¾"	3'-9"	4'-2¼"	4'-7"	5'-0⅝"	5'-5¾"	5'-11"	6'-4¼"	6'-9⅜"	7'-2⅝"	C
	D	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	D
	E	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	0'-6"	E
	F	0'-5½"	0'-6"	0'-6½"	0'-7"	0'-7½"	0'-8"	0'-8½"	0'-9"	0'-9½"	0'-10"	F
	G	4'-4"	4'-10"	5'-4"	5'-10"	6'-4"	6'-10"	7'-4"	7'-10"	8'-4"	8'-10"	G
	H	0'-10"	0'-10"	0'-11"	1'-0"	1'-1"	1'-2"	1'-3"	1'-4"	1'-5"	1'-6"	H
	I	1'-11"	2'-0½"	2'-3"	2'-5½"	2'-8"	2'-10½"	3'-1"	3'-3½"	3'-6"	3'-8½"	I
	J	5'-8½"	6'-4¼"	7'-1¼"	7'-10"	8'-7"	9'-4"	10'-0¾"	10'-9⅝"	11'-7"	12'-4⅛"	J
	K	4'-5½"	4'-11½"	5'-6⅜"	6'-1⅝"	6'-8"	7'-4⅜"	7'-11¼"	8'-6½"	9'-2"	9'-9¼"	K
	L	6'-7⅝"	7'-6"	8'-4½"	9'-2⅞"	10'-1⅜"	10'-11⅝"	11'-10"	12'-8⅜"	13'-6⅞"	14'-5¼"	L
	M	1'-7¼"	1'-2½"	1'-3⅝"	1'-5"	1'-6½"	1'-8"	1'-9⅝"	1'-10¾"	2'-0⅜"	2'-2"	M
	N	0'-5¾"	0'-5¾"	0'-6⅜"	0'-6¾"	0'-7½"	0'-8⅛"	0'-8⅝"	0'-9¼"	0'-10"	0'-10½"	N
	O	0'-11½"	0'-11½"	1'-0½"	1'-1½"	1'-2½"	1'-3½"	1'-4½"	1'-5½"	1'-6½"	1'-7½"	O
	P	5'-9"	6'-6"	7'-3"	8'-0"	8'-9"	9'-6"	10'-3"	11'-0"	11'-9"	12'-6"	P
	R	1'-1"	1'-2½"	1'-4"	1'-5½"	1'-7"	1'-8½"	1'-10"	1'-11½"	2'-1"	2'-2½"	R
CUBIC YARDS CONCRETE	CONC. PIPE	3.558	4.373	5.635	7.089	8.776	10.702	12.861	15.303	18.195	21.285	CONC. PIPE
	C.M. PIPE	3.791	4.680	6.054	7.642	9.490	11.605	13.984	16.678	19.724	23.107	C.M. PIPE
FOR 2:1 FILL SLOPE	C	4'-4"	4'-10⅞"	5'-5¾"	6'-0¾"	6'-7⅞"	7'-2⅝"	7'-9½"	8'-4½"	8'-11⅝"	9'-6¼"	C
	F	0'-6½"	0'-7"	0'-7½"	0'-8"	0'-8½"	0'-9"	0'-9½"	0'-10"	0'-10½"	0'-11"	F
	G	4'-3"	4'-9"	5'-3"	5'-9"	6'-3"	6'-9"	7'-3"	7'-9"	8'-3"	8'-9"	G
	I	1'-10¾"	2'-0¼"	2'-2¾"	2'-5¼"	2'-7¾"	2'-10¼"	3'-0¾"	3'-3¼"	3'-5¾"	3'-8¼"	I
	J	5'-8¼"	6'-4"	7'-1"	7'-9¾"	8'-6¾"	9'-3½"	10'-0½"	10'-9⅞"	11'-6⅞"	12'-3½"	J
	L	8'-8"	9'-9¾"	10'-11⅝"	12'-1½"	13'-3⅜"	14'-5¼"	15'-7"	16'-9"	17'-10¾"	19'-0⅝"	L
	M	1'-11¼"	1'-2"	1'-3½"	1'-4¾"	1'-6⅛"	1'-7¾"	1'-9¼"	1'-10⅝"	2'-0¼"	2'-1⅝"	M
	P	7'-6"	8'-6"	9'-6"	10'-6"	11'-6"	12'-6"	13'-6"	14'-6"	15'-6"	16'-6"	P
	R	1'-0⅞"	1'-2¼"	1'-3⅝"	1'-5¼"	1'-6¾"	1'-8¼"	1'-9¾"	1'-11¼"	2'-0⅞"	2'-2¼"	R
CUBIC YARDS CONCRETE	CONC. PIPE	4.238	5.230	6.761	8.538	10.602	12.958	15.612	18.623	22.104	25.898	CONC. PIPE
	C.M. PIPE	4.469	5.536	7.177	9.088	11.312	13.856	16.730	19.993	23.618	27.704	C.M. PIPE
FOR 1½:1 AND 2:1 FILL SLOPES	a	0'-4½"	0'-5"	0'-5½"	0'-6¼"	0'-7"	0'-7½"	0'-8¼"	0'-8¾"	0'-9½"	0'-10"	a
	b	0'-3½"	0'-4"	0'-4½"	0'-5"	0'-5½"	0'-6"	0'-6½"	0'-7"	0'-7½"	0'-8"	b

FOR ALL DIMENSIONS NOT SHOWN SEE VALUES LISTED ABOVE FOR 1½:1 FILL SLOPE

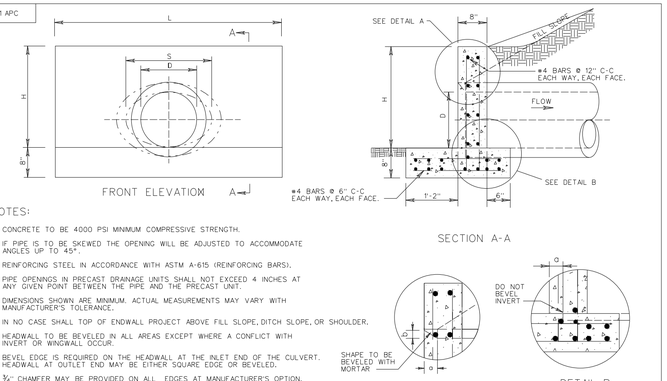
VDOT ROAD AND BRIDGE STANDARDS SHEET 2 OF 3 / REVISION DATE	STANDARD ENDWALL FOR PIPE CULVERTS 42" - 96" CIRCULAR PIPES VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE 105 302
101.04		

2016 ROAD & BRIDGE STANDARDS

4 DE-02 VDOT STANDARD ENDWALL FOR PIPE CULVERTS
NOT TO SCALE

2016 ROAD & BRIDGE STANDARDS

EW-1, 1 APC



NOTES:

1. CONCRETE TO BE 4000 PSI MINIMUM COMPRESSIVE STRENGTH.
2. IF PIPE IS TO BE SKEWED THE OPENING WILL BE ADJUSTED TO ACCOMMODATE ANGLES UP TO 45°.
3. REINFORCING STEEL IN ACCORDANCE WITH ASTM A-615 (REINFORCING BARS).
4. PIPE OPENINGS IN PRECAST DRAINAGE UNITS SHALL NOT EXCEED 4 INCHES AT ANY GIVEN POINT BETWEEN THE PIPE AND THE PRECAST UNIT.
5. DIMENSIONS SHOWN ARE MINIMUM. ACTUAL MEASUREMENTS MAY VARY WITH MANUFACTURER'S TOLERANCE.
6. IN NO CASE SHALL TOP OF ENDWALL PROJECT ABOVE FILL SLOPE, DITCH SLOPE, OR SHOULDER.
7. HEADWALL TO BE BEVELED IN ALL AREAS EXCEPT WHERE A CONFLICT WITH INVERT OR WINGWALL OCCUR.
8. BEVEL EDGE IS REQUIRED ON THE HEADWALL AT THE INLET END OF THE CULVERT. HEADWALL AT OUTLET END MAY BE EITHER SQUARE EDGE OR BEVELED.
9. ¾" CHAMFER MAY BE PROVIDED ON ALL EDGES AT MANUFACTURER'S OPTION.

EW-1P0

ENDWALL FOR CIRCULAR PIPE

DIAMETER OF PIPE CULVERT

	12"	15"	18"	21" OR 24"	27" OR 30"	33" OR 36"
H	2'-0"	2'-3"	2'-6"	3'-2"	3'-10"	4'-4"
L	4'-0"	5'-0"	6'-0"	8'-0"	10'-0"	12'-0"
a	0'-1¼"	0'-1⅝"	0'-2"	0'-2½"	0'-3¼"	0'-3¾"
b	0'-1"	0'-1¼"	0'-1½"	0'-2"	0'-2½"	0'-3"

EW-1AP0

ENDWALL FOR ELLIPTICAL PIPE

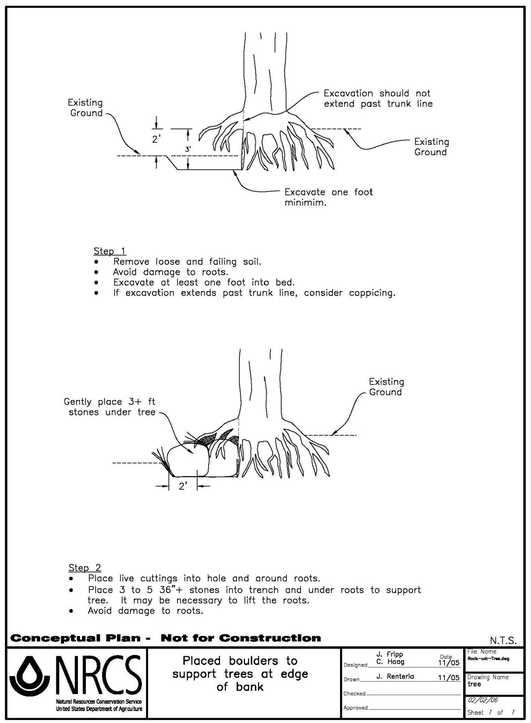
SIZE OF ELLIPTICAL PIPE CULVERT (SPAN x RISE)

S x D	23" x 14"	30" x 19"	34" x 22"	38" x 24"	42" x 27"	45" x 29"	49" x 32"	53" x 34"
H	1'-10"	2'-4"	2'-7"	2'-9"	3'-1"	3'-3"	3'-6"	3'-8"
L	5'-5"	7'-2"	8'-6"	9'-2"	10'-2"	10'-11"	12'-1"	12'-11"
a	0'-2½"	0'-3¼"	0'-3½"	0'-4"	0'-4½"	0'-4¾"	0'-5"	0'-5½"
b	0'-2"	0'-2½"	0'-2¾"	0'-3"	0'-3½"	0'-3⅞"	0'-4"	0'-4½"

VDOT ROAD AND BRIDGE STANDARDS SHEET 1 OF 1 / REVISION DATE	PRECAST ENDWALL FOR PIPE CULVERTS 12" - 36" CIRCULAR AND 23" x 14" - 53" x 34" ELLIPTICAL PIPES VIRGINIA DEPARTMENT OF TRANSPORTATION	SPECIFICATION REFERENCE 105 302
101.02		

2016 ROAD & BRIDGE STANDARDS

5 DE-02 VDOT PRECAST ENDWALL FOR PIPE CULVERTS
NOT TO SCALE



6 DE-02 ROCK PACKING
NOT TO SCALE

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

CONSTRUCTION DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
DE-02

SCALE:
N/A

SHEET:
37 OF 55

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SEQUENCE OF CONSTRUCTION

THE FOLLOWING SEQUENCE OF EVENTS AND EROSION CONTROL MEASURES SHALL BE INCORPORATED INTO THE CONSTRUCTION SCHEDULE FOR THIS PROJECT AND SHALL APPLY TO ALL CONSTRUCTION ACTIVITIES WITHIN THE PROJECT LIMITS:

PROJECT INITIATION:

1. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FROM THE COUNTY AND CONDUCT REQUIRED PRE-CONSTRUCTION MEETINGS AS OUTLINED IN THE CONSTRUCTION SPECIFICATIONS PRIOR TO COMMENCING CONSTRUCTION.
2. THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE (1) WEEK PRIOR TO PRE-CONSTRUCTION MEETING, ONE (1) WEEK PRIOR TO COMMENCEMENT OF LAND DISTURBING ACTIVITY AND ONE (1) WEEK PRIOR TO FINAL INSPECTION.
3. PRIOR TO THE START OF ANY EARTH DISTURBANCE AN ON-SITE PRE-CONSTRUCTION MEETING SHALL BE HELD TO ENSURE THAT ALL AFFECTED PARTIES (DESIGN ENGINEER, CONTRACTOR, CITY OF ALEXANDRIA STAFF, OWNER, AND PROJECT MANAGER) FULLY UNDERSTAND THE CONSTRUCTION SEQUENCING. THE LIMITS OF DISTURBANCE AND GRADING (LOD) SHALL BE MARKED WITH FLAGGING PRIOR TO THIS MEETING TO ALLOW REVIEW PRIOR TO ESTABLISHING PERIMETER CONTROLS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING MISS UTILITY AT 1-800-552-7001 FOR THE LOCATION OF ALL PUBLIC AND PRIVATE UTILITY LINES, PIPES, CABLES, AND ASSOCIATED FEATURES PRIOR TO ANY CONSTRUCTION WORK; ALL UTILITIES SHALL BE CLEARLY IDENTIFIED PRIOR TO CONSTRUCTION.
5. DURING THE PRE-CONSTRUCTION MEETING THE LOD SHALL REVIEWED ON-SITE WITH THE CONTRACTOR, DESIGN ENGINEER, OWNER OR OWNER'S REPRESENTATIVE(S), AND A CITY ARBORIST. A DETERMINATION SHALL BE MADE AT THAT TIME REGARDING WHICH TREES WILL BE REMOVED BASED ON THE APPROVED GRADING AND STREAM RESTORATION ACTIVITIES. ADJUSTMENTS MAY BE MADE TO FLAGGING MARKING THE LOD AND TREE PLANKING CALLED FOR TO ADEQUATELY PROTECT TREES TO BE PRESERVED AND FACILITATE THE SAFE REMOVAL OF TREES TO BE REMOVED. THE LOCATION FOR INSTALLATION OF TREE PROTECTION FENCING SHALL BE ADJUSTED IN CONJUNCTION WITH ANY CHANGES TO THE LOD PRIOR TO THE ESTABLISHMENT OF PERIMETER CONTROLS AND COMMENCEMENT OF ANY OTHER CONSTRUCTION ACTIVITIES.
6. PRIOR TO START OF WORK, THE CONTRACTOR SHALL ARRIVE ON SITE AND SET PERIMETER EROSION AND SEDIMENT CONTROLS AS DIRECTED IN PHASE I EROSION & SEDIMENT CONTROL PLANS. MEASURES INCLUDED IN OTHER PHASE I MEASURES ARE TEMPORARY STONE CONSTRUCTION ENTRANCE, ACCESS ROAD DECK MATS, CULVERT OUTLET PROTECTION, TREE PROTECTION/TREE PLANKING, CULVERT INLET PROTECTION, SAFETY FENCE, SUPER SILT FENCE, TEMPORARY STREAM CROSSINGS, PUMP AROUNDS, AND FILTER BAGS.
7. OBTAIN APPROVAL FROM THE CITY FOR EROSION AND SEDIMENT CONTROL MEASURES INSTALLED. THE CONTRACTOR SHALL PROVIDE THE INSPECTOR 48-HOUR NOTIFICATION TO SCHEDULE AN ONSITE PRE-CONSTRUCTION MEETING TO INSPECT THE INSTALLATION OF EROSION AND SEDIMENT MEASURES, PRIOR TO LAND DISTURBANCE.
8. CONTRACTOR SHALL PROVIDE SEED TAGS AND GAIN APPROVAL FOR SAID TAGS FROM CITY STAFF, PRIOR TO COMMENCING ANY WORK. SEED MUST BE ON-SITE PRIOR TO GRADING ACTIVITIES TO ALLOW PROGRESSIVE STABILIZATION.
9. TREES TO BE REMOVED THAT ARE LOCATED ON THE LOD OR IMMEDIATELY ADJACENT TO THE LOD WITHIN THE PROTECTED AREA SHALL BE REMOVED USING CHAIN SAWS TO MINIMIZE ROOT ZONE DISTURBANCE OR TREES TO BE PRESERVED. TREES SHALL BE CUT FLUSH WITH THE GROUND AND ONLY REMOVED IF NECESSARY TO ACCOMPLISH PROPOSED GRADING.
10. TREE PLANKING SHALL BE INSTALLED AS NEEDED ON ANY TREE TO BE PRESERVED (OUTSIDE THE LOD), BUT WHERE RISK OF DAMAGE FROM CONSTRUCTION TRAFFIC IS FORESEEABLE.
11. CONTRACTOR SHALL SUPPLY AND MAINTAIN AN ONSITE CONCRETE WASHOUT STRUCTURE WHICH SHALL BE ON SITE AND AVAILABLE DURING ALL CONCRETE RELATED WORK ACTIVITIES.
12. TEMPORARY SOIL STABILIZATION WILL BE APPLIED WITHIN 7 DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. TREES CAN BE FLUSH CUT IN ONE MOBILIZATION, HOWEVER STUMPS TO BE REMOVED SHALL REMAIN UNTIL AREA IS BEING ACTIVELY WORKED.
13. BASED ON A 3-DAY DRY WEATHER FORECAST, PLACE TEMPORARY SANDBAG DIVERSION AT THE UPSTREAM AND DOWNSTREAM ENDS OF THE WORK AREA, AS INDICATED ON THE PLANS. WHERE INDICATED, STREAM FLOW SHOULD BE PUMPED AROUND THE WORK AREA AND THE PUMP SHOULD BE DISCHARGED ONTO A STABLE VELOCITY DISSIPATOR MADE OF RIPRAP OR SANDBAGS.
14. INSTALL DEWATERING PUMP AROUND PRACTICE FOR THE DAILY WORK ZONE AS SHOWN IN THE EROSION & SEDIMENT CONTROL PLANS.
15. WATER FROM THE WORK AREA SHOULD BE PUMPED TO A SEDIMENT FILTERING DEVICE, SUCH AS A DEWATERING BASIN, FILTER BAG, OR OTHER APPROVED SOURCE. THE MEASURE SHOULD BE LOCATED SUCH THAT THE WATER DRAINS INTO THE EXISTING CHANNEL. APPROXIMATE LOCATIONS FOR DEWATERING MEASURES ARE INDICATED ON THE PLANS AND THE CONTRACTOR IS RESPONSIBLE FOR ADJUSTING THE LOCATION AS NEEDED TO ENSURE THE WORK AREA IS MAINTAINED IN DRY CONDITION.
16. STAKE OUT THE PROPOSED ALIGNMENT AS SHOWN ON THE GEOMETRY PLAN SHEETS. PC AND PT POINTS SHALL BE STAKED ALONG THE CENTERLINE AND AT 25-FOOT DOUBLE OFFSETS, IDENTIFIED BY CORRESPONDING CENTERLINE STATION, ON EACH SIDE OF THE PROPOSED CHANNEL. THE CENTER OF EACH CURVE SHALL BE STAKED AND MARKED WITH THE CORRESPONDING RADIUS OF CURVATURE. VERTICAL CONTROL SHALL BE CLEARLY MARKED AT SEVERAL LOCATIONS ALONG THE PROPOSED CHANNEL.
17. CONSTRUCTION SHALL PROCEED FROM UPSTREAM TO DOWNSTREAM, UNLESS AN ALTERNATIVE SEQUENCE IS APPROVED BY THE CITY. ALL IN-STREAM WORK SHALL BE PROTECTED BY PUMP AROUND DIVERSION. PHASES I AND II MAY BE COMPLETED IN CONJUNCTION. PHASE III SHALL BE COMPLETED PRIOR TO PHASE IV TO ALLOW THE USAGE OF EXCESS MATERIAL FROM PHASE III WITHIN PHASE IV.
18. THE CONTRACTOR MAY REQUEST APPROVAL FOR A CHANGE IN THE SEQUENCE OF CONSTRUCTION WITH APPROVAL FROM THE CITY AND THE PROJECT ENGINEER.

PHASE I:

1. HARVEST AND STOCKPILE SUITABLE FILL MATERIAL AS NEEDED FROM STATION 6+50 - 8+00. TEMPORARILY STABILIZE AREA. ANY TEMPORARY SITE SHALL BE STABILIZED AT A MAXIMUM 3H:1V SLOPE.
2. INSTALL THE 72" STORMWATER PIPE ENDWALL PER THE PLANS AND DETAIL.
3. INSTALL GRAVITY BLOCK RETAINING WALLS. IT IS SOLELY THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE WALL AND IT'S COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, SHEET PILES, GUYS, TIE-INS, OR BOULDER CASCADE SILLS WHICH MAY BE NECESSARY.
4. EXCAVATE STREAM CHANNEL TO THE SUBGRADE.
5. PLACE RIPRAP AS NECESSARY TO INSTALL THE PLUNGE POOL. PRIOR TO PLACING THE RIP RAP IN THE CHANNEL THE CONTRACTOR SHALL ENSURE A WELL GRADED BED MATERIAL IS PLACED THROUGHOUT THE CHANNEL.
6. CONTINUE GRADING AND STRUCTURE INSTALLATION UNTIL ALL GRADING AND IN-STREAM STRUCTURES ARE INSTALLED. TIE OUT SLOPES SHALL NOT EXCEED 2:1. IF BEDROCK CONDITIONS ARE ENCOUNTERED WITHIN THE WORK AREA DURING CONSTRUCTION, CONSULT THE OWNER AND PROJECT ENGINEER FOR INVERT ELEVATION ADJUSTMENTS.
7. ONCE FINAL GRADING HAS BEEN ACHIEVED, APPLY TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCH PRIOR TO FINALIZING INSTALLATION OF COIR MATTING BY SECURING WITH STAKES AND KEYING IN FABRIC PER MANUFACTURER RECOMMENDATIONS AND AS SHOWN IN THE PLANS.

PHASE II:

1. INSTALL THE VIRGINIA PRE-CAST 36" STORMWATER PIPE ENDWALL PER THE PLANS AND DETAIL.
2. PROPERLY ENCASE THE SEWER IN CONCRETE PER THE UTILITY PROTECTION DETAIL.
3. INSTALL GRAVITY BLOCK RETAINING WALLS. IT IS SOLELY THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE WALL AND IT'S COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, SHEET PILES, GUYS, TIE-INS, OR BOULDER CASCADE SILLS WHICH MAY BE NECESSARY.
4. EXCAVATE STREAM CHANNEL TO THE SUBGRADE.
5. PLACE RIPRAP AS NECESSARY ADJACENT TO THE CONCRETE ENCASEMENT PER THE UTILITY PROTECTION DETAIL. PRIOR TO PLACING THE RIP RAP IN THE CHANNEL THE CONTRACTOR SHALL ENSURE A WELL GRADED BED MATERIAL IS PLACED THROUGHOUT THE CHANNEL.
6. CONTINUE GRADING AND STRUCTURE INSTALLATION UNTIL ALL GRADING AND IN-STREAM STRUCTURES ARE INSTALLED. TIE OUT SLOPES SHALL NOT EXCEED 2:1. IF BEDROCK CONDITIONS ARE ENCOUNTERED WITHIN THE WORK AREA DURING CONSTRUCTION, CONSULT THE OWNER AND PROJECT ENGINEER FOR INVERT ELEVATION ADJUSTMENTS.
7. ONCE FINAL GRADING HAS BEEN ACHIEVED, APPLY TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCH PRIOR TO FINALIZING INSTALLATION OF COIR MATTING BY SECURING WITH STAKES AND KEYING IN FABRIC PER MANUFACTURER RECOMMENDATIONS AND AS SHOWN IN THE PLANS.

PHASE III:

1. INSTALL THE VIRGINIA PRE-CAST 36" STORMWATER PIPE ENDWALL PER THE PLANS AND DETAIL.
2. PROPERLY ENCASE THE SEWER IN CONCRETE PER THE UTILITY PROTECTION DETAIL.
3. INSTALL GRAVITY BLOCK RETAINING WALLS. IT IS SOLELY THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE WALL AND IT'S COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, SHEET PILES, GUYS, TIE-INS, OR BOULDER CASCADE SILLS WHICH MAY BE NECESSARY.
4. EXCAVATE STREAM CHANNEL TO THE SUBGRADE.
5. PLACE RIPRAP AS NECESSARY ADJACENT TO THE CONCRETE ENCASEMENT PER THE UTILITY PROTECTION DETAIL. PRIOR TO PLACING THE RIP RAP IN THE CHANNEL THE CONTRACTOR SHALL ENSURE A WELL GRADED BED MATERIAL IS PLACED THROUGHOUT THE CHANNEL.
6. CONTINUE GRADING AND STRUCTURE INSTALLATION UNTIL ALL GRADING AND IN-STREAM STRUCTURES ARE INSTALLED. TIE OUT SLOPES SHALL NOT EXCEED 2:1. IF BEDROCK CONDITIONS ARE ENCOUNTERED WITHIN THE WORK AREA DURING CONSTRUCTION, CONSULT THE OWNER AND PROJECT ENGINEER FOR INVERT ELEVATION ADJUSTMENTS.
7. ONCE FINAL GRADING HAS BEEN ACHIEVED, APPLY TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCH PRIOR TO FINALIZING INSTALLATION OF COIR MATTING BY SECURING WITH STAKES AND KEYING IN FABRIC PER MANUFACTURER RECOMMENDATIONS AND AS SHOWN IN THE PLANS.

PHASE IV:

1. DEMOLISH EXISTING MANHOLE CONCRETE SKIRT.
2. INSTALL GRAVITY BLOCK RETAINING WALLS. IT IS SOLELY THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE WALL AND IT'S COMPONENT PARTS DURING ERECTION. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, SHEET PILES, GUYS, TIE-INS, OR BOULDER CASCADE SILLS WHICH MAY BE NECESSARY.
3. EXCAVATE STREAM CHANNEL TO THE SUBGRADE.
4. CONTINUE GRADING UNTIL ALL GRADING IS COMPLETE. TIE OUT SLOPES SHALL NOT EXCEED 2:1. IF BEDROCK CONDITIONS ARE ENCOUNTERED WITHIN THE WORK AREA DURING CONSTRUCTION, CONSULT THE OWNER AND PROJECT ENGINEER FOR INVERT ELEVATION ADJUSTMENTS.
5. ONCE FINAL GRADING HAS BEEN ACHIEVED, APPLY TEMPORARY SEEDING, PERMANENT SEEDING, AND MULCH PRIOR TO FINALIZING INSTALLATION OF COIR MATTING BY SECURING WITH STAKES AND KEYING IN FABRIC PER MANUFACTURER RECOMMENDATIONS AND AS SHOWN IN THE PLANS.

PROJECT CLOSEOUT:

1. AS THE WORK FOR EACH DESIGN AREA IS COMPLETED, E&SC MEASURES CAN BE REMOVED WITH APPROVAL FROM PROJECT OWNER, ENGINEER, AND THE EROSION AND SEDIMENT CONTROL INSPECTOR.
2. ONCE CONSTRUCTION OF PROJECT AREA HAS BEEN COMPLETED, THE CONSTRACTOR SHALL PROCEED WITH ARRANGEMENT OF COMPOSING APPROVED RECORD DRAWINGS. CONTRACTOR SHALL FIELD SURVEY ALL INSTALLED WORK. FORWARD THE ELECTRONIC SURVEY TO THE PROJECT ENGINEER FOR VERIFICATION THAT THE PROJECT HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLAN. ELECTRONIC COPY OF THE SURVEY MUST BE ACCOMPANIED BY A HARD COPY OF RECORD DRAWINGS SIGNED AND SEALED BY A MARYLAND REGISTERED LAND SURVEYOR.
3. ONCE CONSTRUCTION OF ALL PROJECT AREAS AT THE PROJECT SITE HAVE BEEN COMPLETED, MAINTENANCE OF TRAFFIC DEVICES SHALL BE REMOVED.
4. CONTRACTOR SHALL ARRANGE FOR AND OBTAIN ANY REQUIRED FINAL SITE INSPECTIONS AND CERTIFICATIONS FOR PROJECT CLOSEOUT.

NOT FOR CONSTRUCTION

DATE	REVISIONS BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

SEQUENCE OF CONSTRUCTION

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: SE-01

SCALE: N/A

SHEET: 38 OF 55

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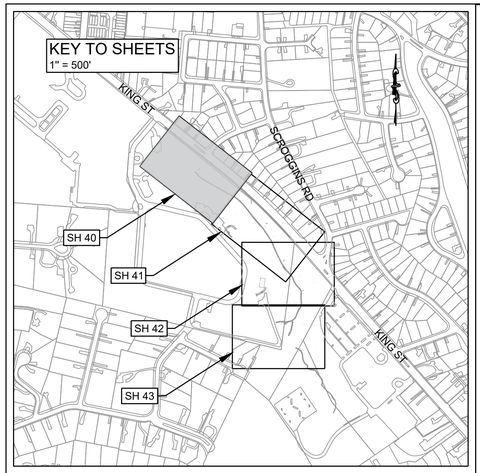
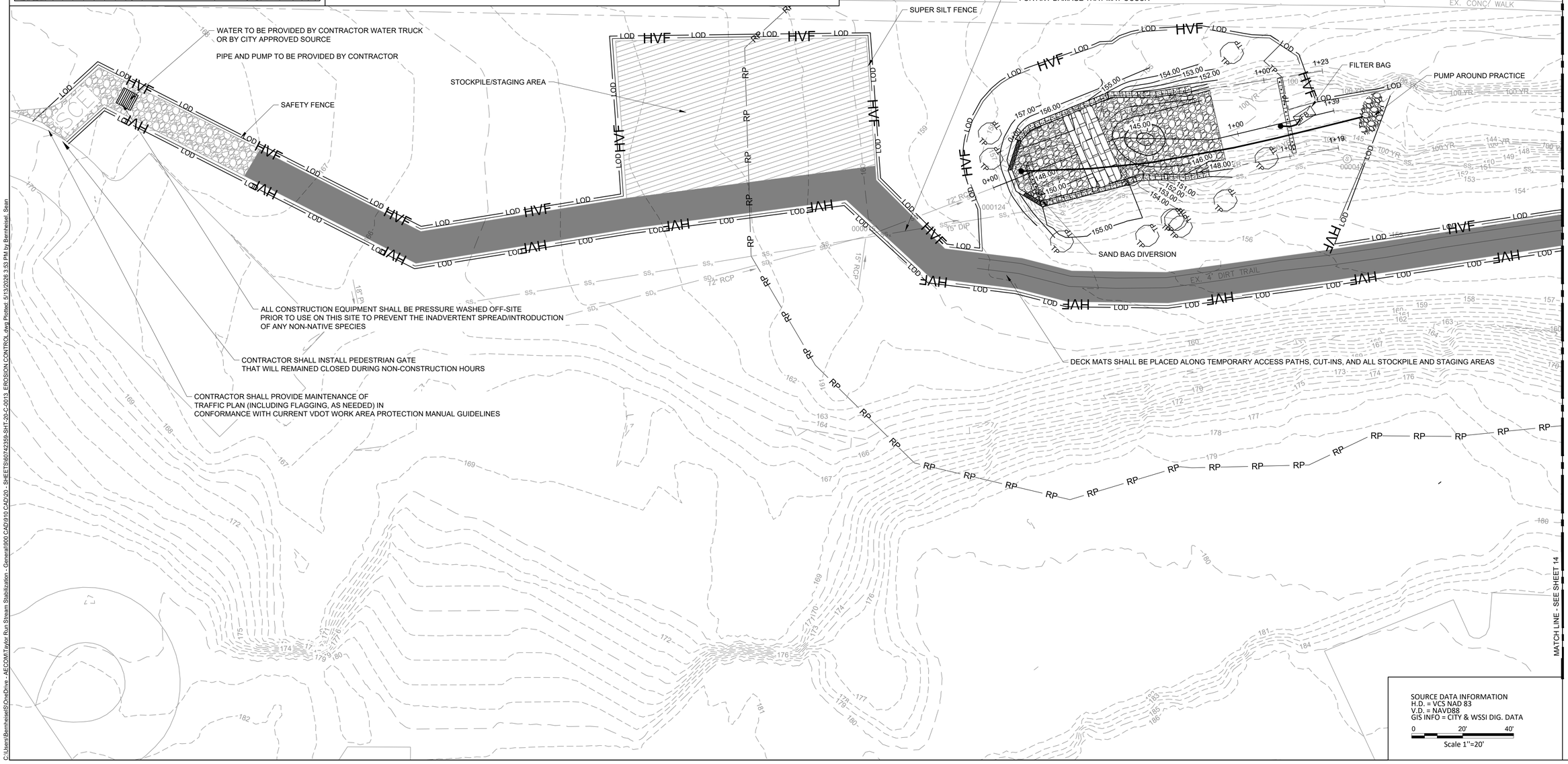


GENERAL SHEET NOTES

1. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING STEEP SLOPES. ANY DISTURBED SLOPES NOT GRADED TO 3:1 OR FLATTER SHALL REQUIRE STABILIZATION WITH NATURAL FIBER MATTING (CM-700 OR APPROVED EQUIVALENT)
2. CALL ALEXANDRIA ARCHAEOLOGY IMMEDIATELY (703-746-4399) IF ANY BURIED STRUCTURAL REMAINS (WALL FOUNDATIONS, WELLS, PRIVIES, CISTERNS, ETC.) OR CONCENTRATIONS OF ARTIFACTS ARE DISCOVERED DURING DEVELOPMENT. WORK MUST CEASE IN THE AREA OF THE DISCOVERY UNTIL A CITY ARCHAEOLOGIST COMES TO THE SITE AND RECORDS THE FINDS. THE LANGUAGE NOTED ABOVE SHALL BE INCLUDED ON ALL FINAL SITE PLAN SHEETS INVOLVING ANY GROUND DISTURBING ACTIVITIES.
3. THE APPLICANT SHALL NOT ALLOW ANY METAL DETECTION AND/OR ARTIFACT COLLECTION TO BE CONDUCTED ON THE PROPERTY, UNLESS AUTHORIZED BY ALEXANDRIA ARCHAEOLOGY. FAILURE TO COMPLY SHALL RESULT IN PROJECT DELAYS. THE LANGUAGE NOTED ABOVE SHALL BE INCLUDED ON ALL FINAL SITE PLAN SHEETS INVOLVING ANY GROUND DISTURBING ACTIVITIES.
4. PROPOSED CONTOURS ARE INTENDED TO DEPICT OVERALL GRADING CONCEPT. EXISTING AND PROPOSED CONDITIONS CONTOURS ARE SHOWN AT 1-FT C.I. THE CONTRACTOR SHALL GRADE AT 3:1 OR FLATTER AT THE DIRECTION OF THE ENGINEER TO MEET EXISTING CONDITIONS IN AREAS WHERE ADDITIONAL INFORMATION IS NEEDED.
5. ENSURE ALL DISCHARGES ARE IN ACCORDANCE WITH CITY OF ALEXANDRIA CODE TITLE 5, CHAPTER 6, ARTICLE B.
6. DEWATERING AND OTHER CONSTRUCTION RELATED DISCHARGE LIMITS TO THE SEWER SYSTEM ARE REGULATED BY ALEXRENEW PRETREATMENT. ENGINEER/OWNER IS REQUIRED TO CONTACT ALEXRENEW'S PRETREATMENT COORDINATOR AT 703-549-3381X2020
7. CONTRACTOR SHALL FOLLOW VIRGINIA WORK ZONE PROTECTION MANUAL GUIDELINES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUBMIT MAINTENANCE OF TRAFFIC PLANS ALONG WITH THE PERMIT APPLICATION.



CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

NOT FOR CONSTRUCTION

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CHECKED BY:	BA DATE: 10/2025
APPROVED BY:	BA DATE: 10/2025

SEAL:

EROSION AND SEDIMENT CONTROL PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-01
SCALE: 1:20
SHEET: 39 OF 55

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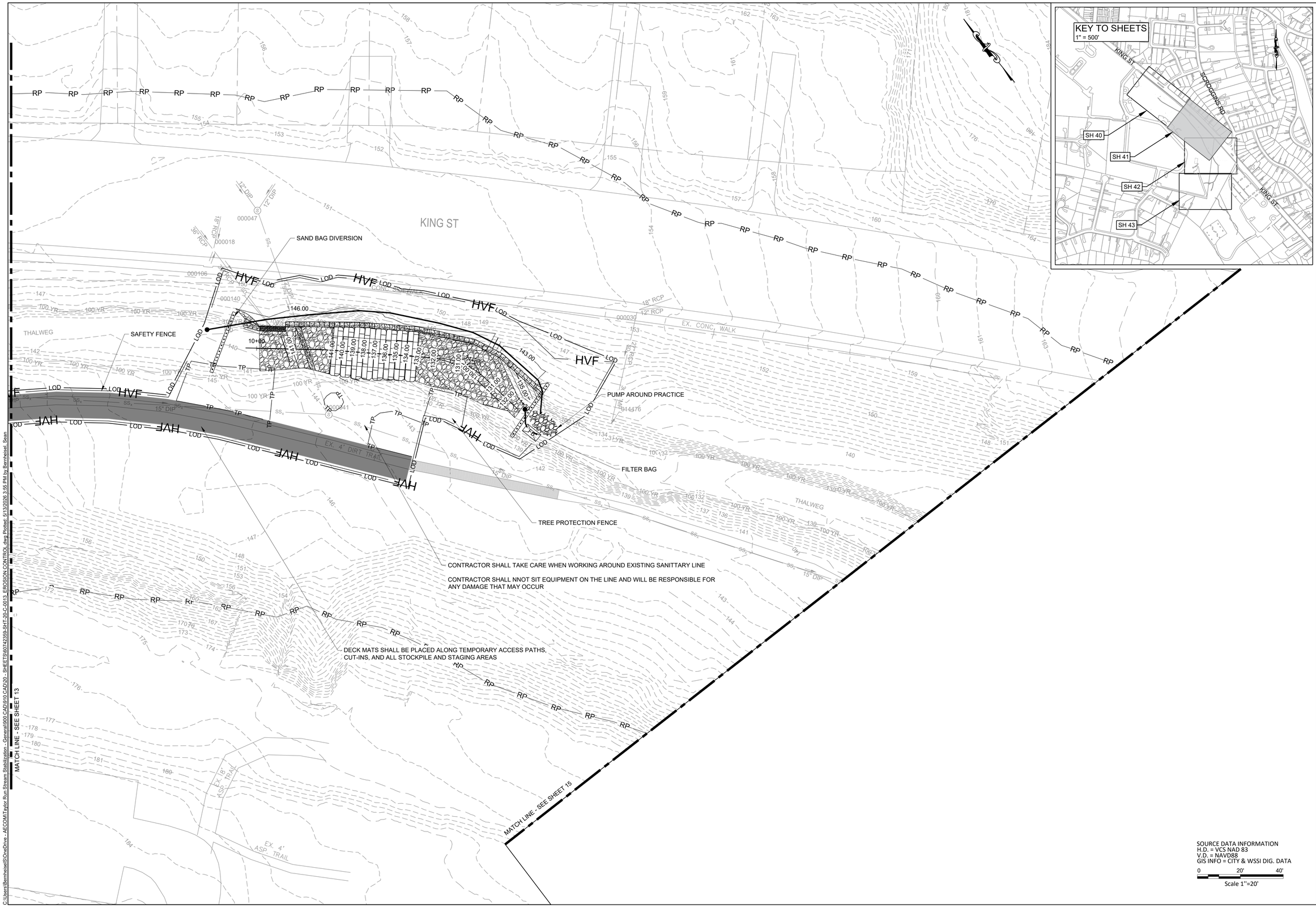

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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ALEXANDRIA PROJECT NO.: 23086
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DESIGNED BY: SB DATE: 10/2025
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APPROVED BY: BA DATE: 10/2025

SEAL:

EROSION AND SEDIMENT CONTROL PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
ESC-02

SCALE:
1:20

SHEET:
40 OF 55

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MATCH LINE - SEE SHEET 14

MATCH LINE - SEE SHEET 16

CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING SANITTARY LINE

CONTRACTOR SHALL NNOT SIT EQUIPMENT ON THE LINE AND WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR

DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATHS, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS

SAFETY FENCE

SAND BAG DIVERSION

TREE PLANKING, TYP.

FILTER BAG

PUMP AROUND PRACTICE

CHINQUAPIN DR

KING ST

SCROGGINS ROAD

EX. 4' DIRT TRAIL

EX. 8' ASP. TRAIL

EARTHEN TRAIL

THALWEG

15" CMP

2" RCP

RA-1

RA-2

RA-3

TOP= 140.65'

TOP= 140.65'

INV= 139.77'

LOD

100 YR

100-YR

15' FIRE

SS

SD

RP

TP

007530

007526

132.00

128.00

125.00

123.00

KEY TO SHEETS
1" = 500'

SH 40

SH 41

SH 42

SH 43

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

EROSION AND SEDIMENT CONTROL PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-03
SCALE: 1:20
SHEET: 41 OF 55

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MATCH LINE - SEE SHEET 15

DECK MATS SHALL BE PLACED ALONG TEMPORARY ACCESS PATHS, CUT-INS, AND ALL STOCKPILE AND STAGING AREAS

WATER TO BE PROVIDED BY CONTRACTOR WATER TRUCK OR BY CITY APPROVED SOURCE

PIPE AND PUMP TO BE PROVIDED BY CONTRACTOR

CONTRACTOR SHALL INSTALL PEDESTRIAN GATE THAT WILL REMAINED CLOSED DURING NON-CONSTRUCTION HOURS

SAFETY FENCE

SUPER SILT FENCE

TEMPORARY BRIDGE CROSSING, TYP.

FILTER BAG

PUMP AROUND PRACTICE

SAND BAG DIVERSION

ALL CONSTRUCTION EQUIPMENT SHALL BE PRESSURE WASHED OFF-SITE PRIOR TO USE ON THIS SITE TO PREVENT THE INADVERTENT SPREAD/INTRODUCTION OF ANY NON-NATIVE SPECIES

CONTRACTOR SHALL TAKE CARE WHEN WORKING AROUND EXISTING SANITTARY LINE

CONTRACTOR SHALL NNOT SIT EQUIPMENT ON THE LINE AND WILL BE RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR

KEY TO SHEETS
1" = 500'

KING ST
SCROGGINS RD
SH 40
SH 41
SH 42
SH 43
KING ST

SOURCE DATA INFORMATION
H.D. = VCS NAD 83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

ALEXANDRIA PROJECT NO.:	23086
DATE OF PLAN ISSUANCE:	
CONSULTANT PROJECT ID.:	60742359
DESIGNED BY: SB	TN DATE: 10/2025
DRAWN BY: SB	TN DATE: 10/2025
CHECKED BY:	BA DATE: 10/2025
APPROVED BY:	BA DATE: 10/2025

DATE	REVISIONS BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

SEAL:

EROSION AND SEDIMENT CONTROL PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING:
ESC-04

SCALE:
1:20

SHEET:
42 OF 55

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GENERAL EROSION AND SEDIMENT CONTROL NOTES

ES-1: UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION ANDSEDIMENT CONTROL PRACTICES WILL BE CONSTRUCTED AND MAINTAINED ACCORDINGTO MINIMUM STANDARDS AND SPECIFICATIONS OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK AND VIRGINIA REGULATIONS 4VAC50-30 EROSION AND SEDIMENT CONTROL REGULATIONS.

ES-2: THE PLAN APPROVING AUTHORITY MUST BE NOTIFIED ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE, ONE WEEK PRIOR TO THE COMMENCEMENT OF LAND DISTURBING, AND ONE WEEK PRIOR TO THE FINAL INSPECTION.

ES-3: A "CERTIFIED LAND DISTURBER" (CLD) SHALL BE NAMED IN A LETTER TO THE DIVISION CHIEF OF CONSTRUCTION AND INSPECTION (C&I), DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES PRIOR TO ANY LAND DISTURBING ACTIVITY. IF THE CLD CHANGES DURING THE PROJECT, THAT CHANGE MUST BE NOTED IN A LETTER TO THE DIVISION CHIEF.A NOTE TO THIS EFFECT SHALL BE PLACED ON THE PHASE I E&S PLAN SHEETS OF THE SITE PLAN.

ES-4: ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CLEARING.

ES-5: A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.

ES-6: PRIOR TO COMMENCING LAND DISTURBING ACTIVITIES IN AREAS OTHER THAN INDICATED ON THESE PLANS (INCLUDING, BUT NOT LIMITED TO, OFF-SITE BORROW OR WASTE AREAS), THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY EROSION CONTROL PLAN TO THE OWNER FOR REVIEW AND APPROVAL BY THE PLAN APPROVING AUTHORITY.

ES-7: THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF ANY ADDITIONAL EROSION CONTROL MEASURES NECESSARY TO PREVENT EROSION AND SEDIMENTATION AS DETERMINED BY THE PLAN APPROVING AUTHORITY.

ES-8: ALL DISTURBED AREAS ARE TO DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBING ACTIVITIES AND DURING SITE DEVELOPMENT UNTIL FINAL STABILIZATION IS ACHIEVED.

ES-9: DURING DEWATERING OPERATIONS, WATER WILL BE PUMPED INTO AN APPROVED FILTERING DEVICE.

ES-10: THE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES PERIODICALLY AND AFTER EACH RUNOFF-PRODUCING RAINFALL EVENT. ANY NECESSARY REPAIRS OR CLEANUP TO MAINTAIN THE EFFECTIVENESS OF THE EROSION CONTROL DEVISES SHALL BE MADE IMMEDIATELY.

ES-11: ANY DENUDED SLOPES, EITHER DISTURBED OR CREATED BY THIS PLAN THAT EXCEED 2500 SQUARE FEET (SUCH AS THOSE ADJACENT TO THE CONSTRUCTION ENTRANCE) SHALL BE SEEDED (PER SEEDING SCHEDULE) AND MATTED IMMEDIATELY FOLLOWING ESTABLISHMENT.

ES-12: ALL VEHICLES SHALL BE CLEANED BEFORE ENTERING ONTO PUBLIC RIGHT-OF-WAY.

ES-13 THE WASH WATER FROM THE CONSTRUCTION ENTRANCE SHALL BE FILTERED THROUGH THE PROVIDED SILT FENCE TO ENSURE THAT NO SEDIMENT LADEN RUNOFF IS ALLOWED TO RUNOFF ON TO THE ADJACENT PROPERTY OR THE PUBLIC RIGHT-OF-WAY.

ES-14: THE FIRE DEPARTMENT SHALL BE NOTIFIED IN AADVANCE OF ANY FIRE HYDRANTS TAKEN OUT OF SERVICE AND OF ALL AREAS AFFECTED AS WORK IS PERFORMED.

ES-15: THE FIRE DEPARTMENT SHALL BE NOTIFIED IN ADVANCE OF ANY FIRE HYDRANTS TAKEN OUT OF SERVICE AND OF ALL AREAS AFFECTED AS WORK IS PERFORMED.

ES-16: THE CONTRATOR SHALL COORDINATE WITH THE CITY OF ALEXANDRIA RECREATION, PARKS, AND CULTURAL ACTIVITIES DEPARTMENT CONCERNING CONSTRUCTION ACCESS ANND TRAIL RESTORATION REQUIREMENTS.

ES-17: PRIOR TO REMOVING ANY TREES—ALIVE OR DEAD, STANDING OR FALLEN—TAKE ALL NECESSARY STEPS TO CONFIRM THAT NO ACTIVE WILDLIFE IS USING THE TREES FOR FOOD, SHELTER, OR NESTING. IF WILDLIFE ACTIVITY IS OBSERVED AND THERE IS ANY UNCERTAINTY ON HOW TO PROCEED, IMMEDIATELY CONTACT THE RPCA NATURAL RESOURCES DEPARTMENT AND/OR THE VA DWR REGION 4 OFFICE FOR GUIDANCE.

MAINTENANCE

ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED AFTER EACH RAINFALL OR WEEKLY, WHICHEVER IS MOST FREQUENT, AND SHOULD BE CLEANED AND REPAIRED ACCORDING TO THE FOLLOWING SCHEDULE:

1. EROSION AND SEDIMENT CONTROL WILL BE CHECKED REGULARLY (MINIMUM WEEKLY) FOR UNDERMINING OR DETERIORATION AND BUILDUP OR CLOGGING WITH SEDIMENT. CORRECTIVE ACTION WILL BE TAKEN IMMEDIATELY.
2. ALL SEEDED AREAS WILL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE RESEEDED AS NEEDED.
3. ALL TEMPORARY EROSION AND SEDIMENT MEASURES SHALL BE DISPOSED OF WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED AND VEGETATION IS ESTABLISHED.

TEMPORARY SEEDING

PLANTING DATES	SPECIES	SEEDING RATE (LBS/ACRE)
SEPT 1 - FEB 15	50 - 50 MIX OF ANNUAL RYEGRASS & CEREAL RYE (SECALE CEREALE)	50-100
FEB 16 - APR 30	ANNUAL RYEGRASS (LOLIUM MULTI-FLORUM)	60-100
MAY 1 - AUG 31	GERMAN MILLET (SETARIA ITALICA)	50

PERMANENT SEEDING

ALL PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH THE APPROVED SEEDING SCHEDULE (VS-02)

4VAC50-30-40. MINIMUM STANDARDS

NOTE: ALL CONSTRUCTION ON SITE SHALL BE IN CONFORMANCE WITH THE FOLLOWING 19 MINIMUM STANDARDS AS ESTABLISHED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL REGULATIONS.

1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.
2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCK PILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.
3. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.
4. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE.
5. STABILIZATION MEASURES SHALL BE APPLIED TO CHANNELS AND EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN. 6.1. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES. 6.2. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A 25-YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.
7. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.
8. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.
10. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.
11. BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.
12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
13. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.
14. ALL APPLICABLE FEDERAL, STATE AND LOCAL CHAPTERS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.
15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK INTHE WATERCOURSE IS COMPLETED.
16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWINGSTANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
    - 16.1. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
    - 16.2. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
    - 16.3. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
    - 16.4. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
    - 16.5. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THIS CHAPTER.
    - 16.6. APPLICABLE SAFETY CHAPTERS SHALL BE COMPLIED WITH.
17. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.
19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA:
    - 19.1. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITE SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEM. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR PIPE SYSTEM, DOWNSTREAM STABILITY ANALYSES AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.
    - 19.2. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
        - 19.2.1. THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION; OR
            - 19.2.1.1. NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS.
            - 19.2.1.2. ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STORMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND
            - 19.2.1.3. PIPES AND STORM SEWER SYSTEMS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
    - 19.3. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
        - 19.3.1. IMPROVE THE CHANNELS TO A CONDITION WHERE A TEN-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO CHANNEL THE BED OR BANKS; OR
        - 19.3.2. IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES;
        - 19.3.3. DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TEN-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MANMADE CHANNEL; OR
        - 19.3.4. PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE PLAN APPROVING AUTHORITY TO PREVENT DOWNSTREAM EROSION.
    - 19.4. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
    - 19.5. ALL HYDROLOGIC ANALYSES SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT CONDITION OF THE SUBJECT PROJECT.
    - 19.6. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION, HE SHALL OBTAIN APPROVAL FROM THE LOCALITY OF A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMEN

EROSION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

THIS PROJECT ENTAILS STREAM STABILIZATION USING A 'MINIMAL STABILZIATION' APPROACH TO LIMIT TREE IMPACTS AND DISTURBANCE TO THE COMMUNITY. THE TAYLOR RUN PROJECT AREA BEGINS AT THE 72' RCP CULVERT OUTFALL TO THE NORTHEAST OF THE CHINQUAPIN RECREATION CENTER, ADJACENT TO KING STREE IN THE CITY OF ALEXANDRIA, VIRIGNIA. APPROXIMATELY 1,500 LINEAR FEET OF TAYLOR RUN IS WIHTIN THE PROJECT AREA BUT APPROXIMATELY 590 LINEAR FEET WILL BE IMPACTED. THE PROJECT TERMINANTES DOWNSTREAM OF THE EXISTING SHEET PILE WALL.
WITHIN THE PROJECT AREA, THERE ARE TWO STORMWATER OUTFALLS IN DISREPAIR AND AN UNDERSIZED PLUNGE POOL. SEVERE EROSION HAS UNDERCUT TREES CAUSING THEM TO FALL, EXPOSED ROOTS AND UNDERMINED THE STREAM BANKS, INCLUDING THE CRITICAL ROOT ZONE OF A CHAMPION TREE. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH TWO EXPOSED CROSSINGS AND AN EXPOSED MANHOLE.
THE PROJECT LIES WITHIN A FEMA MAPPED ZONE AE SEPCIAL FLOOD HAZARD AREA (SFHA) AND IS ENTIRELY WITHIN THE CITY RESOURCE PROTECTION AREA (RPA). THE SURROUNDING AREA IS HIGHLY RESIDENTIAL, WHICH INCLUDES THE CITY OF ALEXANDRIA HIGH SCHOOL.

EXISTING SITE CONDITIONS

THE PROJECT REACH IS BOUNDED AT THE UPSTREAM LIMITS OF THE CHANNEL BY AN EXISTING CULVERT OUTFALL DRAINING FROM THE DIRECTION OF THE CHINQUAPIN RECREATION CENTER GROUNDS. THE PROJECT IS LOCATED ON CITY OF ALEXANDRIA PROPERTY. THE DRAINAGE AREA FOR THE PROJECT REACH IS APPROXIMATELY 333 ACRES WITH 38% IMPERVIOUSNESS, MEASURED TO THE DOWNSTREAM EXTENT OF THE PROJECT. THE STREAM CORRIDOR IS HIGHLY DISTURBED, WITH SEVERE EROSION IN VARIOUS LOCATIONS, INCLUDING A 10 TO 20-FT HIGH VERTICAL BANK WHICH CURRENTLY THREATENS THE EXISTING WALKING PATH ALONG THE RIGHT BANK OF THE STREAM. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH TWO DESTABILIZED AND EXPOSED CROSSINGS WITHIN THE RESTORATION AREA.

ADJACENT PROPERTY

THE PROJECT IS LOCATED ON CITY OF ALEXANDRIA PROPERTY. THESE PROPERTIES ARE BOUNDED BY MULTIPLE PRIVATE PARCELS AND FIRST BAPTIST CHURCH OF ALEXANDRIA, HOWEVER CONSTRUCTION ACTIVITIES WILL NOT AFFECT ANY OF THE ADJACENT PROPERTIES.

OFF-SITE AREAS

THE DRIVEWAY TO THE PARKING LOT FOR CHINQUAPIN RECREATION CENTER WILL BE THE LOCATION OF THE CONSTRUCTION ENTRANCE TO THE PROJECT AND MAY CAUSE DISRUPTION TO TRAFFIC FLOW IN THIS AREA. DESIGN FOR THE ACCESS ROAD SHALL BE IN ACCORDANCE WITH APPROVED PLANS. TRAFFIC AND FACILITY SIGNS WILL ALSO BE LOCATED IN OFF-SITE AREAS IN ACCORDANCE WITH LOCAL REGULATIONS. ALL EXCAVATED MATERIAL WILL BE TRUCKED AND DISPOSED OF OFF-SITE IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

CRITICAL AREAS

THIS PROJECT IS LOCATED ENTIRELY WITHIN A STREAM CHANNEL. HOWEVER, THE DESIGN PRESENTED HEREIN PROPOSES TO LIMIT FURTHER EROSION WITHIN THIS DEGRADED STREAM CHANNEL THUS IMPROVING THE WATER QUALITY OF THE DOWNSTREAM RECEIVING WATERS. ADDITIONALLY THE PROJECT IS LOCATED ENTIRELY WITHIN THE RPA. STREAM STABILIZATION PROJECTS ARE WATER DEPENDENT AND AN ALLOWABLE USE IN THE RPA.

SOIL

THE DOMINANT SOIL LOCATED WITHIN THE PROJECT AREA IS SASSAFRAS NEABSCO COMPLEX. THIS SOIL HAS MARGINAL DRAINAGE AND MEDIUM EROSION POTENTIAL.

EROSION AND SAFETY CONTROL MEASURES

ALL SOIL EROSION & SEDIMENT CONTROL MEASURES SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS CONTAINED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH).

STRUCTURAL PRACTICES
3.01 - SAFETY CHAIN LINK FENCING
3.02 - TEMPORARY STONE CONSTRUCTION ENTRANCE
3.05 - SILT FENCE WITH WIRE SUPPORT
3.23 - STRUCTURAL STREAMBANK STABILIZATION (VANE STRUCTURES, ROCK STEP, ROCK SILLS, STEP POOLS)
3.24 - STREAM CROSSING
3.26 - DEWATERING STRUCTURE (PUMP AROUND)
3.26 - FILTER BAG
3.38 - TREE PROTECTION FENCING
N/A - DECK MATTING
3.08 - CULVERT INLET PROTECTION
3.18 - CULVERT OUTLET PROTECTION

VEGETATIVE PRACTICES
3.30 - TOPSOIL (STOCKPILE)
3.31 - TEMPORARY SEEDING
3.32 - PERMANENT SEEDING
3.35 - MULCHING
3.36 - SOIL STABILIZATION BLANKET

STORMWATER MANAGEMENT

THIS PROJECT WILL IMPROVE STORMWATER QUALITY AS WELL AS PROVIDE CHANNEL PROTECTION. THERE IS NO PROPOSED INCREASE IN IMPERVIOUS SURFACE WITH THIS PROJECT AND DISCHARGES LEAVING THE SITE WILL REMAIN THE SAME.

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

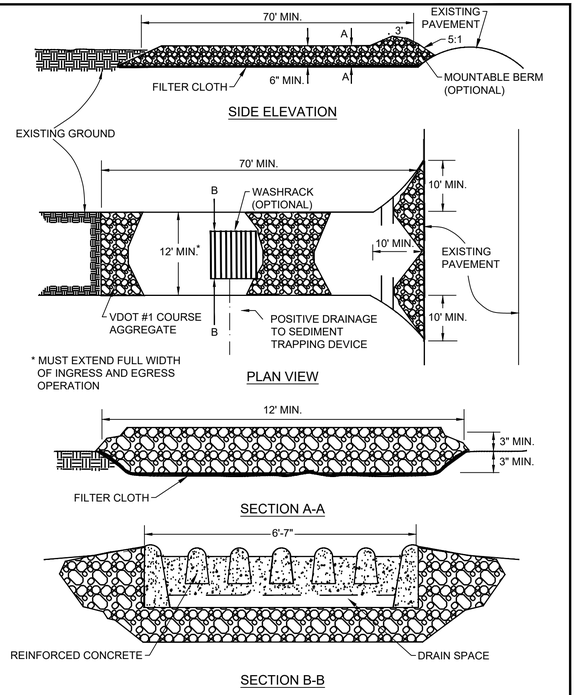
SEAL:

EROSION AND SEDIMENT CONTROL NARRATIVE

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-05
SCALE: N/A
SHEET: 43 OF 55

C:\Users\BenthelseiS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0014 EROSION NARRATIVE.dwg Plotted: 5/13/2026 4:05 PM by Benthelsei, Sean



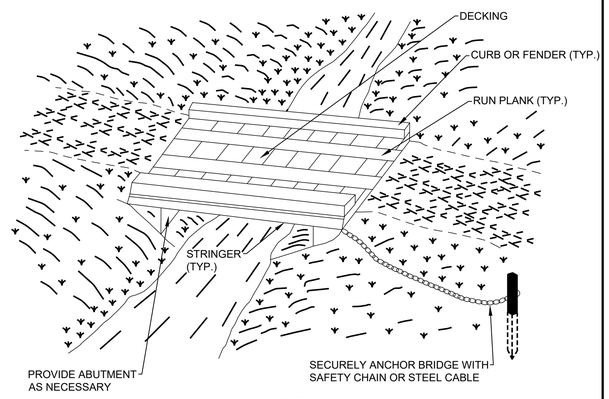
STONE CONSTRUCTION ENTRANCE SPECIFICATIONS:

1. EXCAVATE THE ENTRANCE AREA TO A MINIMUM OF 3 INCHES AND CLEAR THE AREA OF ALL VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL.
2. CONSTRUCT ANY DRAINAGE FACILITIES ACCORDING TO SPECIFICATIONS. PROVIDE FOR THE CONVEYANCE OF SURFACE WATER UNDER THE ENTRANCE THROUGH CULVERTS.
3. PLACE THE FILTER FABRIC UNDERLAYMENT ATOP THE ENTIRE WIDTH AND LENGTH OF THE ENTRANCE.
4. FOLLOWING THE FILTER FABRIC INSTALLATION, PLACE THE STONE TO THE SPECIFIED DIMENSIONS (INCLUDING THE CONSTRUCTION OF THE MOUNTABLE BERM) AS NECESSARY.
5. IF WASH RACKS ARE USED, INSTALL WASH RACKS ACCORDING TO MANUFACTURER'S SPECIFICATIONS. ENSURE THE WASH RACK CAN CONVEY SEDIMENT-LADEN WATER IMMEDIATELY TO A SEDIMENT CONTROL TREATMENT DEVICE BEFORE ENTERING A WATER BODY.
6. CONFIRM THE LENGTH AND WIDTH OF THE CONSTRUCTION ENTRANCE BEFORE SETTING UP EROSION CONTROL MEASURES AND PERIMETER CONTROL MEASURES.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

STONE CONSTRUCTION ENTRANCE

v1.1 SOURCE: VA. DSWC, MD ESC STDS C-SCM-03-1



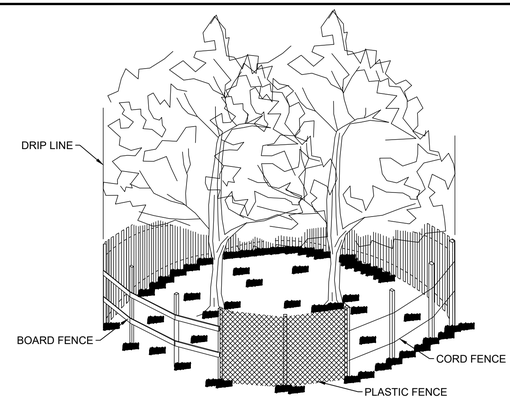
LOCATION PLAN

NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

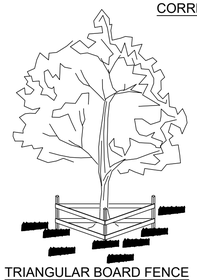
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

TEMPORARY BRIDGE CROSSING

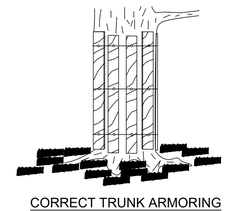
v1.1 SOURCE: MD DEPT. OF ENV. 2011 C-ENV-03-1



CORRECT METHODS OF TREE FENCING



TRIANGULAR BOARD FENCE



CORRECT TRUNK ARMORING

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

FENCING AND ARMORING

v1.1 SOURCE: VA. DSWC C-SSM-01-2

1 ED-01 STONE CONSTRUCTION ENTRANCE
NOT TO SCALE

2 ED-01 TEMPORARY BRIDGE CROSSING
NOT TO SCALE

3 ED-01 TREE FENCING AND ARMORING
NOT TO SCALE

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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EROSION AND SEDIMENT CONTROL DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-06
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SHEET: 44 OF 55

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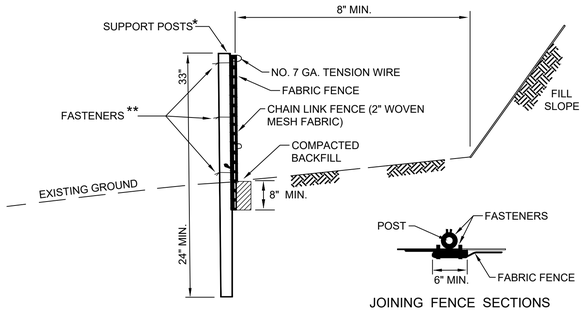


JOINING FENCE SECTIONS

* POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.

* * CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL PRE-FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 13.5 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX C. TO C.

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

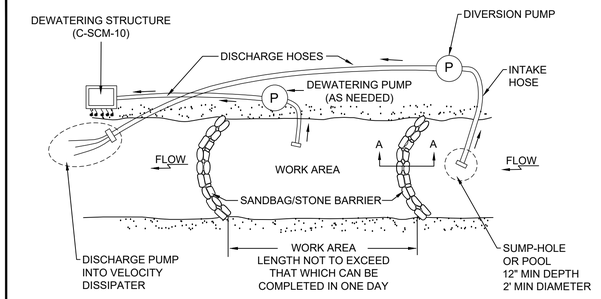
SUPER SILT FENCE INSTALLATION

v1.1 SOURCE: ADAPTED FROM PA DEP 2012 C-PCM-04-3

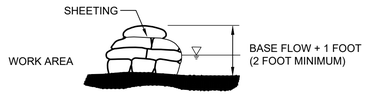
INSTALLATION FOR SUPER SILT FENCE:

1. EXCAVATE AN 8-INCH-DEEP TRENCH, MINIMIZING THE DISTURBANCE ON THE DOWNSLOPE SIDE, WITH THE BOTTOM OF THE TRENCH AT LEVEL GRADE.
2. INSTALL THE CHAIN LINK FENCE IN THE DOWNSLOPE SIDE OF THE TRENCH WITH THE FENCE ON THE UPSLOPE SIDE OF THE SUPPORT POLES. INSTALL 2.5-INCH- DIAMETER GALVANIZED OR ALUMINUM POLES SET AT 10-FOOT MAXIMUM SPACING. INSTALL POLES AT A MINIMUM DEPTH OF 24 INCHES BELOW THE GROUND SURFACE AND EXTEND A MINIMUM OF 33 INCHES ABOVE GROUND. A POSTHOLE DRILL MAY BE NECESSARY TO INSTALL POLES APPROPRIATELY FOR MOST SITES. POLES DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO FENCE POSTS WITH WIRE TIES.
4. ENSURE CHAIN LINK IS GALVANIZED NO. 11.5 GA. STEEL WIRE WITH 2.25-INCH OPENING, NO. 11 GA. ALUMINUM COATED STEEL WIRE IN ACCORDANCE WITH ASTM-A-491, OR GALVANIZED NO. 9 GA. STEEL WIRE TOP AND BOTTOM WITH GALVANIZED NO. 11 GA. STEEL INTERMEDIATE WIRES. INSTALL NO. 7 GAGE TENSION WIRE HORIZONTALLY THROUGH HOLES AT THE TOP OF THE CHAIN LINK FENCE OR ATTACH WITH HOG RINGS, WIRE FASTENERS, STAPLES, OR PREFORMED CLIPS AT 5-FOOT (MAXIMUM) CENTERS.
5. STRETCH FILTER FABRIC AND SECURELY FASTEN TO THE FENCE WITH WIRE FASTENERS, STAPLES, OR PREFORMED CLIPS. EXTEND THE FABRIC A MINIMUM OF 33 INCHES ABOVE THE GROUND SURFACE. ENSURE THE FILTER FABRIC WIDTH IS A MINIMUM OF 42 INCHES.
6. FASTEN THE FILTER FABRIC SECURELY TO THE CHAIN LINK FENCE WITH FASTENERS, STAPLES, OR PREFORMED CLIPS SPACED HORIZONTALLY 24 INCHES AT THE GROUND SURFACE, TOP, AND MIDSECTION.
7. WHEN ATTACHING TWO SUPER SILT FENCES, THE OVERLAP JOINING METHOD SHOULD BE USED. SEE FIGURE C-PCM-04-5.8 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2.
8. PLACE THE FABRIC TOE IN THE BOTTOM OF THE TRENCH, THEN BACKFILL AND COMPACT THE TRENCH.
9. REMOVE AND PROPERLY DISPOSE OF SUPER SILT FENCE WHEN THE DISTURBED AREA TRIBUTARY TO THE FENCE IS PERMANENTLY STABILIZED.

1 ED-02 SUPER SILT FENCE
NOT TO SCALE



PLAN



CROSS-SECTION OF SANDBAG DIKE

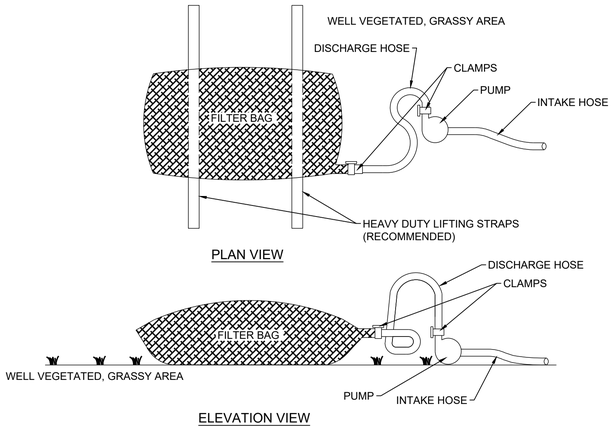
SECTION A-A

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

PUMP-AROUND DIVERSION PRACTICE

v1.1 SOURCE: VA DRC 2004 C-ENV-08-1

2 ED-02 PUMP-AROUND DIVERSION
NOT TO SCALE



PLAN VIEW

ELEVATION VIEW

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

FILTER BAG

v1.1 SOURCE: PADEP 2012 C-SCM-10-4

PUMPED WATER FILTER BAG NOTES ON PROPER USE:

- USE LOW-VOLUME FILTER BAGS MADE FROM NON-WOVEN MONOFILAMENT GEOTEXTILE MATERIAL SEWN WITH HIGH-STRENGTH, DOUBLE-STITCHED "J" TYPE SEAMS. USE FILTER BAGS CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS.
- USE HIGH-VOLUME FILTER BAGS MADE FROM WOVEN MONOFILAMENT THAT MEET THE REQUIREMENTS INCLUDED IN TABLE C-SCM-10-3.
- PROVIDE A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES. REPLACE FILTER BAGS WHEN THEY BECOME HALF FULL OF SEDIMENT. KEEP SPARE BAGS AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. PLACE BAGS ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.
- LOCATE BAGS IN A WELL-VEGETATED (GRASSY) AREA AND DISCHARGE ONTO STABLE, EROSION-RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, PROVIDE A GEOTEXTILE UNDERLAYMENT AND FLOW PATH. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. DO NOT PLACE BAGS ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.
- NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. INSTALL SILT FENCE (BMP C-PCM-04) OR COMPOST FILTER SOCK (BMP C-PCM-05) BELOW BAGS LOCATED WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE A GRASSY AREA IS NOT AVAILABLE.

Table C-SCM-10-3 Material Specifications for Pumped Water Filter Bag

Property	Test Method	Minimum Standard
Avg. Wide Width Strength	ASTM D-4884	60 lb/in
Grab Tensile	ASTM D-4632	205 lb
Puncture	ASTM D-4833	110 lb
Mullen Burst	ASTM D-3786	350 psi
UV Resistance	ASTM D-4355	70%
AOS % Retained	ASTM D-4751	80 Sieve

3 ED-02 FILTER BAG
NOT TO SCALE

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
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APPROVED BY: __BA__ DATE: 10/2025

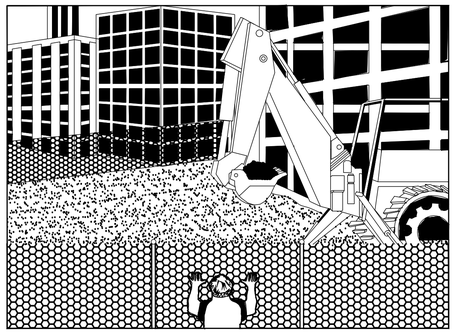
SEAL:

EROSION AND SEDIMENT CONTROL DETAILS

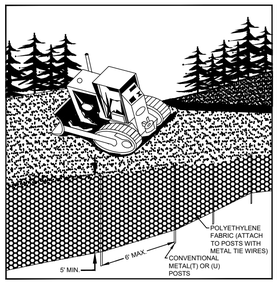
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-07
SCALE: N/A
SHEET: 45 OF 55

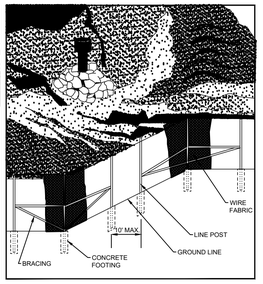
C:\Users\Bernheisel\SOneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0015 EROSION DETAILS.dwg Plotted: 5/13/2026 4:07 PM by Bernheisel, Sean



PERSPECTIVE VIEW



PERSPECTIVE VIEW
PLASTIC FENCE



PERSPECTIVE VIEW
METAL FENCE

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

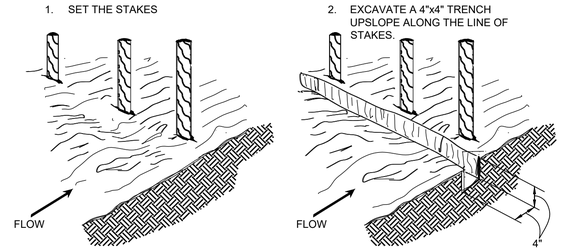
SAFETY FENCE

SOURCE: VDOT STDS., VA DSWC, CONWED PLASTICS

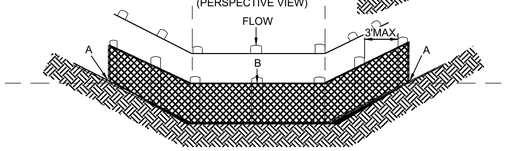
C-PCM-01-1

SAFETY FENCE CONSTRUCTION SPECIFICATIONS:

1. SAFETY FENCES SHOULD BE INSTALLED BEFORE THE EROSION AND SEDIMENT CONTROL MEASURE BECOMES ACCESSIBLE.
2. THE POLYETHYLENE WEB OF THE PLASTIC SAFETY FENCE SHOULD BE SECURED TO A CONVENTIONAL METAL "T" OR "U" POST DRIVEN INTO THE GROUND TO A MINIMUM DEPTH OF 18 INCHES; POSTS SHOULD BE SPACED AT 6-FOOT CENTERS. SEE PERSPECTIVE VIEW ON FIGURE C-PCM-01-1 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2.
3. THE METAL SAFETY FENCE SHOULD BE INSTALLED AS PER THE FOLLOWING PROCEDURE:
   - 3.a. LINE POSTS SHOULD BE PLACED AT INTERVALS OF 10 FEET MEASURED FROM CENTER TO CENTER OF ADJACENT POSTS. IN DETERMINING THE POST SPACING, MEASUREMENT WILL BE MADE PARALLEL WITH THE GROUND SURFACE. SEE PERSPECTIVE VIEW ON FIGURE C-PCM-01-1 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2.
   - 3.b. POSTS WILL BE SET IN CONCRETE AND BACKFILLED OR ANCHORED BY OTHER ACCEPTABLE MEANS.
   - 3.c. POSTS SET IN THE TOPS OF CONCRETE WALLS SHOULD BE GROUTED INTO PRE-FORMED HOLES TO A MINIMUM DEPTH OF 12 INCHES.
   - 3.d. ALL CORNER POSTS, END POSTS, GATE POSTS, AND PULL POSTS SHOULD BE EMBEDDED, BRACED, AND TRUSSED AS SHOWN IN THE "STANDARD FENCE - CHAIN LINK" DETAIL FOUND IN THE LATEST VERSION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) ROAD AND BRIDGE STANDARDS.
   - 3.e. FENCING FABRIC SHOULD NOT BE STRETCHED UNTIL AT LEAST 4 DAYS AFTER THE POSTS ARE GROUTED INTO WALLS OR 14 DAYS AFTER THE POSTS ARE SET INTO CONCRETE.
   - 3.f. THE FABRIC SHOULD BE STRETCHED TAUT AND SECURELY FASTENED BY MEANS OF TIE CLIPS TO THE POSTS AT INTERVALS NOT EXCEEDING 15 INCHES AND TO THE TOP RAILS OR TENSION WIRES AT INTERVALS NOT EXCEEDING 2 FEET. CARE SHOULD BE TAKEN TO EQUALIZE THE TENSION ON EACH SIDE OF EACH POST.
4. APPLICABLE WARNING SIGNS NOTING HAZARDOUS CONDITIONS MUST BE INSTALLED IMMEDIATELY UPON INSTALLATION OF SAFETY FENCE.
5. SEE TABLE C-PCM-01-1 "PHYSICAL PROPERTIES OF PLASTIC SAFETY FENCE" IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2



SHEET FLOW INSTALLATION
(PERSPECTIVE VIEW)



POINTS A SHOULD BE HIGHER THAN POINT B.

DRAINAGEWAY INSTALLATION
(FRONT ELEVATION)

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

v1.1

CONSTRUCTION OF SILT FENCE WITHOUT WIRE SUPPORT

SOURCE: ADAPTED FROM STRAW & FAB. BARRIERS, SHERWOOD & WYANT

C-PCM-04-2B

INSTALLATION FOR STANDARD SILT FENCE:

1. INSTALL SILT FENCE (AFTER TRENCHING) A MINIMUM HEIGHT OF 18 INCHES ABOVE THE ORIGINAL GROUND SURFACE FOR STANDARD SILT FENCE.
2. TURN THE FENCE UPHILL AT 45-DEGREE ANGLES AT THE END OF EACH FENCE RUN TO PREVENT RUN-AROUND BYPASS.
3. WHERE SILT FENCE CANNOT BE INSTALLED ALONG THE CONTOUR, J-HOOKS SHOULD BE USED AT THE END OF EACH FENCE RUN.
4. PURCHASE THE FILTER FABRIC IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS.
5. AT FABRIC ENDS, WRAP BOTH ENDS AROUND THE SUPPORT STAKE AND STAPLE (SEE FIGURE C-PCM-04-2 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2). IF THE FABRIC COMES ALREADY ATTACHED TO THE STAKES, HOLD THE END STAKES TOGETHER WHILE THE FABRIC IS WRAPPED AROUND THE STAKES AT LEAST ONE REVOLUTION (360 DEGREES) BEFORE DRIVING THE STAKES.
6. EXCAVATE A TRENCH APPROXIMATELY 4 INCHES WIDE AND 4 INCHES DEEP ON THE UPSLOPE SIDE OF THE PROPOSED LOCATION OF THE MEASURE.
7. WHEN WIRE SUPPORT IS USED (REINFORCED SILT FENCE), STANDARD-STRENGTH FILTER FABRIC MAY BE USED. FOR THIS TYPE OF INSTALLATION, PLACE POSTS A MAXIMUM OF 10 FEET APART (SEE FIGURE C-PCM-04-3 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2). FASTEN THE WIRE MESH FENCE SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 1 INCH LONG, TIE WIRES, OR HOG RINGS. EXTEND THE WIRE INTO THE TRENCH A MINIMUM OF 2 INCHES AND DO NOT EXTEND MORE THAN 34 INCHES ABOVE THE ORIGINAL GROUND SURFACE. STAPLE OR WIRE THE STANDARD-STRENGTH FABRIC TO THE WIRE FENCE AND EXTEND 8 INCHES OF THE FABRIC INTO THE TRENCH. DO NOT STAPLE THE FABRIC TO EXISTING TREES.
8. WHEN WIRE SUPPORT IS NOT USED (STANDARD SILT FENCE OR HIGH-PERFORMANCE SILT FENCE), USE EXTRA-STRENGTH FILTER FABRIC. PLACE POSTS FOR THIS TYPE OF FABRIC A MAXIMUM OF 6 FEET APART (SEE FIGURE C-PCM-04-3 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2). FASTEN THE FILTER FABRIC SECURELY TO THE UPSLOPE SIDES OF THE POSTS USING 1-INCH-LONG (MINIMUM) HEAVY-DUTY WIRE STAPLES OR TIE WIRES AND EXTEND 8 INCHES OF THE FABRIC INTO THE TRENCH. THIS METHOD OF INSTALLATION IS MORE COMMONPLACE THAN THE USE OF THE REINFORCED SILT FENCE. DO NOT STAPLE THE FABRIC TO EXISTING TREES.
9. WHEN ATTACHING TWO SILT FENCES, FIRST PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL. DRIVE BOTH POSTS A MINIMUM OF 18 INCHES INTO THE GROUND AND BURY THE FLAP IN A TRENCH.
10. IF A SILT FENCE IS TO BE CONSTRUCTED ACROSS A DITCH LINE OR SWALE, ENSURE THE MEASURE IS OF SUFFICIENT LENGTH TO ELIMINATE END-FLOW, AND THE PLAN CONFIGURATION RESEMBLES AN ARC OR HORSESHOE WITH THE ENDS ORIENTED UPSLOPE (SEE FIGURE C-PCM-04-3 IN VIRGINIA STORMWATER MANAGEMENT HANDBOOK, VERSION 1.2). USE EXTRA-STRENGTH FILTER FABRIC FOR THIS APPLICATION WITH A MAXIMUM 3-FOOT SPACING OF POSTS.
11. DRIVE STAKES A MINIMUM OF 18 INCHES BELOW GROUND SURFACE.
12. BACKFILL AND COMPACT THE 4-INCH BY 4-INCH TRENCH WITH SOIL OVER THE FILTER FABRIC.
13. REMOVE THE SILT FENCE WHEN THE FENCE HAS SERVED ITS USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

1 DE-03 SAFETY FENCE
NOT TO SCALE

2 DE-03 SILT FENCE
NOT TO SCALE

NOT FOR CONSTRUCTION

REVISIONS BY	DATE	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: __BA__ DATE: 10/2025
APPROVED BY: __BA__ DATE: 10/2025

SEAL:

EROSION AND SEDIMENT CONTROL DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: ESC-08
SCALE: N/A
SHEET: 46 OF 55

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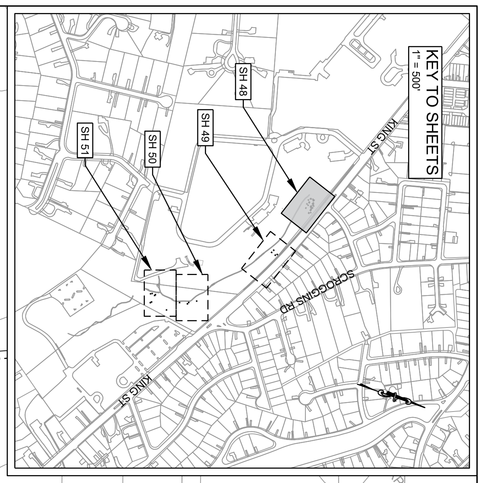

MIX - SEE PLANT SCHEDULE SHEET PM-03

1 - LT
1 - AR
3 - LB
1 - IO
2 - HV

1 - IO
1 - AS
6 - KL
1 - RP

1 - LT
1 - AS
3 - HV

2 - HV
1 - IO

1 - AR
1 - AS
1 - IV
1 - AN

3 - KL
8 - LB
1 - AN
2 - RP

1 - IO
1 - IV
1 - UA
1 - PS
1 - HV

KING ST

EX. 4' DIRT TRAIL

EX. CONC. WALK

MATCH LINE - SEE SHEET 48

SOURCE DATA INFORMATION
H.D. = NAD83
V.D. = NAVD88
GIS INFO = CITY & WSSI DIG. DATA

0 20' 40'
Scale 1"=20'

NOT FOR CONSTRUCTION

DRAWING: PP-01
SCALE: 1:10
SHEET: 47 OF 55

PLANTING PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

SEAL:

ALEXANDRIA PROJECT NO.:	23086
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DATE	BY	DESCRIPTION

CITY OF ALEXANDRIA, VIRGINIA
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301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

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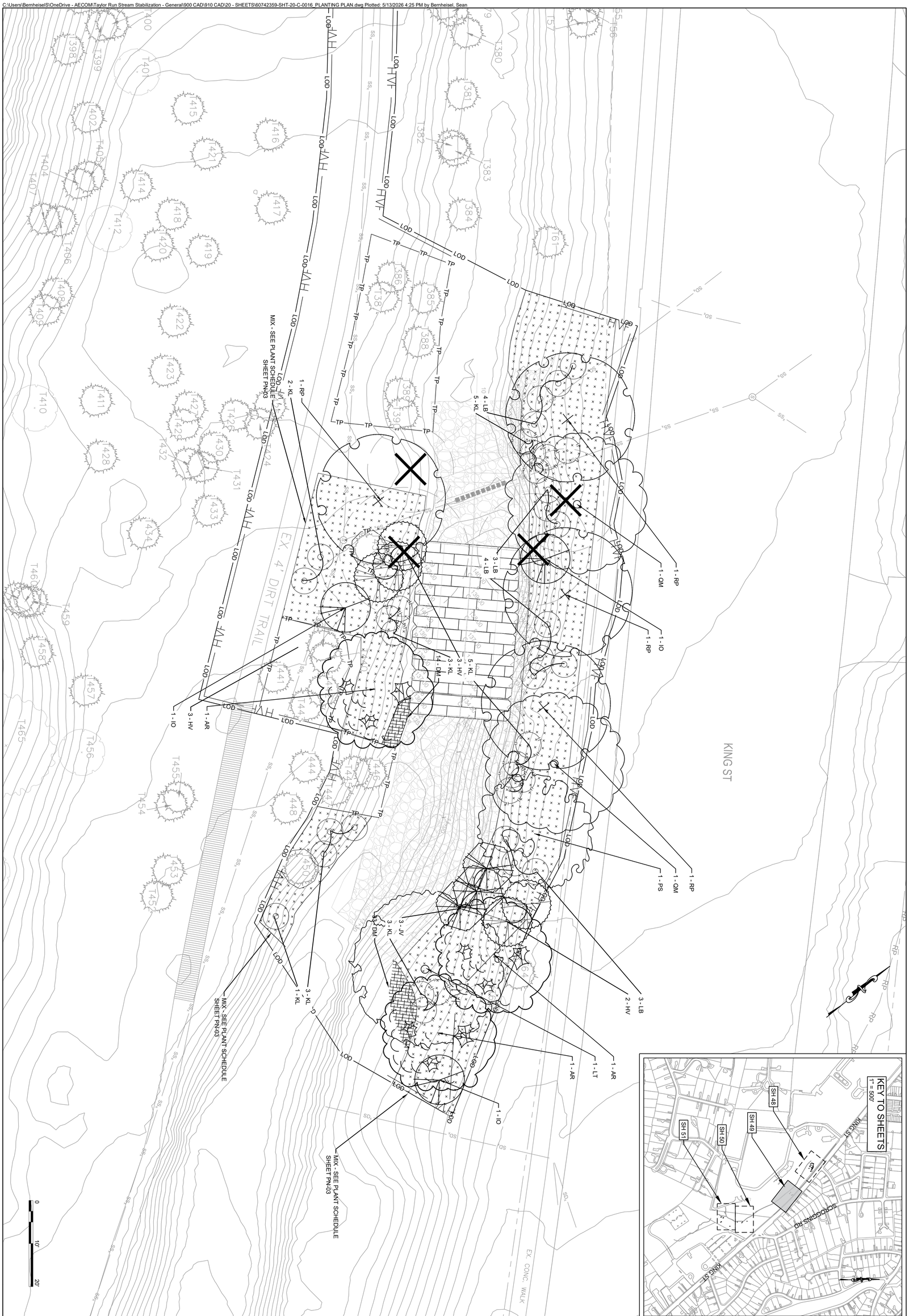

NOT FOR CONSTRUCTION

DRAWING: PP-02
SCALE: 1:10
SHEET: 48 OF 55

PLANTING PLAN

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

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ALEXANDRIA, VIRGINIA 22314

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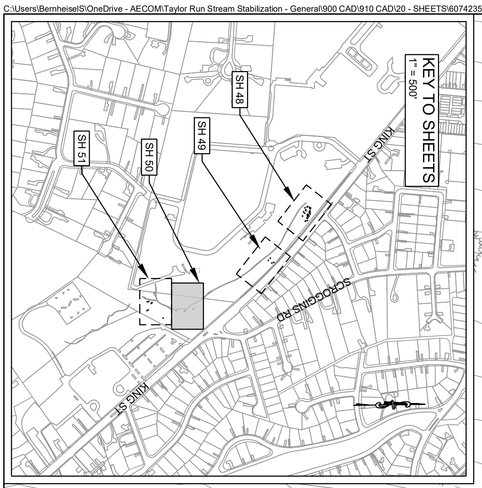

MATCH LINE - SEE SHEET 16

MIX - SEE PLANT SCHEDULE SHEET PN-03

MIX - SEE PLANT SCHEDULE SHEET PN-03

4' DIRT TRAIL

3 - LB
1 - PS
4 - LB
1 - IO
4 - KL
2 - HV
1 - AR
10 - DM
3 - LB
1 - RP
3 - HV
1 - AR
1 - JV

LOD
HVE
TP
RP
SS

0
10'
20'

NOT FOR CONSTRUCTION

DRAWING: PP-03
SCALE: 1:10
SHEET: 49 OF 55

PLANTING PLAN

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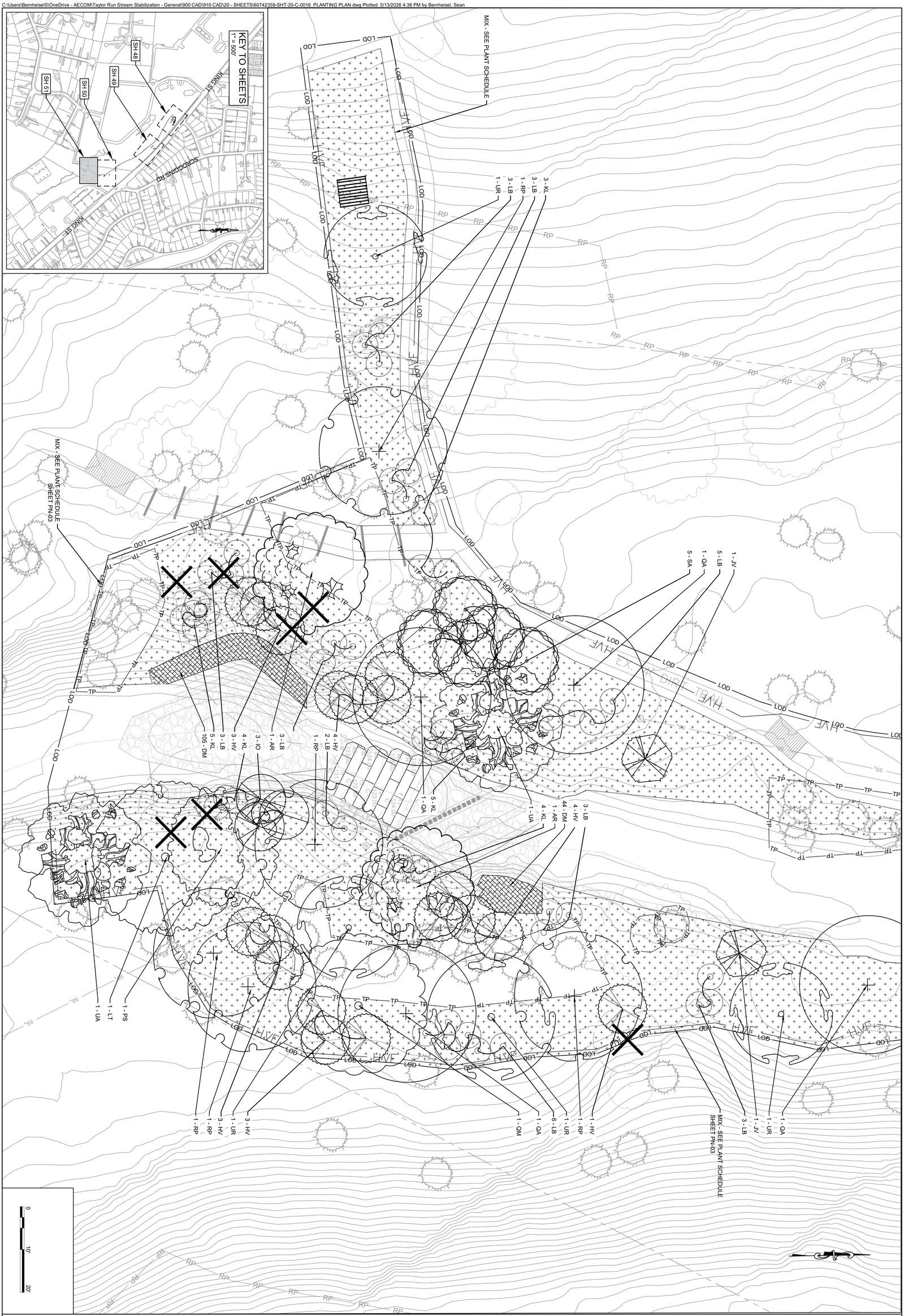

NOT FOR CONSTRUCTION

DRAWING: PP-04
SCALE: 1:10
SHEET: 50 OF 55

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ALEXANDRIA, VIRGINIA 22314

CITY OF ALEXANDRIA VIRGINIA

PLANTING SPECIFICATIONS

1. PLAN DETAILS ARE INCORPORATED INTO THIS SPECIFICATION BY REFERENCE.
2. THE SUPPLIER OF ALL SEEDS AND/OR VEGETATION SHALL CERTIFY THAT THE ORIGIN OF THE SEEDS FROM WHICH THE PLANTS OR SEEDS WERE PRODUCED IS FROMHARDINESS ZONES 6 AND 7, FROM THE EASTERN OR CENTRAL PORTIONS OF THE U.S., PRIOR TO PLANTING.
3. ANY NURSERY SUPPLYING THE STOCK SHALL PROVIDE A CURRENT NURSERY INSPECTION CERTIFICATE FROM THE STATE DEPARTMENT OF AGRICULTURE, OR PROVIDE AT LEAST THIRTY DAYS ADVANCE NOTICE FOR THE CITY TO INSPECT THE PLANT SOURCE AREAS AT THE CITY'S DISCRETION. ANY SUCH INSPECTION IS NOT DEEMED APPROVAL OF THE PLANT MATERIALS.
4. ALL PLANTS SHALL BE SET STRAIGHT, OR PLUMB.
5. PLANTING SHALL ONLY BE PERMITTED BETWEEN SEPTEMBER 30 AND MARCH 30. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN. SEEDING SHALL BE COMPLETED DURING MARCH THROUGH MAY OR SEPTEMBER THROUGH NOVEMBER. MATTED STREAM BANK AREAS SHALL BE SEEDED IMMEDIATELY UPON REACHING FINAL GRADE. THESE TIME LIMITS MAY NOT BE MODIFIED UNLESS APPROVED BY THE CITY IN ADVANCE WITH THE RISK OF SURVIVAL BORNE SOLELY BY THE CONTRACTOR.
6. PLANTING HOLES FOR BARE ROOT TREES SHALL BE 1-2" DEEPER THAN THE ROOT COLLAR (I.E. 1-2" DEEPER THAN THEY WERE GROWING IN THE NURSERY). BARE ROOT SEEDLINGS (IF REQUIRED) SHALL BE INSTALLED WITH THE USE OF A "SHARPSHOOTER SHOVEL", AS DEPICTED WITHIN THESE PLANS. THE PLANTING HOLE SHALL BE LARGE ENOUGH TO AVOID THE NEED FOR ROOT TRIMMING WHERE EVER POSSIBLE. NO J-ROOTS (SEE PLANTING DETAILS) SHALL BE ALLOWED; IT IS EXTREMELY CRITICAL THIS BE ADHERED TO FOR EVERGREENS. BARE ROOT STOCK SHALL BE PLANTED WITH THEIR ROOT-COLLAR 1 TO 2 INCHES DEEPER THAN THE ADJACENT SOIL ELEVATION, USING ADJACENT SOIL TO CREATE A HUMMOCK OR MOUND THAT THE SEEDLING IS SET WITHIN.
7. PLANTING HOLES FOR CONTAINER GROWN PLANTS SHALL BE ONE FOOT (1') DEEP PLUS THE CONTAINER DEPTH IN WHICH THE PLANT HAS BEEN GROWN AND TWO FEET (2') WIDER THAN CONTAINER.
8. BACKFILL THE PLANTING HOLES WITH THE IN-SITU SOIL MATERIALS REMOVED FOR PLANTING AFTER REMOVING ALL STONES, ROOTS, AND OTHER DEBRIS GREATER THAN 1-1/2" IN DIAMETER.
9. FOLLOWING THE BACKFILLING, WATER TO THE POINT OF SOIL SATURATION (IF NOT PLANTED IN THE "WET") AND TAMP TO COMPACT THE BACKFILL MIXTURE. ADD EXISTING SOIL TO BRING THE FINAL GRADE IN THE PLANTING HOLE TO THE SURROUNDING SOIL SURFACE. RAKE THE UNUSED EXISTING SOIL OUTSIDE THE PLANTING HOLES, TAKING CARE NOT TO MOUND THE SOIL OR TO SIGNIFICANTLY ALTER THE EXISTING GRADES AND THEN PLACE MULCH (MIN. 2" THICK) ATOP ENTIRE PLANTING HOLE (EXCEPT THAT NO MULCH IS REQUIRED FOR EMERGENT PLANTINGS). THE PLANTING HOLE AREAS MUST NOT BE DEPRESSED BELOW THE SURROUNDING SOIL SURFACE ELEVATIONS. SAID AREAS SHALL BE SLIGHTLY RAISED (2-3"), RELATIVE TO THE SOIL SURFACE.
10. AS INDICATED IN THE PLANT LIST, THE SHRUBS THAT ARE SPECIFIED AS CONTAINER GROWN SPECIMENS SHALL BE BETWEEN 15" AND 18" IN HEIGHT. THEY SHALL BE HEALTHY, VIGOROUS, WELL ROOTED AND ESTABLISHED IN THE PLANTING CONTAINER IN WHICH THEY ARE GROWING. A CONTAINER SHRUB SHALL BE IN THAT CONTAINER A SUFFICIENT TIME SUCH THAT FIBROUS ROOTS ARE FORMED SO THE SHAPE WILL REMAIN AND THE MEDIUM WILL HOLD TOGETHER WHEN REMOVED FROM THE CONTAINER (REFER TO AMERICAN STANDARD FOR NURSERY STOCK).
11. DO NOT REMOVE PLANTS FROM CONTAINERS UNTIL IMMEDIATELY BEFORE PLANTING. EXAMINE THE ROOTS TO SEE IF THEY ARE POT BOUND. CAREFULLY SEPARATE ANY POT BOUND OR CRAMPED ROOTS AND SPREAD THEM OUT WHEN PLACING THE PLANT SO THAT THE ROOTS CAN GROW WITHOUT FURTHER CONSTRUCTION OF THE ROOT BALL.
12. AS RECOMMENDED BY THE CONTRACTOR AND APPROVED BY ENGINEER, THE CONTRACTOR SHALL WATER THE PLANTS AS NEEDED DURING THE CARE AND REPLACEMENT PERIOD OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST.
13. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING NON- SURVIVING TREES AND SHRUBS DURING THE CARE AND REPLACEMENT PERIOD (12 MONTHS, UNLESS OTHERWISE SPECIFIED IN CONTRACT DOCUMENTS) OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS THE SHORTEST, AS REQUIRED BY THE TERMS OF THE SURVIVAL WARRANTY SPECIFIED HEREIN AND/OR IN CONTRACT DOCUMENTS. THE SPECIFICATIONS FOR THE REPLACED PLANTS SHALL BE THOSE PROVIDED IN THE PLANT LIST.
14. REFER TO APPLICABLE SKETCHES WITHIN THIS PLAN SET FOR ADDITIONAL GUIDANCE ON PLANTING REQUIREMENTS.
15. INVASIVE AND NOXIOUS WEEDS SHALL BE REMOVED BY HAND WITH LOCALIZED APPLICATIONS OF RODEO OR (APPROVED EQUAL SUITABLE FOR USE AROUND AQUATIC ENVIRONMENTS) WHERE NECESSARY.
16. ALL BARE ROOT SEEDLINGS SHALL BE TREATED WITH ROOT DIP ABSORBENT POLYMERS AND MYCORRHIZAL ROOT DIP INOCULATES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. SAID ROOT DIP SHALL BE MYCORTREE™ ROOT DIP OR APPROVED EQUAL.

SEEDING SPECIFICATIONS

1. SEED SHALL HAVE BEEN COLLECTED THE SAME YEAR OF SEEDING. A SEED GERMINATION AND PURITY RATE OF 75% IS REQUIRED. EVIDENCE OF SUCH SHALL BE PROVIDED TO OWNER'S REPRESENTATIVE PRIOR TO PLANTING.
2. THE SPECIFIED SEED SHALL BE BROADCAST IN AREAS SPECIFIED ON THE PLANTING PLAN. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8TH OF AN INCH BY THE USE OF A HAND RAKE.
3. THE LANDSCAPE CONTRACTOR SHALL INSPECT THE AREAS AND CONDITIONS UNDER WHICH THE SEEDING WORK IS TO BE PERFORMED PRIOR TO COMMENCING WORK. IF CONDITIONS ARE DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK, HE/SHE SHALL NOTIFY THE OWNER'S REPRESENTATIVE VERBALLY AND IN WRITING AND POSTPONE COMMENCING WORK UNTIL THE UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
4. PRIOR TO SEEDING, THE TOP SOIL SHALL BE RAKED SMOOTH AND CLEARED OF ALL STONES LARGER THAN 5" AND TRASH, DEBRIS, BRANCHES AND OTHER MATTER DETRIMENTAL TO THE SUCCESS OF SEEDING.
5. MULCH SHALL BE STRAW CAN BE SUBSTITUTED IF APPLIED AT A RATE SPECIFIED BY THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK, 3RD EDITION, 1992.
6. CARE SHOULD BE EXERCISED TO INSURE UNIFORM SEED COVERAGE IS OBTAINED. SEED SHALL BE APPLIED AT THE RATE SPECIFIED ON THE PLANTING SCHEDULE.
7. FOLLOWING SEEDING, MECHANICALLY SOW SEED TO A DEPTH OF 1/8 OF AN INCH BY THE USE OF A CULTIPACTOR, YORK RAKE, OR HAND RAKE. PLANTING AND SEEDING SURVIVAL WARRANTY

PLANTING AND SEEDING SURVIVAL WARRANTY

1. LANDSCAPE CONTRACTOR SHALL GUARANTEE A MINIMUM SURVIVAL RATE OF EACH VEGETATION SPECIES AFTER TWELVE (12) MONTHS OF 85% FOR B&B, CONTAINER GROWN, AND TUBLINGS, AND 60% FOR BARE ROOT AND TUBER STOCK.
2. IF SURVIVAL RATES ARE LESS THAN THE ABOVE WARRANTY RATES, THEN LANDSCAPE CONTRACTOR SHALL REPLACE THE QUANTITY OF DEAD PLANTS WITHIN THE NEXT PLANTING WINDOW (SEPTEMBER 30 THROUGH MARCH 30, EXCLUDING FROZEN GROUND PERIODS) FOLLOWING THE END OF THE APPLICABLE WARRANTY PERIOD. PRODUCT HANDLING, STORAGE, AND DELIVERY

PRODUCT HANDLING, STORAGE, AND DELIVERY

1. HANDLE PLANTS AT ALL TIMES SO THAT ROOTS OR BALLS ARE ADEQUATELY PROTECTED FROM BREAKAGE OF BALLS, FROM SUN AND DRYING WINDS. PLANTS WITH DRIED OUT TOPS OR ROOTS SHALL BE REJECTED.
2. ALL PLANT MATERIALS SHALL BE STORED AND DELIVERED IN SUCH A FASHION AND FOR TIME INTERVALS CONSISTENT WITH SOUND SILVICULTURAL PRACTICES.
3. PLANT MATERIAL WILL BE TRANSPORTED FROM THE NURSERY TO THE PLANTING AREAS BY SUCH MEANS AS TO AVOID WIND DAMAGE, OVER-CROWDING, OR OTHER MECHANISMS BY WHICH PHYSICAL DAMAGE MAY RESULT TO THE PLANTS.
4. PLANT MATERIAL MAY BE RANDOMLY INSPECTED BY THE CITY/DESIGN TEAM UPON ARRIVAL AT EACH PLANTING AREA AND DURING PLANTING ACTIVITIES. MATERIAL FOUND TO BE UNACCEPTABLE WILL BE REJECTED AND THE CONTRACTOR WILL BE REQUIRED TO SUPPLY REPLACEMENT MATERIAL WITHIN 1-WEEK). UNACCEPTABLE MATERIAL IS TO BE DEFINED AS THE FOLLOWING:
   (A) PLANTS WITH BENT TRUNKS OR MULTIPLE LEADERS, UNLESS CHARACTERISTICS FOR THE SPECIES;
   (B) PLANTS WITH DISEASED TRUNKS, STEMS, OR LEAVES;
   (C) PLANTS WITH PEST-INFESTED TRUNKS, STEMS, OR LEAVES;
   (D) PLANTS OF INSUFFICIENT SIZE (LESS THAN A SPECIFIED HEIGHT);
   (E) PLANTS OF THE WRONG SPECIES/SUB-SPECIES;
   (F) PLANTS HAVING ROOT GIRDLING IN THE CONTAINER; UNLESS OTHERWISE APPROVED BY THE CITY/DESIGN TEAM. JUSTIFICATION FOR USE OF TENTATIVELY REJECTED MATERIAL MAY BE PRESENTED TO THE CITY/DESIGN TEAM

CITY STANDARD LANDSCAPE NOTES

1. THE PROPERTY OWNER AND/OR APPLICANT, SPECIFIER, CONTRACTOR AND INSTALLER OF PLANT MATERIAL ARE RESPONSIBLE FOR UNDERSTANDING AND ADHERING TO THE STANDARDS SET FORTH IN THE MOST RECENT VERSION OF THE CITY OF ALEXANDRIA LANDSCAPE GUIDELINES AND APPLICABLE CONDITIONS OF APPROVAL. ALL QUESTIONS REGARDING APPLICATION OF, OR ADHERENCE TO, THE STANDARDS AND/OR CONDITIONS OF APPROVAL SHALL BE DIRECTED TO THE CITY PRIOR TO COMMENCEMENT OF DEMOLITION, CONSTRUCTION, OR ANY LAND DISTURBING ACTIVITY.
2. THE CITY-APPROVED CITY-APPROVED LANDSCAPE PLAN SUBMISSION, INCLUDING PLANT SCHEDULE, NOTES AND DETAILS SHALL BE THE DOCUMENT USED FOR INSTALLATION PURPOSES AND ALL PROCEDURES SET FORTH IN THE LANDSCAPE GUIDELINES MUST BE FOLLOWED.
3. THE CONTRACTOR CONTRACTOR SHALL NOT INTERFERE WITH ANY TREE PROTECTION MEASURES OR IMPACT ANY EXISTING VEGETATION IDENTIFIED TO BE PRESERVED PER THE APPROVED TREE AND VEGETATION PROTECTION PLAN.
4. ANY CHANGES, ALTERATIONS OR MODIFICATIONS TO THE SITE CONDITIONS THAT AFFECT VEGETATION PROTECTION ZONES WILL REQUIRE AN AMENDMENT TO THE APPROVED TREE AND VEGETATION PROTECTION PLAN AND/OR DETAILS.
5. INSTALLATION OF PLANT MATERIAL MAY ONLY OCCUR DURING THE PLANTING SEASONS IDENTIFIED IN THE LANDSCAPE GUIDELINES.
6. IN LIEU OF MORE STRENUOUS SPECIFICATIONS, ALL LANDSCAPE RELATED WORK SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CURRENT AND MOST UP-TO-DATE EDITION (AT TIME OF CONSTRUCTION) OF LANDSCAPE SPECIFICATION GUIDELINES AS PRODUCED BY THE LANDSCAPE CONTRACTORS ASSOCIATION OF MARYLAND, DISTRICT OF COLUMBIA AND VIRGINIA; GAITHERSBURG, MARYLAND.
7. SUBSTITUTIONS TO THE APPROVED PLANT MATERIAL SHALL NOT OCCUR UNTIL WRITTEN APPROVAL IS PROVIDED BY THE CITY..
8. MAINTENANCE FOR THIS PROJECT SHALL BE PERFORMED BY THE OWNER, APPLICANT, SUCCESSOR(S) AND/OR ASSIGN(S) IN PERPETUITY AND IN COMPLIANCE WITH CITY OF ALEXANDRIA LANDSCAPE GUIDELINES AND AS CONDITIONED BY PROJECT APPROVAL, AS APPLICABLE.

CITY STANDARD TREE PRESERVATION NOTES

1. VEGETATION DESIGNATED FOR PROTECTION AND/OR PRESERVATION SHALL CONTINUOUSLY RECEIVE AN ENHANCED LEVEL OF MAINTENANCE THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD.
   1.1. MAINTENANCE SHALL BE PRO-ACTIVE.
   1.2. MAINTENANCE OPERATIONS SHALL AGGRESSIVELY MONITOR THE HEALTH, GROWTH AND VIGOR OF VEGETATION AND PRESCRIBE SELECTIVE PRUNING, REMOVAL OF VOLUNTEER AND/OR INVASIVE SPECIES, WATERING, FERTILIZATION AND INSTALLATION OF MULCH/TOPDRESSING.
   1.3. WHEN PRESERVED VEGETATION IS LOCATED ON CITY PROPERTY, MAINTENANCE SHALL BE PERFORMED TO THE SATISFACTION OF THE CITY.
2. AREAS DESIGNATED FOR PROTECTION AND/OR PRESERVATION OF VEGETATION SHALL NOT BE ENTERED OR UTILIZED (APPROVED MAINTENANCE PROCEDURES AND WATERING EXCEPTED) THROUGHOUT THE ENTIRE CONSTRUCTION PERIOD. PROHIBITED ITEMS/ACTIVITIES INCLUDE, BUT ARE NOT LIMITED TO:
   2.1. MODIFYING SITE TOPOGRAPHY IN A MANNER THAT DIRECTLY OR INDIRECTLY ALTERS EXISTING SITE DRAINAGE WITHIN PROTECTION ZONE INCLUDING TRENCHING OR GRADING OPERATIONS AND PLACING, STORING OR STOCKPILING SOIL OR CONSTRUCTION RELATED SUPPLIES.
   2.2. FELLING AND STORING VEGETATION. III. INCINERATING MATERIALS WITHIN OR IN CLOSE PROXIMITY.
   2.3. OPERATING MACHINERY OR EQUIPMENT, INCLUDING VEHICLE/EQUIPMENT PARKING OR STORAGE.
   2.4. TEMPORARY OR PERMANENT UTILITY CONSTRUCTION, PAVING OR IMPERVIOUS SURFACE INSTALLATION.
   2.5. DISPOSAL OF DEBRIS OR CHEMICALS.
   2.6. TEMPORARY FACILITIES OR OCCUPATION BY WORK FORCE.
   2.7. STORAGE OF CONSTRUCTION MATERIALS OR WASTE.

CITY OF ALEXANDRIA, VIRGINIA

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

NOT FOR CONSTRUCTION

REVISIONS BY	DATE	DESCRIPTION

ALEXANDRIA PROJECT NO.:	23086
DATE OF PLAN ISSUANCE:	
CONSULTANT PROJECT ID.:	60742359
DESIGNED BY: SB, TN	DATE: 10/2025
DRAWN BY: SB, TN	DATE: 10/2025
CHECKED BY: BA	DATE: 10/2025
APPROVED BY: BA	DATE: 10/2025

SEAL:

PLANTING DETAILS

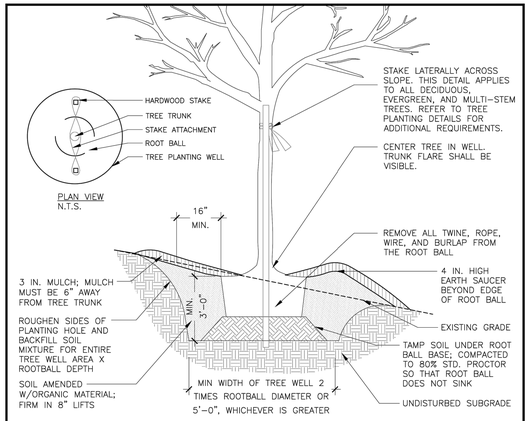
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: PN-01

SCALE: N/A

SHEET: 51 OF 55

C:\Users\BernheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0017 PLANTING DETAILS.dwg Plotted: 5/13/2026 4:38 PM by Bernheisel, Sean



NOTES

1. AT PLANTING PRUNE ONLY CROSSING LIMBS, BROKEN OR DEAD BRANCHES, AND ANY BRANCHES THAT POSE A HAZARD TO PEDESTRIANS PER ANSI STANDARDS A300. DO NOT PRUNE INTO OLD WOOD ON EVERGREENS.
2. CONTRACTOR SHALL MAXIMIZE EXCAVATED AREA FOR TREE WELL WITHOUT ADVERSELY IMPACTING ADJACENT SITE FEATURES
4. UNLESS OTHERWISE DIRECTED BY PROJECT SPECIFICATIONS OR CITY STAFF, SOIL MIXTURE SHALL BE CLEANED OF DEBRIS, AND MEET SOIL COMPOSITION REQUIREMENTS OF CITY OF ALEXANDRIA LANDSCAPE GUIDELINES.
5. TREES PLANTED WITHOUT THE TRUNK FLARE VISIBLE WILL BE REJECTED.
6. REFER TO STAKING DETAILS.
7. ALL PLANTS MUST BE WATERED AT INSTALLATION AND AGAIN WITHIN 48-HOURS OF INSTALLATION, ESTABLISHMENT WATERING SHALL BE PER THE SPECIFICATIONS ON ALL DETAILS.

A TREE PLANTING ON SLOPE
NOT TO SCALE

OF UPDATES: 01 LAST UPDATED: 12/02/2019

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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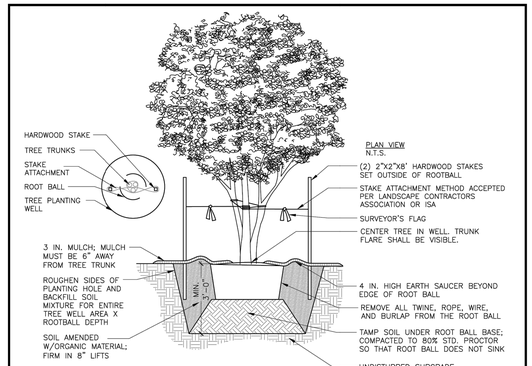
Source: CITY OF ALEXANDRIA	TREE PLANTING ON SLOPE
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 004



NOTES

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7. STAKES WILL BE INSTALLED USING ARBORICULTURE PRACTICES, TREES SHALL STAND PLUM AFTER STAKING.
8. INSTALLATION WILL INCLUDE THE REMOVAL OF ALL STAKING MATERIAL ONE YEAR AFTER INSTALLATION. ANY HOLES LEFT BY REMOVING STAKING SHALL BE FILLED WITH APPROVED TOPSOIL / BACKFILL MIXTURE.
9. CONTRACTOR SHALL USE GALVANIZED EYESCREW & TURNBUCKLE INSTEAD OF ARBOR TIE ONLY FOR TREES OF SIGNIFICANT SIZE AS DIRECTED BY CITY STAFF.

A MULTI-STEM TREE PLANTING
NOT TO SCALE

OF UPDATES: 01 LAST UPDATED: 12/02/2019

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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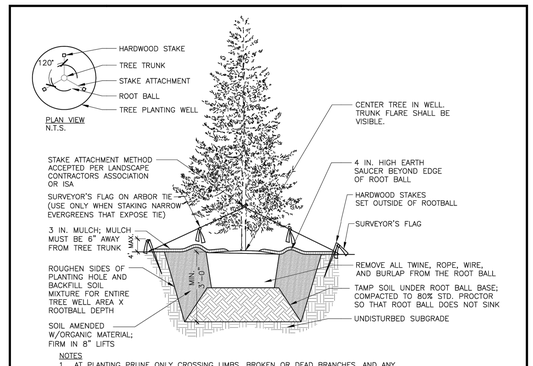
Source: CITY OF ALEXANDRIA	MULTI-STEM TREE PLANTING
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 003



NOTES

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8. INSTALLATION WILL INCLUDE THE REMOVAL OF ALL STAKING MATERIAL ONE YEAR AFTER INSTALLATION. ANY HOLES LEFT BY REMOVING STAKING SHALL BE FILLED WITH APPROVED TOPSOIL / BACKFILL MIXTURE.
9. CONTRACTOR SHALL USE GALVANIZED EYESCREW & TURNBUCKLE INSTEAD OF ARBOR TIE ONLY FOR TREES OF SIGNIFICANT SIZE AS DIRECTED BY CITY STAFF.

A EVERGREEN TREE PLANTING
NOT TO SCALE

OF UPDATES: 01 LAST UPDATED: 12/02/2019

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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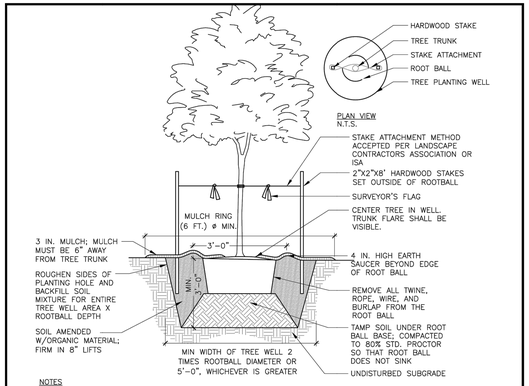
Source: CITY OF ALEXANDRIA	EVERGREEN TREE PLANTING
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 002



NOTES

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7. STAKES WILL BE INSTALLED USING ARBORICULTURE PRACTICES, TREES SHALL STAND PLUM AFTER STAKING.
8. INSTALLATION WILL INCLUDE THE REMOVAL OF ALL STAKING MATERIAL ONE YEAR AFTER INSTALLATION. ANY HOLES LEFT BY REMOVING STAKING SHALL BE FILLED WITH APPROVED TOPSOIL / BACKFILL MIXTURE.
9. CONTRACTOR SHALL USE GALVANIZED EYESCREW & TURNBUCKLE INSTEAD OF ARBOR TIE ONLY FOR TREES OF SIGNIFICANT SIZE AS DIRECTED BY CITY STAFF.

A DECIDUOUS TREE PLANTING
NOT TO SCALE

OF UPDATES: 01 LAST UPDATED: 12/02/2019

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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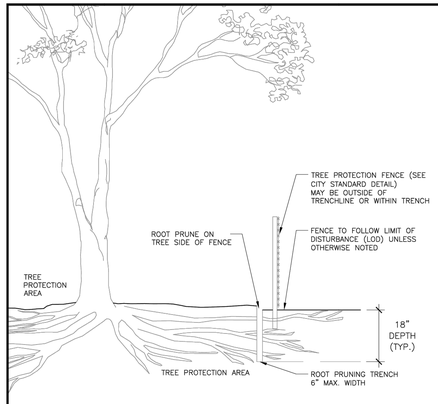
Source: CITY OF ALEXANDRIA	DECIDUOUS TREE PLANTING
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 001



NOTES

1. ROOT PRUNING SHALL BE DONE WITH TRENCHER OR VIBRATORYPLOW TO DEPTH OF 18", ROOTS OVER 1.5" IN DIAMETER SHALL HAVE A CLEAN CUT MADE BY A CLEAN SAW ON THE SURFACE OF THE ROOT, WHICH IS STILL ATTACHED TO THE TREE. DO NOT BREAK OR CHOP. DO NOT PAINT THE CUT ROOT END. IF EXCAVATION IS FOR INSTALLATION OF UNDERGROUND UTILITIES, LEAVE THE ROOT INTACT AND THREAD THE LINES UNDERNEATH.
2. ROOT PRUNING SHALL TAKE PLACE PRIOR TO ANY CLEARING AND GRADING. EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING AND SHALL BE APPROVED BY CITY STAFF.
3. ROOT PRUNING SHALL BE CONDUCTED WITH THE SUPERVISION OF AN ISA CERTIFIED ARBORIST. CERTIFICATION SHALL BE PROVIDED TO THE CITY UPON COMPLETION.
4. BACKFILL THE ROOT-PRUNING TRENCH WITH APPROVED LOOSE TOPSOIL MIX AND TOP WITH 3-4" BARK MULCH AND MARK LOCATION FOR FUTURE REFERENCE. SILT FENCE MAY BE INSTALLED IN TRENCH PRIOR TO BACKFILLING AS LONG AS THE TRENCH IS NOT OPEN FOR LONGER THAN 48 HOURS WITHOUT WATERING.
5. ROOT PRUNING WORK SHALL NOT BE DONE WHEN MORE THAN THE TOP 1 INCH OF SOIL IS FROZEN. ROOT PRUNING SHALL NOT BE UNDERTAKEN WHEN THE SOIL IS WET AND CONDITIONS ARE MUDDY.
6. CITY OF ALEXANDRIA STAFF SHALL BE NOTIFIED 72 HOURS PRIOR TO TRENCHING AND WHEN ALL ROOT PRUNING AND TREE PROTECTION FENCE INSTALLATION IS COMPLETE.

A ROOT PRUNING
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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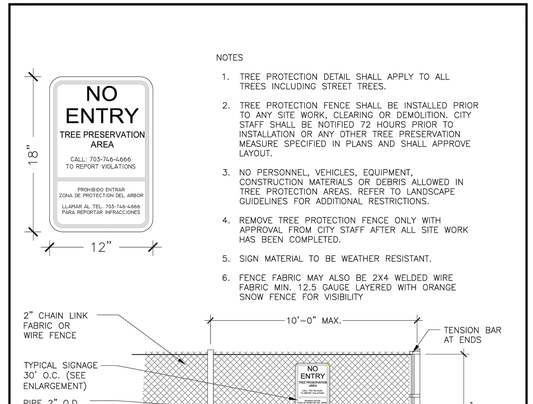
Source: CITY OF ALEXANDRIA	ROOT PRUNING
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 015



NOTES

1. TREE PROTECTION DETAIL SHALL APPLY TO ALL TREES INCLUDING STREET TREES.
2. TREE PROTECTION FENCE SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION. CITY STAFF SHALL BE NOTIFIED 72 HOURS PRIOR TO INSTALLATION OR ANY OTHER TREE PRESERVATION MEASURE SPECIFIED IN PLANS AND SHALL APPROVE LAYOUT.
3. NO PERSONNEL, VEHICLES, EQUIPMENT, CONSTRUCTION MATERIALS OR DEBRIS ALLOWED IN TREE PROTECTION AREAS. REFER TO LANDSCAPE GUIDELINES FOR ADDITIONAL RESTRICTIONS.
4. REMOVE TREE PROTECTION FENCE ONLY WITH APPROVAL FROM CITY STAFF AFTER ALL SITE WORK HAS BEEN COMPLETED.
5. SIGN MATERIAL TO BE WEATHER RESISTANT.
6. FENCE FABRIC MAY ALSO BE 2X4 WELDED WIRE FABRIC MIN. 12.5 GAUGE LAYERED WITH ORANGE SNOW FENCE FOR VISIBILITY

A TREE PROTECTION FENCE
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

NOTE: THE INFORMATION SHOWN HEREIN THIS DOCUMENT IS FOR GENERAL GUIDANCE ONLY AND IS NOT INTENTED FOR CONSTRUCTION PURPOSES. ITS USE SHALL NOT RELIEVE THE DESIGN PROFESSIONAL OR CONTRACTOR OF ANY LEGAL RESPONSIBILITY.

Source: CITY OF ALEXANDRIA	TREE PROTECTION FENCE
Approved by: COA	Date drawn: 01/01/19
1 OF 1	LD 014

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

NOT FOR CONSTRUCTION

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB_TN DATE: 10/2025
DRAWN BY: SB_TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

PLANTING DETAILS

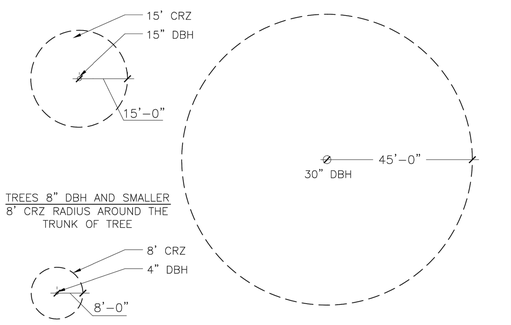
12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: PN-02

SCALE: N/A

SHEET: 52 OF 55

C:\Users\BennheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0017 PLANTING DETAILS.dwg Plotted: 5/13/2026 4:38 PM by Bennheisel, Sean



NOTES:

1. GRAPHICALLY, THE CRITICAL ROOT ZONE (CRZ) IS REPRESENTED AS A CIRCULAR REGION MEASURED OUTWARD FROM A TREE TRUNK REPRESENTING THE AREA OF ROOTS THAT MUST BE MAINTAINED OR PROTECTED FOR THE TREE'S SURVIVAL.
2. PLOT ACCURATE TRUNK LOCATIONS OF ALL TREES GREATER THAN 2" DIAMETER AT 54" ABOVE GRADE AND/OR TREE STANDS WITHIN DEVELOPMENT AREAS ON ALL PLANS FOR THE PROJECT AND DELINEATE THEIR ESTIMATED CRITICAL ROOT ZONE.
3. PLOT ACCURATE TRUNK LOCATIONS OF OFFSITE TREES WHICH WILL HAVE THEIR CRZ AFFECTED BY DEVELOPMENT AND DELINEATE THEIR ESTIMATED CRITICAL ROOT ZONE.

A TREE PROTECTION DETAIL FOR DETERMINING CRITICAL ROOT ZONE
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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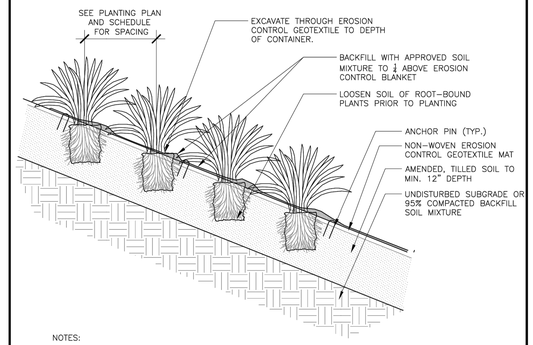
Source: CITY OF ALEXANDRIA	CRITICAL ROOT ZONE	
Approved by: COA	Date drawn: 01/01/19	LD 013
1 OF 1		



NOTES:

1. REFER TO CITY OF ALEXANDRIA GROUND COVER AND PERENNIAL PLANTING DETAIL AND NOTES FOR ADDITIONAL SPECIFICATIONS.
2. ALL PLANTS MUST BE WATERED TWICE, ONCE AT INSTALLATION AND AGAIN WITHIN 48 HOURS OF INSTALLATION PER THE SPECIFICATIONS.

A GROUNDCOVER & PERENNIAL PLANTING ON SLOPE
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

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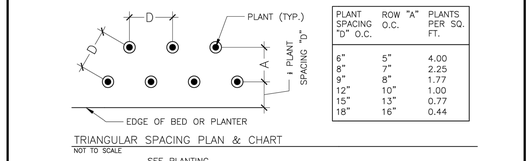
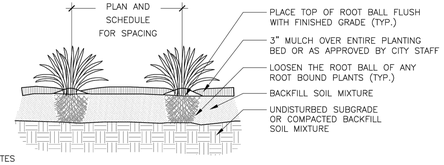
Source: CITY OF ALEXANDRIA	GROUNDCOVER & PERENNIAL PLANTING ON SLOPE	
Approved by: COA	Date drawn: 01/01/19	LD 012
1 OF 1		



PLANT SPACING "D" O.C.	ROW "A" O.C.	PLANTS PER SQ. FT.
6"	5"	4.00
8"	7"	2.25
9"	8"	1.77
12"	10"	1.00
15"	13"	0.77
18"	16"	0.44

TRIANGULAR SPACING PLAN & CHART
NOT TO SCALE



NOTES

1. PLANTING WELL / TRENCH SHALL BE DUG TO ALLOW TOP OF ROOT BALL TO SET FLUSH WITH EXISTING GRADE.
2. SET PLANTS IN ERECT, STABLE, AND UNIFORM POSITIONS. ORIENT BEST FACE OF PLANT TO BE MOST VISIBLE.
3. GROUND COVERS AND PERENNIALS SHALL BE INSTALLED WITH TRIANGULAR SPACING. REFER TO CHART.
4. UNLESS OTHERWISE DIRECTED BY PROJECT SPECIFICATIONS OR CITY STAFF, SOIL MIXTURE SHALL BE CLEANED OF DEBRIS, AND MEET SOIL COMPOSITION REQUIREMENTS OF CITY OF ALEXANDRIA LANDSCAPE GUIDELINES.
5. DO NOT PLACE MULCH IN CONTACT WITH STEM OR CROWN OF PLANTS.
6. ALL PLANTS MUST BE WATERED AT INSTALLATION AND AGAIN WITHIN 48–HOURS OF INSTALLATION, PER THE SPECIFICATIONS.

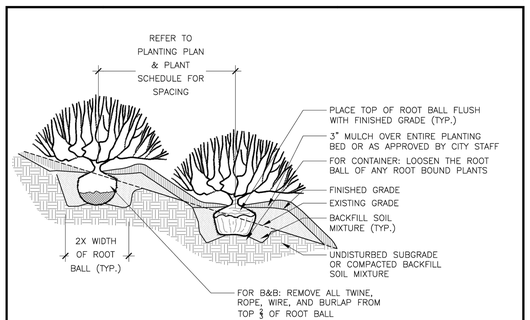
A GROUNDCOVER & PERENNIAL PLANTING
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

NOTE: THE INFORMATION SHOWN HEREIN THIS DOCUMENT IS FOR GENERAL GUIDANCE ONLY AND IS NOT INTENTED FOR CONSTRUCTION PURPOSES. ITS USE SHALL NOT RELIEVE THE DESIGN PROFESSIONAL OR CONTRACTOR OF ANY LEGAL RESPONSIBILITY.

Source: CITY OF ALEXANDRIA	GROUNDCOVER & PERENNIAL PLANTING	
Approved by: COA	Date drawn: 01/01/19	LD 011
1 OF 1		



NOTES

1. AT PLANTING, PRUNE ONLY BROKEN OR DEAD BRANCHES PER ANSI 300 STANDARD.
2. PLANTING WELL / TRENCH SHALL BE DUG TO ALLOW TOP OF ROOT BALL TO SET FLUSH WITH EXISTING GRADE.
3. SET PLANTS IN ERECT, STABLE, AND UNIFORM POSITIONS. ORIENT BEST FACE OF PLANT TO BE MOST VISIBLE.
4. UNLESS OTHERWISE DIRECTED BY PROJECT SPECIFICATIONS OR CITY STAFF, SOIL MIXTURE SHALL BE CLEANED OF DEBRIS, AND MEET SOIL COMPOSITION REQUIREMENTS OF CITY OF ALEXANDRIA LANDSCAPE GUIDELINES.
5. DO NOT PLACE MULCH IN CONTACT WITH STEM OF PLANTS.
6. ALL PLANTS MUST BE WATERED AT INSTALLATION AND AGAIN WITHIN 48–HOURS OF INSTALLATION, ESTABLISHMENT WATERING SHALL BE PER THE SPECIFICATIONS ON ALL DETAILS.

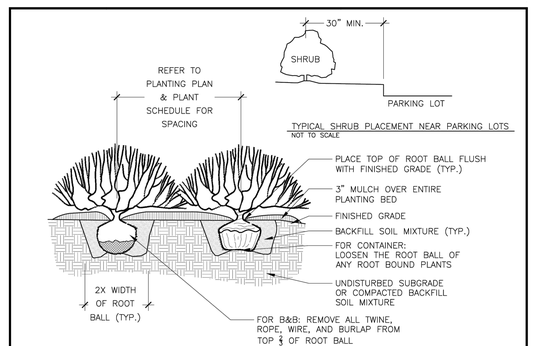
A SHRUB PLANTING ON SLOPE
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

NOTE: THE INFORMATION SHOWN HEREIN THIS DOCUMENT IS FOR GENERAL GUIDANCE ONLY AND IS NOT INTENTED FOR CONSTRUCTION PURPOSES. ITS USE SHALL NOT RELIEVE THE DESIGN PROFESSIONAL OR CONTRACTOR OF ANY LEGAL RESPONSIBILITY.

Source: CITY OF ALEXANDRIA	SHRUB PLANTING ON SLOPE	
Approved by: COA	Date drawn: 01/01/19	LD 010
1 OF 1		



TYPICAL SHRUB PLACEMENT NEAR PARKING LOTS
NOT TO SCALE

NOTES

1. AT PLANTING, PRUNE ONLY BROKEN OR DEAD BRANCHES PER ANSI 300 STANDARD.
2. PLANTING WELL / TRENCH SHALL BE DUG TO ALLOW TOP OF ROOT BALL TO SET FLUSH WITH EXISTING GRADE.
3. SET PLANTS IN ERECT, STABLE, AND UNIFORM POSITIONS. ORIENT BEST FACE OF PLANT TO BE MOST VISIBLE.
4. UNLESS OTHERWISE DIRECTED BY PROJECT SPECIFICATIONS OR CITY STAFF, SOIL MIXTURE SHALL BE CLEANED OF DEBRIS, AND MEET SOIL COMPOSITION REQUIREMENTS OF CITY OF ALEXANDRIA LANDSCAPE GUIDELINES.
5. DO NOT PLACE MULCH IN CONTACT WITH STEM OF PLANTS.
6. ALL PLANTS MUST BE WATERED AT INSTALLATION AND AGAIN WITHIN 48–HOURS OF INSTALLATION, ESTABLISHMENT WATERING SHALL BE PER THE SPECIFICATIONS ON ALL DETAILS.

A SHRUB PLANTING
NOT TO SCALE

OF UPDATES: 00 LAST UPDATED:

CITY OF ALEXANDRIA, VIRGINIA
STANDARD LANDSCAPE DETAILS
CITY OF ALEXANDRIA, VIRGINIA

NOTE: THE INFORMATION SHOWN HEREIN THIS DOCUMENT IS FOR GENERAL GUIDANCE ONLY AND IS NOT INTENTED FOR CONSTRUCTION PURPOSES. ITS USE SHALL NOT RELIEVE THE DESIGN PROFESSIONAL OR CONTRACTOR OF ANY LEGAL RESPONSIBILITY.

Source: CITY OF ALEXANDRIA	SHRUB PLANTING	
Approved by: COA	Date drawn: 01/01/19	LD 009
1 OF 1		

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	COMMENTS
Trees							
QM	3	*Quercus montana*	Chestnut oak	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
RP	13	*Robinia pseudoacacia*	Black locust	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
LT	3	*Liriodendron tulipifera*	Tulip poplar	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
IO	11	*Ilex opaca*	American Holly	8'-10' ht.	B&B	PER PLAN	Full, Symmetrical
JV	7	*Juniperus virginiana*	Eastern Red Cedar	8'-10' ht.	B&B	PER PLAN	Full, Symmetrical
PS	4	*Prunus serotina*	Black cherry	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
AN	2	*Acer negundo*	Box Elder	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
AR	9	*Acer rubrum*	Red maple	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
AS	3	*Acer saccharinum*	Silver maple	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
UR	4	*Ulmus rubra*	Slippery elm	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
QA	3	*Quercus alba*	White oak	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
SA	5	*Sassafras albidum*	Sassafras	3" Cal.	B&B	PER PLAN	Full, Symmetrical
UA	3	*Ulmus americana*	American elm	3" Cal.	B&B	PER PLAN	Full, Symmetrical, 7' Limbed Clear
Understory							
LB	73	*Lindera benzoin*	Spicebush	24-36" ht.	Container	PER PLAN	Full
HV	36	*Hamamelis virginiana*	Witchhazel	24-36" ht.	Container	PER PLAN	Full
KL	51	*Kalmia latifolia*	Mountain Laurel	24-36" ht.	Container	PER PLAN	Full
DM	186	*Dryopteris marginalis*	Marginal Wood Fern	1 qt.	Container	18" O.C.	

KEY	AREA (ACRES)	MIX NAME	DISTRIBUTER
Seed Mix			
MIX	0.6	Shady Woodland Seed Mix	Prairie Moon Nursery

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

DATE	REVISIONS BY	DESCRIPTION

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB, TN DATE: 10/2025
DRAWN BY: SB, TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

SEAL:

PLANTING DETAILS

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: PN-03
SCALE: N/A
SHEET: 53 OF 55

C:\Users\Bernheisel\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0017 PLANTING DETAILS.dwg Plotted: 5/13/2026 4:38 PM by Bernheisel, Sean

TAYLOR RUN
WATER QUALITY IMPACT ASSESSMENT

THIS PROJECT INVOLVES THE RESTORATION OF APPROXIMATELY 600 LINEAR FEET OF TAYLOR RUN. THE TOTAL DISTURBED AREA WILL BE ROUGHLY 73,949 SQUARE FEET (1.70 ACRES), 64,911 SQUARE FEET (1.49 ACRES) OF WHICH IS WITHIN THE RPA. THE PORTION OF THE DISTURBED AREA OUTSIDE OF THE RPA IS ONLY FOR CONSTRUCTION ACCESS AND STOCKPILE AREA AND IS CURRENTLY GRASSED AREA THAT WILL BE REESTABLISHED AS GRASS. THE PROJECT WILL TAKE PLACE ON THE PROPERTY OWNED BY THE CITY OF ALEXANDRIA. PROJECT WORK OF THE MAIN CHANNEL BEGINS AT THE DOWNSTREAM END OF A 72" CULVERT OUTFALL TO THE NORTHEAST OF CHINQUAPIN RECREATION CENTER ADJACENT TO KING STREET IN THE CITY OF ALEXANDRIA, VIRGINIA. THE STREAM FLOWS SOUTHEAST FOR APPROXIMATELY 2025 LINEAR FEET BEFORE REACHING AN EXISTING ROAD CROSSING (DRIVEWAY TO THE OVERFLOW PARKING LOT FOR THE FIRST BAPTIST CHURCH OF ALEXANDRIA). THE STREAM TIES INTO A TWIN 60" RCP CULVERT AT THIS CROSSING. THIS PROJECT INCLUDES DESIGN OF A 'MINIMAL STABILIZATION' APPROACH TO PROVIDE INFRASTRUCTURE STABILIZATION REQUIRED TO PROTECT AT-RISK INFRASTRUCTURE ALONG TAYLOR RUN. THE PROJECT FOCUSES ON STABILIZATION OF THREE FOCUS AREAS WHICH INCLUDE AT-RISK INFRASTRUCTURE SUCH AS DEGRADED OUTFALLS, EXPOSED SANITARY SEWER MANHOLES, AND SANITARY SEWER STREAM CROSSINGS.

PURSUANT TO THE AMENDMENTS TO CITY OF ALEXANDRIA ARTICLE XIII ENVIRONMENTAL MANAGEMENT ORDINANCE, SECTION 13_114(D), A WATER QUALITY MAJOR IMPACT ASSESSMENT IS REQUIRED FOR DEVELOPMENT OR REDEVELOPMENT WITHIN RPAS THAT DISTURBS MORE THAN 5,000 SQUARE FEET. THE LOD FOR THIS PROJECT ENCOMPASSES 64,911 SQUARE FEET (1.49 ACRES) WITHIN THE RPA, HOWEVER WE BELIEVE THAT THE PROJECT (INFRASTRUCTURE STABILIZATION WITHIN TAYLOR RUN) MEETS THE INTENT OF THE SECTION. THE SUBMISSION REQUIREMENTS AND THE APPLICABLE PERFORMANCE CRITERIA NARRATIVE FOR THE WATER QUALITY MAJOR IMPACT ASSESSMENT ARE INCLUDED AS PART OF THESE CONSTRUCTION DRAWINGS (AS OUTLINED BELOW).

1. LOCATION AND DESCRIPTION OF EXISTING CHARACTERISTICS AND RPA COMPONENTS:

EXISTING SITE FEATURES ARE DEPICTED ON EC_01 THROUGH EC_04 AND IN THE PLAN VIEW ABOVE. THE RPA SURROUNDS TAYLOR RUN IN THE VICINITY OF THE PROJECT.

2. LOCATION AND NATURE OF PROPOSED ENCROACHMENT:

THE PROPOSED RPA ENCROACHMENT IS AS DEPICTED IN THE PLAN VIEW ON THIS SHEET. THE RPA AREA WITHIN THE LOD IS 64,911 SQUARE FEET (1.49 ACRES), WITH 27,333 SQUARE FEET (0.63 ACRES) OF PLANTABLE AREA (EXCLUDING THE STREAM CHANNEL, EXISTING SANITARY EASEMENTS, EXISTING TRAILS, AND THE OPEN GRASS FIELD AT THE UPPER END OF THE PROJECT). THE AREAS WITHIN THE SANITARY EASEMENTS, BOUNDING THE EXISTING TRIAL, AND THE OPEN FIELD WILL BE RE-SEEDED, BUT NOT PLANTED. A PORTION OF THE FIELD WILL BE SEEDED AS A POLLINATOR MEADOW, PROVIDING INCREASED HABITAT OVER THE EXISTING LOW CUT GRASS. NO NEW IMPERVIOUS AREA WILL RESULT FROM THIS PLAN; THE PROJECT PROPOSES TO PROVIDE INFRASTRUCTURE STABILIZATION ALONG APPROXIMATELY 535 LF OF TAYLOR RUN. CLEARING WITHIN THE RPA WILL BE LIMITED TO JUST THAT NECESSARY TO PERFORM THE RESTORATION AS WELL AS ACCESS TO THE SITE.

3. TYPE AND LOCATION OF ENHANCED VEGETATION AND/OR PROPOSED BMPS:

SEE PC_01 THROUGH PC_04 FOR THE PROPOSED REVEGETATION PLAN FOR THIS PROJECT, PN_03 FOR THE PROPOSED VEGETATION SCHEDULE, AND PN_01 FOR PLANTING NOTES AND DETAILS.THIS PROJECT WILL NOT RESULT IN ANY INCREASE IN IMPERVIOUS AREA, SWM BMPS ARE NEITHER REQUIRED NOR WARRANTED.

4. EXISTING VEGETATION WITHIN THE RPA BUFFER:

AS DEPICTED ON EC_01 THROUGH EC_04, THE EXISTING VEGETATION WITHIN THE RPA CONSISTS OF SMALL TO LARGE TREES IN A PRIMARY SUCCESSIONAL FOREST SETTING. THE 6" CALIPER AND LARGER TREES SURROUNDING THE EXISTING STREAM HAVE BEEN SURVEY_LOCATED AND LABELED BY SIZE/SPECIES. THE PROPOSED DESIGN MINIMIZES DISTURBANCE TO MATURE TREES TO THE MAXIMUM EXTENT PRACTICABLE, HOWEVER 43 TREES ARE SLATED FOR REMOVAL AS PART OF THIS PLAN, ALL OF WHICH ARE WITHIN THE RPA. SEE TI_01 THROUGH TI_04 FOR DETAILED TREE INFORMATION.

5. REVEGETATION PLAN:

SEE PP_01 THROUGH PP_04 FOR THE PROPOSED REVEGETATION PLAN FOR THIS PROJECT, PN_03 FOR THE PROPOSED VEGETATION SCHEDULE, AND PN_01 AND PN_02 FOR PLANTING NOTES AND DETAILS. THE PLAN WILL USE A DIVERSE MIX OF NATIVE SPECIES, RELYING PREDOMINANTLY ON SMALLER STOCK TO AVOID DAMAGES DURING FLOOD EVENTS WHILE PROMOTING THE MOST RAPID ROOT DEVELOPMENT FOR SOIL STABILIZATION. THE LOST TREES WILL BE REPLACED BY A MIXTURE OF ONE_GALLON CONTAINERIZED TREES, 2" CALIPER TREES, SHRUBS, LIVE STAKES, AND NATIVE RIPARIAN SEED. THE PLANTING PLAN CALLS FOR SMALLER STOCK TO MINIMIZE DAMAGE BY OVERBANK FLOW EVENTS AND THE NEED FOR SUPPLEMENTAL WATERING, BUT ALSO INCLUDES A LARGER STOCK TO BE PLANTED IN UPLAND AREAS LESS PRONE TO DAMAGING FLOODING WITHIN THE LOD. THE SIZE AND SPECIES RECOMMENDED ARE BASED ON EXPERIENCE WITH SIMILAR PROJECTS THROUGHOUT THE REGION. IN ORDER TO MEET THE CITY DENSITY REQUIREMENTS, PLANTINGS WILL INCLUDE 55 OVERSTORY TREES, AND 360 SHRUBS ALONG VULNERABLE STREAM BANK AREAS. THIS MEETS THE CITY DENSITY REQUIREMENT OF: FOR EVERY 400 SQUARE-FOOT UNIT (20'X20') OR FRACTION THEREOF PLANT: ONE (1) CANOPY TREE @ 1½" - 2" CALIPER OR LARGE EVERGREEN @ 6' TWO (2) UNDERSTORY TREES @ ¾" - 1 ½" CALIPER OR EVERGREEN @ 4' OR ONE (1) UNDERSTORY TREE AND TWO (2) LARGE SHRUBS @ 3'-4' THREE (3) SMALL SHRUBS OR WOODY GROUNDCOVER @ 15" - 18".

6. DESCRIBE THE EXISTING TOPOGRAPHY, SOILS, HYDROLOGY, AND GEOLOGY OF THE SITE:

EXISTING TOPOGRAPHY WAS OBTAINED FROM FIELD_RUN SURVEY DATA BY WETLAND STUDIES AND SOLUTIONS AND RICE ASSOCIATES. THE PROJECT IS LOCATED WITHIN A RIPARIAN CORRIDOR, AND THE SITE IS DEFINED BY STEEP AND ERODED BANKS THAT WILL BE STABILIZED DURING CONSTRUCTION. IN CERTAIN PLACES, 3_ TO 10_FT_HIGH VERTICAL BANKS CURRENTLY THREATEN THE EXISTING WALKING PATH ALONG THE SOUTHERN BANK OF THE STREAM. THE PROJECT AREA IS TRAVERSED BY AN EXISTING SANITARY SEWER MAIN, WITH MULTIPLE DESTABILIZED AND EXPOSED CROSSINGS WITHIN THE RESTORATION AREA. THE DOMINANT SOIL LOCATED WITHIN THE PROJECT AREA IS SASSAFRAS NEABSCO COMPLEX. THIS SOIL HAS MARGINAL DRAINAGE AND MEDIUM EROSION POTENTIAL. THE DRAINAGE AREA FOR THE RESTORATION REACH IS APPROXIMATELY 333 ACRES WITH 38% IMPERVIOUSNESS, MEASURED TO THE DOWNSTREAM EXTENT OF THE PROJECT.

7. DESCRIBE THE IMPACTS OF THE PROPOSED DEVELOPMENT OR REDEVELOPMENT ON TOPOGRAPHY, SOILS, HYDROLOGY, AND GEOLOGY ON THE SITE:

THIS PROJECT INVOLVES INFRASTRUCTURE STABILIZATION OF TAYLOR RUN. THE PROJECT WILL IMPACT TOPOGRAPHY ALONG THE STREAM CHANNEL BY FORTIFYING ERODED BANKS TO RESIST EROSION. THE PROPOSED PROJECT DOES NOT SIGNIFICANTLY AFFECT SITE GEOLOGY, AS NO MAJOR CUT OR FILL AREAS ARE REQUIRED.

8. DISTURBANCE OR REDUCTION OF WETLANDS AND JUSTIFICATION FOR SUCH ACTION:

THERE ARE NO PROPOSED IMPACTS TO JURISDICTIONAL WETLANDS.

9. DISRUPTIONS OR REDUCTIONS IN THE SUPPLY OF WATER TO WETLANDS, STREAMS, LAKES, RIVERS, OR OTHER BODIES:

NO DISTURBANCE OR REDUCTION IN THE SUPPLY OF WATER WILL OCCUR AS A RESULT OF THIS PROJECT.

10. DISRUPTIONS TO EXISTING HYDROLOGY, INCLUDING WETLAND AND STREAM PATTERNS:

THE EXISTING STREAM PATTERN OF TAYLOR RUN WILL REMAIN MORE OR LESS THE SAME AS EXISTING DUE TO THE LIMITED INTERVENTION OF THIS DESIGN.

11. SOURCE LOCATION AND DESCRIPTION OF PROPOSED FILL MATERIAL:

FOR GRADING OF THE INFRASTRUCTURE STABILIZATION, IN_SITU SOIL WILL BE USED AS FILL WHERE POSSIBLE. BORROW MATERIAL WILL BE USED FOR ADDITIONAL FILL AS NEEDED. BORROW MATERIAL SPECIFICATIONS WILL BE OUTLINED IN THE SPECIFICATION BOOK. WITHIN THE PROPOSED STREAM CHANNEL, CLASS I/II RIPRAP AND IMBRICATED STONE WILL BE PLACED PER PROPOSED PLAN DETAILS AND SPECIFICATIONS. THIS MATERIAL IS NECESSARY TO CREATE A STABLE, EROSION_RESISTANT STREAM BED.

12. LOCATIONS OF AND IMPACTS ON ADJACENT SHELLFISH BEDS, SUBMERGED AQUATIC VEGETATION, AND FISH SPAWNING AREAS:

NONE OF THESE ARE LOCATED WITHIN THE DISTURBED AREA OF THE PROJECT.

13. THE ESTIMATED PRE_ AND POST_DEVELOPMENT POLLUTANT LOADS IN RUNOFF:

THIS PROJECT IS NOT DESIGNED TO REDUCE POLLUTANT LOADINGS IN THE TAYLOR RUN WATERSHED. APPLICATION OF THE VIRGINIA RUNOFF REDUCTION METHOD SPREADSHEET FOR RE_DEVELOPMENT CONFIRMS COMPLIANCE WITH STATE STORMWATER REGULATIONS AND NO TP REMOVAL IS REQUIRED.

14. ESTIMATION OF PERCENT INCREASE IN IMPERVIOUS SURFACE:

THERE IS NO INCREASE IN IMPERVIOUS AREA PROPOSED IN THIS PROJECT.

15. PERCENT OF SITE TO BE CLEARED:

APPROXIMATELY 86% OF THIS SITE AREA WITHIN THE LIMITS OF DISTURBANCE BUT OUTSIDE OF THE STREAM ITSELF WILL BE CLEARED. THIS PERCENTAGE IS VERY HIGH DUE TO THE LOD BEING LIMITED TO ONLY THOSE AREAS NECESSARY FOR INFRASTRUCTURE STABILIZATION.

16. ANTICIPATED DURATION AND PHASING SCHEDULE OF THE CONSTRUCTION:

PROJECT CONSTRUCTION IS ANTICIPATED TO TAKE UP 6 MONTHS. PHASING IS PRIMARILY AT THE CONTRACTOR'S DISCRETION WITH THE EXCEPTION OF EROSION AND SEDIMENT CONTROL MEASURES AS NOTED IN THE SEQUENCE OF CONSTRUCTION PROVIDED ON THE PLANS.

17. LISTING OF ALL REQUISITE PERMITS:

PROJECT REQUIRES AUTHORIZATION BY U.S. ARMY CORPS (COE) NATIONWIDE PERMITS (#3 - MAINTENANCE, #13 - BANK STABILIZATION, #18 - MINOR DISCHARGES). IMPLEMENTATION WILL ALSO REQUIRE A CITY OF ALEXANDRIA SITE PLAN/GRADING PERMIT. VSMP REQUIREMENTS WILL BE MET THROUGH PROCUREMENT OF A CONSTRUCTION GENERAL PERMIT AND MAINTENANCE OF A SWPPP ON SITE.

18. PROPOSED EROSION AND SEDIMENT CONTROL MEASURES:

THE EROSION AND SEDIMENT CONTROL WILL INCLUDE A STABILIZED STONE CONSTRUCTION ENTRANCE WITH WASH RACK, PUMP_AROUND DIVERSIONS WITH SANDBAG DIKES, LOD FENCING, SILT FENCE WITH WIRE SUPPORT, TIMBER BRIDGE STREAM CROSSINGS, FILTER BAGS, AND TEMPORARY DECK MATTING HAUL ROAD. SITE DISTURBANCE SHALL BE LIMITED TO THE SECTION OF STREAM CHANNEL BEING STABILIZED THAT DAY. ALL TREE CLEARING IS TO OCCUR AT ONCE. STUMPS WILL BE LEFT TO MINIMIZE DISTURBANCE UNTIL GRADING COMMENCES. NO SECTION OF STREAM WILL BE LEFT UNSTABILIZED OVERNIGHT. ANY WORK AREA WILL BE ISOLATED FROM THE ACTIVE STREAM CHANNEL VIA PUMP_AROUND DIVERSION, WHICH WILL REMAIN UNTIL STABILIZATION IS COMPLETE.

19. PROPOSED STORMWATER MANAGEMENT SYSTEM:

STREAM AREAS WILL BE CONSTRUCTED IN THE DRY, PROTECTED BY A PUMP AROUND DIVERSION. SEDIMENT LADEN RUNOFF THAT ENTERS THE TEMPORARILY DRY WORK AREAS WILL BE PUMPED TO A FILTER BAG AND RELEASED DOWNSTREAM IN A NON-EROSIVE MANNER.

20. CREATION OF WETLAND TO REPLACE THOSE LOST:

THERE ARE NO PROPOSED IMPACTS TO JURISDICTIONAL WETLANDS.

21. MINIMIZING CUT AND FILL:

CUT MATERIAL WILL BE USED ON SITE TO THE GREATEST EXTENT PRACTICAL, FILLING EXISTING CHANNEL AREAS WHERE A SHIFT IN CHANNEL GEOMETRY IS PROPOSED. THE PROJECT HAS AN OVERALL NET FILL, AND CLEAN FILL WILL NEED TO BE IMPORTED ONTO THE SITE.

22. A SUPPLEMENTAL LANDSCAPING PLAN:

THE TAYLOR RUN INFRASTRUCTURE STABILIZATION PLAN INCLUDES A PLANTING PLAN (PP-01 THROUGH PP-04) WITH CORRESPONDING VEGETATION SCHEDULES (PN-03) AND PLANTING NOTES AND DETAILS (PN-01 AND PN-02). THESE SHEETS IDENTIFY THE DIVERSE NATIVE VEGETATION TO BE PLANTED WITHIN THE RPA.

NOT FOR CONSTRUCTION

CITY OF ALEXANDRIA, VIRGINIA
DEPARTMENT OF PROJECT IMPLEMENTATION
301 KING STREET, ROOM 4100
ALEXANDRIA, VIRGINIA 22314

REVISIONS BY	DESCRIPTION	DATE

ALEXANDRIA PROJECT NO.: 23086
DATE OF PLAN ISSUANCE:
CONSULTANT PROJECT ID.: 60742359
DESIGNED BY: SB TN DATE: 10/2025
DRAWN BY: SB TN DATE: 10/2025
CHECKED BY: BA DATE: 10/2025
APPROVED BY: BA DATE: 10/2025

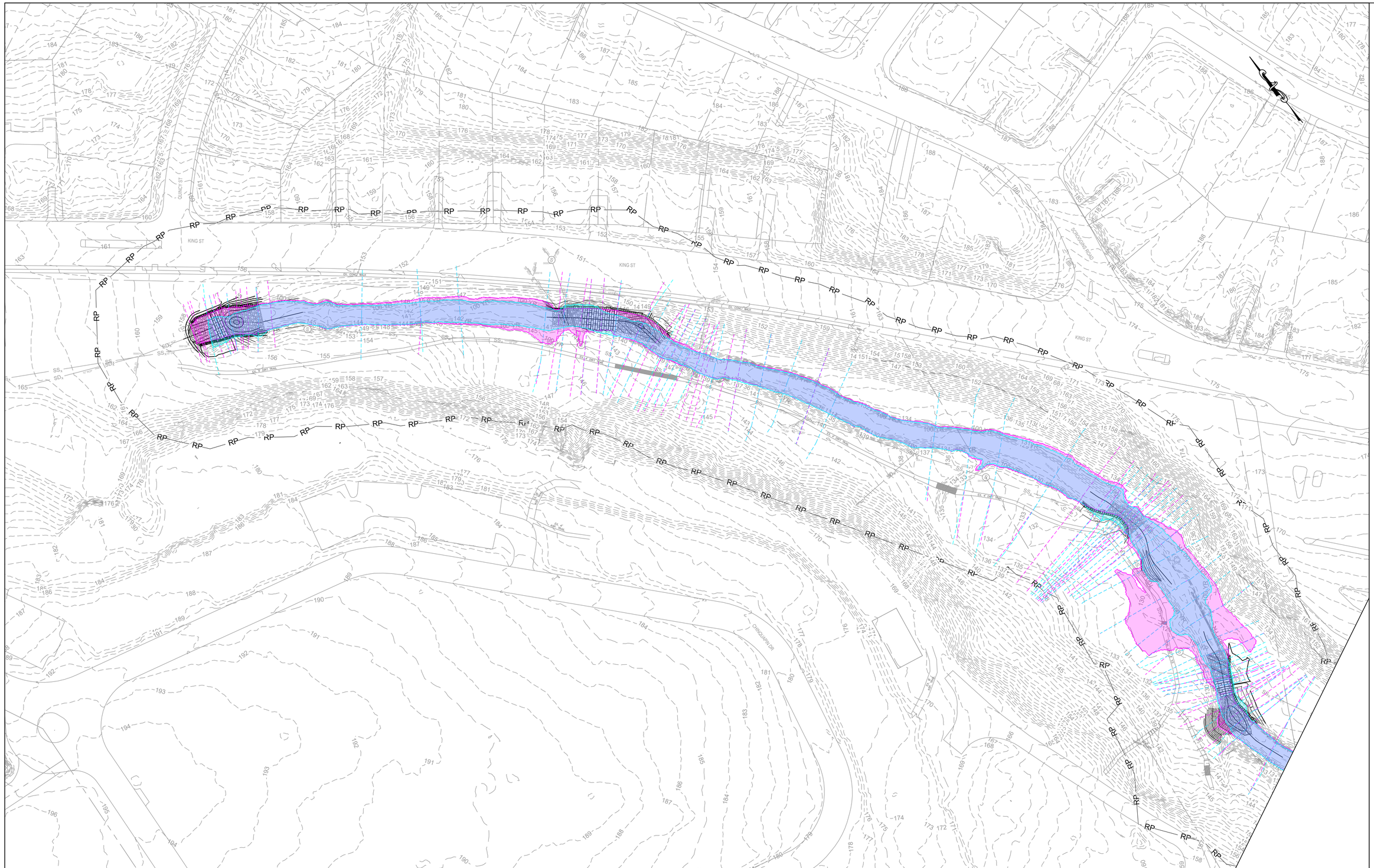
SEAL:

WATER QUALITY IMPACT ASSESSMENT

12420 MILESTONE CENTER DRIVE, SUITE 150
GERMANTOWN, MD 20876
(301) 250-2934

DRAWING: WQIA-01
SCALE: 1" = 60'
SHEET: 54 OF 55

C:\Users\BenheiselS\OneDrive - AECOM\Taylor Run Stream Stabilization - General\900 CAD\910 CAD\20 - SHEETS\60742359-SHT-20-C-0019_WQIA.dwg Plotted: 6/25/2026 9:30 PM by Benheisel, Sean


KING ST
QUINCY ST
Chesapeake Dr
Scroggins Road
RP
EX. CONC. BOX
EX. 6' DIA. RCP
EX. 6' DIA. CMP
EX. 6' DIA. CMP
EX. 6' DIA. RCP
EX. 6' DIA. RCP
EX. 6' DIA. RC

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