



Date: December 8, 2023; revised April 23, 2024

To: Ryan Levering – Henrico County

From: WRA

Project: Doran Road Capital Trail Connector

Subject: Alternatives Analysis Memorandum

I. Background

The purpose of the Doran Road Capital Trail Connector Path study is to evaluate alternatives and prepare a conceptual design and cost estimate for providing a trail connection between the Four Mile Run and Castleton subdivisions that would also connect to the Virginia Capital Trail. **Figure 1** includes a map of the project study area and potential alignments to be considered. Two alignment alternatives were considered – one along the east side of Doran Road between Four Mile Run Parkway (Four Mile Run subdivision) and the sidewalk located south of Macallan Parkway (Castleton subdivision) and one between the Four Mile Run Subdivision at 7622 King Eider Drive and the Castleton Subdivision community pool area at 6800 Kidwelly Lane.

The purpose of this Alternatives Analysis Memorandum is to document the alternatives considered and evaluated, major design features, design criteria, design approach including assumptions, environmental considerations, and planning-level costs for the alternatives under consideration. The goal is to establish a clear scope for future preliminary design efforts and an estimated project cost estimate to support establishing project funding.

Figure 1: Study Location





II. Design Criteria

The following assumptions were made while preparing the conceptual designs for the shared use path:

- Design speed - 18 mph min.
- Minimum width - 10' with 2' shoulders
- Maximum vertical grade - 5%
- Minimum railing height - 3.5'
- Minimum Bridge Width - 14' (2' shoulder + 10' trail + 2' shoulder)

III. Existing Conditions

A. Roadway

The proposed options would all connect the Four Mile Run subdivision and the Castleton Subdivision to the Virginia Capital Trail. Currently, these communities do not have direct access to the Capital Trail via a sidewalk or shared use path. Options to provide access were evaluated along Doran Road, which is a two-lane, undivided road and is classified as a major collector. Doran Road does not currently have pedestrian facilities within the study limits with the exception of the Virginia Capital Trail uncontrolled crossing located approximately 400 feet north of Four Mile Run Parkway. A sidewalk is located along the east side of Doran Road and begins approximately 600 feet south of Macallan Parkway (Castleton subdivision). Additionally, a sidewalk is located on the north side of Four Mile Run Parkway on the east side of Doran Road.

Options were also evaluated to provide a pedestrian connection between the subdivisions from King Eider Drive, an internal subdivision street within Four Mile Run, to the Castleton Subdivision community pool. There is evidence of the 7622 King Elder Drive parcel being used by residents to access the Capital Trail from the Four Mile Run subdivision.

B. Utilities

A review of previous Miss Utility tickets submitted near the project area identified local utility owners as Comcast, Colonial Pipeline Company, Dominion Energy, Henrico County Water, Henrico County Sewer, City of Richmond Gas, and Verizon. GIS Data was obtained for Henrico County Water, Henrico County Sewer, and City of Richmond Gas. Utility locations were confirmed during a site visit in November 2023. Water, sewer and gas facilities parallel Doran Road. The Colonial Pipeline, Dominion transmission lines and sewer parallel the Capital Trail. There is one light pole located on the northeast corner of the intersection of Doran Road and Four Mile Run Parkway.

C. Stormwater & Hydraulics

The project area is located in the vicinity of the Four Mile Creek. This section of the creek is contained within Zone AE (with Floodway) based on current Henrico County Floodplain GIS. To facilitate preliminary hydraulic modeling for the project, data was obtained from the Henrico County website to acquire the HEC-RAS model for this area. The project will be subject to Henrico County stormwater regulations for quality and quantity control of runoff from new disturbance and from extra impervious areas.



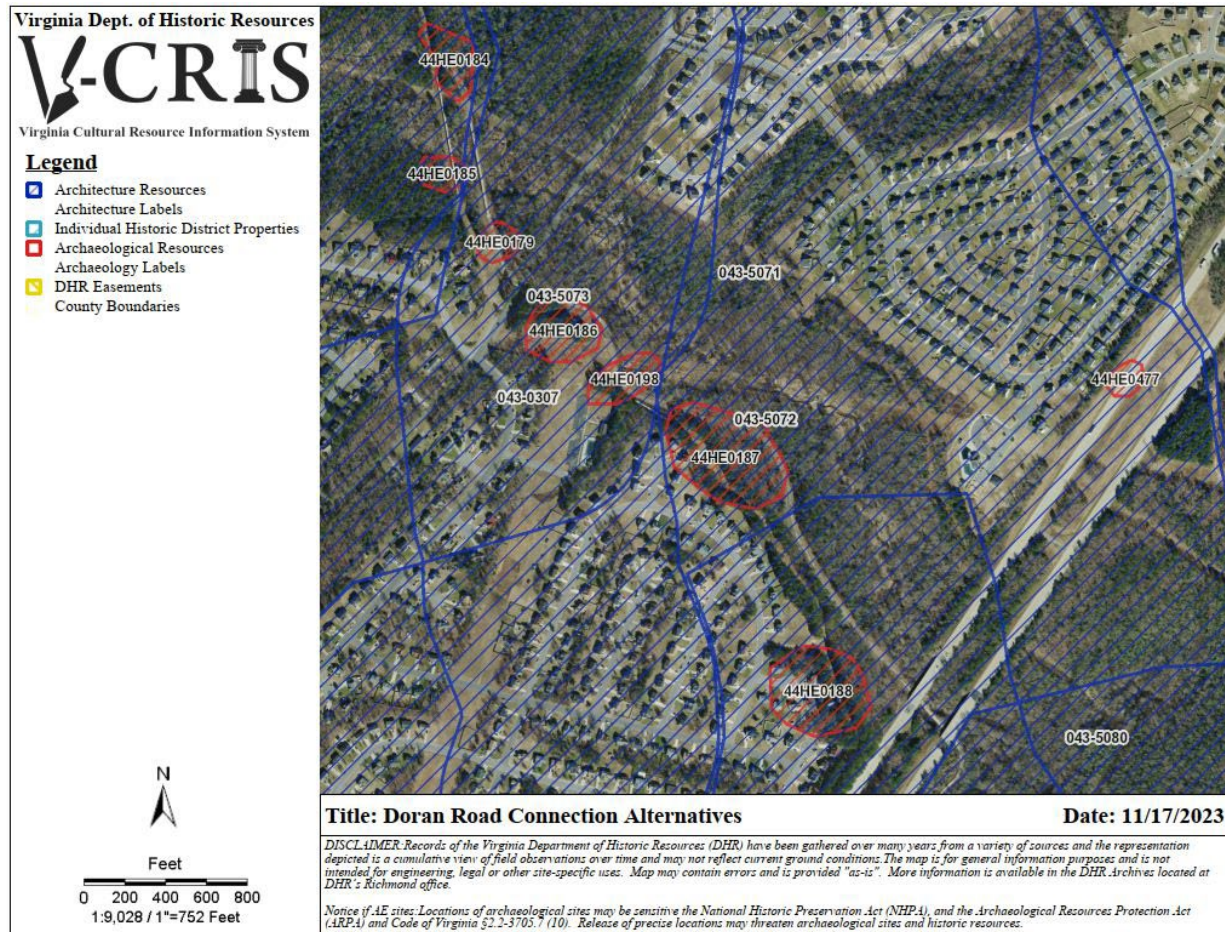
D. Environmental

WRA reviewed site information and publicly available regulatory database information to provide the following preliminary environmental information.

Cultural Resources

Based on the Virginia Department of Historic Resources' (VDHR) Virginia Cultural Resource Information System (V-CRIS), there are three architectural and three archaeological resources within the Project vicinity that are potentially eligible, or have not been evaluated, for listing on the National Register of Historic Places (NRHP). These resources are shown in **Figure 2**. VDHR reports for these resources are provided in **Attachment A**.

Figure 2: VDHR V-CRIS Resources



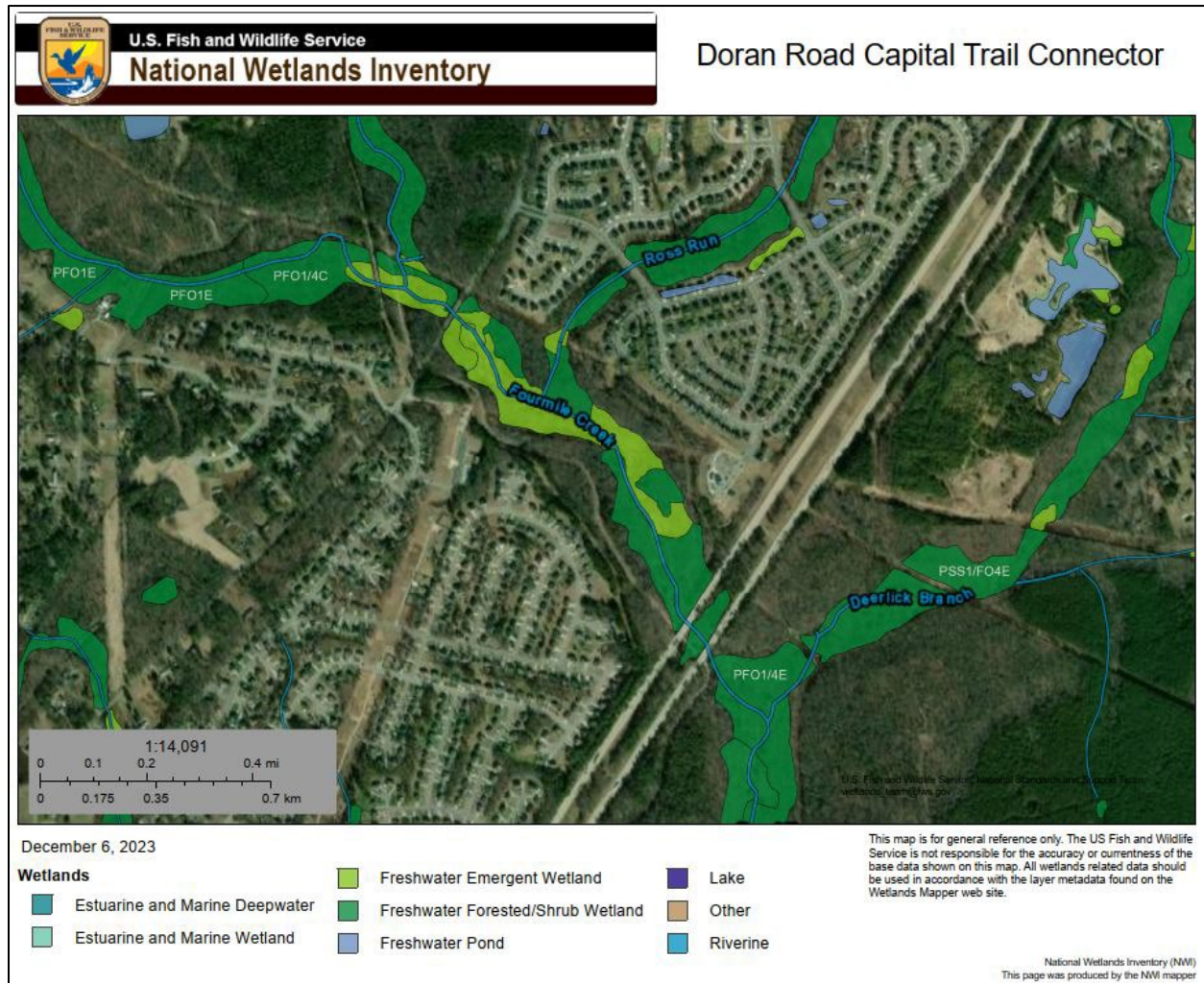
Wetlands and Streams

Waters of the U.S., including wetlands, are regulated under Sections 401 and 404 of the Federal Clean Water Act (33 U.S.C. §1251 *et seq.*) and Section 10 of the Federal Rivers and Harbors Act (33 U.S.C. §401). In Virginia, state waters, including wetlands, are regulated under the Virginia State Water Control Law (§62.1-44.15:20, §28.2-Chapters 12 and 13), the Virginia Water Protection Program Permit Regulation (9VAC 25-210-10 *et seq.*), and other applicable state and local laws and regulations. Any proposed impacts may require authorization from the appropriate federal, state, and/or local regulatory agencies.



Based on the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) "Wetlands Mapper", Fourmile Creek, a riverine system, and palustrine forested and palustrine emergent wetlands are present in the study area (see **Figure 3**). WRA environmental scientist Ralph Tuck II, PWD visited the site and confirmed the presence of the stream and adjacent floodplain wetlands.

Figure 3: USFWS NWI Mapping



Wildlife

WRA queried online databases to determine if any federal- or state-listed species have been documented that could be affected by the Project. The databases included the US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database, the Department of Conservation and Recreation Division of Natural Heritage (DCR-DNH) Data Explorer, and the Department of Wildlife Resources (DWR) Virginia Fish and Wildlife Information Service (VaFWIS). The databases identified a total of four species that are listed, or proposed for listing, as threatened or endangered within the study area. These findings are summarized in **Table 1** and provided in **Attachment A**.



Table 1: Documented Federal and State-Listed Species Summary

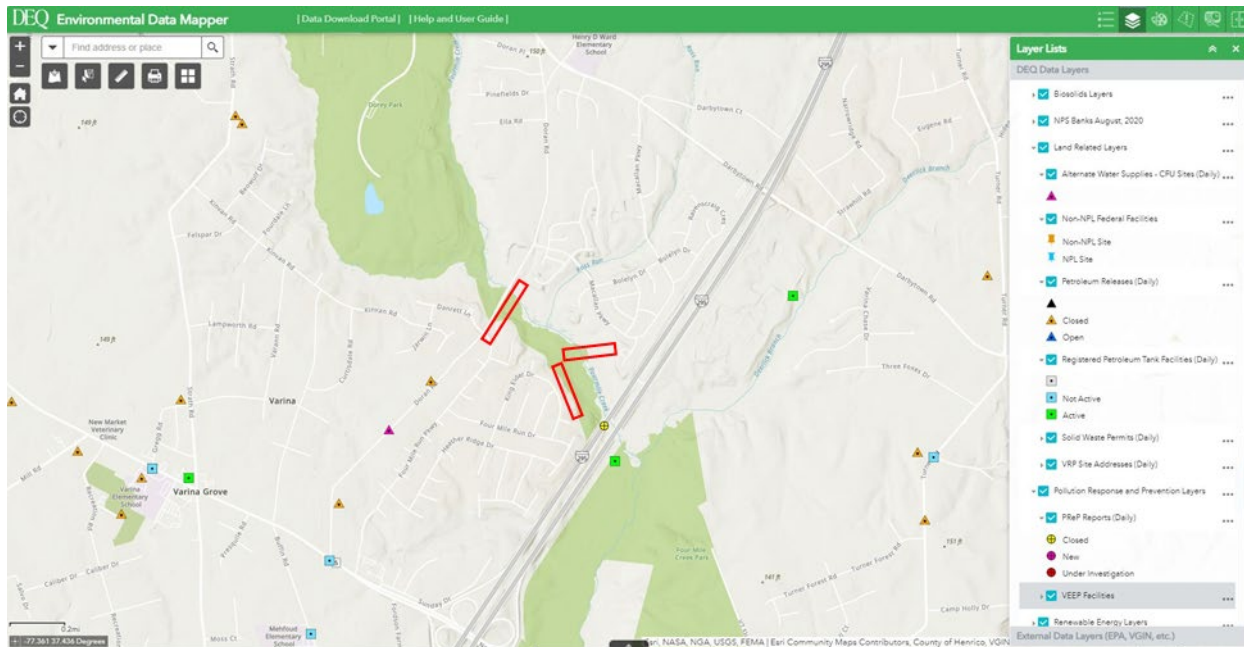
Common Name	Scientific Name	Legal Status	IPaC	DCR-DNH (020802060104)	VAFWIS (Confirmed 2-Mile Buffer)
Northern long-eared bat	<i>Myotis septentrionalis</i>	FESE	X	---	---
Tricolored bat	<i>Perimyotis subflavus</i>	PFESE	X	---	---
Swamp pink	<i>Helonias bullata</i>	FTSE	X	---	---
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	FESE	---	X	---

Note: FT=Federally Threatened, FE=Federally Endangered, PFE=Proposed Federally Endangered, ST=State Threatened, SE=State Endangered

Hazardous Materials

WRA queried the Environmental Protection Agency (EPA) GIS database, EnviroMapper, and the Virginia Department of Environmental Quality (DEQ) Environmental Data Mapper (EDM). No hazardous material sites were identified within the study area (see **Figure 4**).

Figure 4: DEQ EDM Results



Chesapeake Bay Preservation Areas

Henrico County is located within Tidewater Virginia as defined in the Chesapeake Bay Preservation Act (Code of Virginia, §62.1-44.15:68). As such, the County is responsible for regulating development within Chesapeake Bay Preservation Areas (CBPA), including Resource Management Areas (RMAs) and Resource Protection Areas (RPAs). In addition, the County also provides protections of intermittent streams with greater than 100 acres of drainage in the form of the Stream Protection Areas (SPAs).



Fourmile Creek is a perennial stream. As such, the stream and any contiguous wetlands, along with a 100-foot landward buffer projecting off these aquatic resources, would be components of the RPA. Henrico County includes flood hazard areas, highly erodible soils, highly permeable soils, and a 100-foot landward buffer from the RPA as components of the RMA.

Open Space Easements and Recreational Resources

According to online GIS resources maintained by the DCR Virginia Outdoors Foundation, conservation projects, recreational resources, and public access lands are located within the Project vicinity. These include the Virginia Capital Trail and Four Mile Creek Park.

E. Site Soils/Geology

The section of Doran Road between Four Mile Run Parkway and Macallan Parkway is bisected by the channel and floodplain of Fourmile Creek. Expect to encounter quaternary alluvium, primarily graded sands and gravels near the streambed, and sediments that generally become younger towards the western and eastern edges of the project area. Sediments exposed near Fourmile Creek include the older Lower Chesapeake Group clayey silt and the younger Bacons Castle Formation, which involves lenticularly bedded sandy clays, clayey silts, and rounded quartz gravel. Located just east of the Fall Line that separates rocky Piedmont Plateau to the west from coastal plain sediments to the east, this region primarily expresses deep sections of Late Mesozoic to Cenozoic sediments before encountering bedrock.

IV. Alternatives Considered

Three options were initially identified and evaluated including options both north and south of the Capital Trail. Two options were evaluated along Doran Road and one option was evaluated between the Four Mile Run and Castleton subdivisions. The options also include sub-options “A” and “B” with “A” options located south of the Capital Trail and “B” options located north of the Capital Trail. These options were segmented north and south of the Capital Trail since any option south of the trail could be combined with any option north of the trail. An alternatives review meeting was held with Henrico County staff on January 11, 2024 to discuss the three options initially developed by WRA. Based on discussions at the meeting, the County requested a fourth option be developed to minimize impacts to the 16” waterline located along the east side of Doran Road just south of the Capital Trail crossing. This new option was named Option 4A/4B.

The concepts are depicted in **Attachment B**.

Option 1 is located along the east side of Doran Road and generally maintains the existing open section. The southern terminus of this option would connect to the existing sidewalk along the north side of Four Mile Run Parkway and would utilize the existing excess pavement along the east side of Doran Road by relocating the existing curb and gutter into the existing roadway and provide an 11’ travel lane with curb and gutter. The crossing of Fourmile Creek would include a bridge with this option. **Option 1A** is located between Four Mile Run Parkway and the Capital Trail and **Option 1B** is located between the Capital Trail and the existing sidewalk that terminates approximately 600’ south of Maccallan Parkway.

Option 2 is located along the east side of Doran Road and includes curb and gutter from the southern terminus at Four Mile Run Parkway to approximately 600’ south of Maccallan Parkway. The general typical section for this option includes an 11’ lane with curb and gutter, a 5’ buffer between the back of curb and the 10’ shared used path. To cross over Fourmile Creek, the



existing culvert is proposed to be extended. **Option 2A** is located between Four Mile Run Parkway and the Capital Trail and **Option 2B** is located between the Capital Trail and the existing sidewalk that terminates approximately 600' south of Maccallan Parkway.

Option 3 begins at the County-owned parcel at 7622 King Elder Drive and travels through the wooded areas adjacent to the Capital Trail and Fourmile Creek connecting to the Castleton Clubhouse and Community Pool property. **Option 3A** is located between King Elder Drive and the Capital Trail and **Option 3B** is located between the Capital Trail and the Castleton Clubhouse and Community Pool property. Alignments for these options meander considerably to accommodate existing terrain and to meet a maximum 5% vertical grade.

Option 4 is similar to Option 1 and is located along the east side of Doran Road and generally maintains the existing open section. The southern terminus of this option would connect to the existing sidewalk along the north side of Four Mile Run Parkway and would utilize the existing excess pavement along the east side of Doran Road by relocating the existing curb and gutter into the existing roadway and provide an 11' travel lane with curb and gutter. The curb and gutter section would continue to the Capital Trail crossing to avoid impacts to the 16" waterline and then transition to open section north of the Capital Trail crossing. The crossing of Fourmile Creek would include a bridge with this option. **Option 4A** is located between Four Mile Run Parkway and the Capital Trail and **Option 4B** is located between the Capital Trail and the existing sidewalk that terminates approximately 600' south of Maccallan Parkway.

The following sections summarize the key design elements, challenges, and potential impacts associated with the eight options under consideration.

A. Shared Use Path

Existing terrain used to identify and evaluate the most desirable shared use path alignments was developed using GIS contours downloaded from the County's GIS database; therefore, all impacts and some design elements such as handrails, slopes, etc. are approximations based on best available data and will need to be refined in the future with more precise survey information. All horizontal curves meet the VDOT Bicycle and Pedestrian Facility Guidelines recommendation of 18 MPH minimum for horizontal curves. All six considered options will require handrails where the vertical drop from either side of the shared use path exceeds 6' and the slopes are steeper than 3:1.

Option 1A/1B: The proposed typical section for the new two-directional shared use path along the east side of Doran Road includes a 10' wide paved shared use path, a 3' wide outer shelf, and a 2:1 maximum graded outer tie-in. The southernmost approximately 280 feet of the trail that will be constructed along the east side of Doran Road and north of Four Mile Run Parkway will utilize the excess pavement area and relocate the existing curb and gutter and provide an 11' lane with curb and gutter, a 5' buffer, a 10' shared used path, a 3' wide outer shelf, and a 2:1 maximum graded outer tie-in. The remainder of this option to the north includes an 8' graded shoulder adjacent to Doran Road in-lieu of curb and gutter, a ditch with 2:1 front and back slopes, and a 3' wide inner shelf between the ditch and the shared used path. By utilizing an open section with a ditch for this option, impacts and the construction footprint are greater when compared to Option 2 since the construction limits are extended to the east and away from the roadway and require a significant amount of grading. The extension of these construction limits results in results in greater right of way impacts and other environmental impacts to Fourmile Creek. This option also requires a bridge structure to cross Fourmile Creek.



Option 2A/2B: The proposed typical section of Options 2A and 2B include an 11' northbound travel lane along Doran Road, curb and gutter, a 5' buffer, a 10' shared used path, a 3' wide outer shelf, and a 2:1 maximum graded outer tie-in. A segment of the Capital Trail where the proposed shared use path intersect the Capital Trail will have to be reconstructed to add new curb ramps to connect the new curb and gutter section along Doran Road. This option minimizes grading and right of way impacts as the new shared use path is located closer to Doran Road; however, there will be a greater amount of drainage elements such as structures and pipes needed with this curb and gutter section, along with a need to extend the existing culvert structure across Fourmile Creek.

Option 3A/3B: The proposed typical section for the new Capital Trail connection to the Four Mile Run Subdivision includes a 10' paved two-directional shared used path with 2' minimum graded shoulders on both sides, and 2:1 maximum graded tie-ins. This connection will tie into King Eider Drive on the County-owned parcel located at 7622 King Eider Drive and meander along the existing terrain to connect to the Capital Trail while maintaining a maximum 5% vertical grade. The northern connection typical section will also consist of a 10' paved two-directional shared used path with 2' minimum graded shoulders on both sides, and 2:1 maximum graded tie-ins. This alignment runs from the Capital Trail and connects to the Castleton Clubhouse and Community Pool property. The existing terrain is very steep as the alignment approaches the pool property, creating the need to provide a series of switchbacks to meet a 5% maximum vertical slope. A bridge structure is proposed to cross the Fourmile Creek within this alignment.

Option 4A/4B: Similar to Option 1, the proposed typical section for the new two-directional shared use path along the east side of Doran Road includes a 10' wide paved shared use path, a 3' wide outer shelf, and a 2:1 maximum graded outer tie-in. The southernmost approximately 280 feet of the trail that will be constructed along the east side of Doran Road and north of Four Mile Run Parkway will utilize the excess pavement area and relocate the existing curb and gutter and provide an 11' lane with curb and gutter, a 5' buffer, a 10' shared used path, a 3' wide outer shelf, and a 2:1 maximum graded outer tie-in. North of this area to just south of the Capital Trail crossing, an 11' lane with curb and gutter, a 5' buffer, and a 10' shared used path is proposed to minimize impacts to the 16" waterline. The remainder of this option to the north includes an 8' graded shoulder adjacent to Doran Road in-lieu of curb and gutter, a ditch with 2:1 front and back slopes, and a 3' wide inner shelf between the ditch and the shared used path. By utilizing an open section with a ditch for this option, impacts and the construction footprint are greater when compared to Option 2 since the construction limits are extended to the east and away from the roadway and require a significant amount of grading. The extension of these construction limits results in greater right of way impacts and other environmental impacts to Fourmile Creek. This option also requires a bridge structure to cross Fourmile Creek.

B. Bridge Crossing of Fourmile Creek

Option 1B/4B: This trail option transitions the trail away from the existing roadway embankment as the trail nears the stream crossing. The proposed typical section for the new bridge includes a 10' shared use-path with 2' shoulders. The proposed structure will clear span the regulatory floodway of Fourmile Creek just downstream of the box culvert outlet. The span length is approximately 125' which is within standard prefabricated truss lengths. The total face to face of rail width is 14'-0". The railing may be composed of either a concrete curb with a short steel railing above, or a more open steel railing.



The proposed substructure would consist of medium height concrete abutments on potentially deep foundations such as piles. To limit the amount of fill into the floodplain near the abutments, 50 linear feet of retaining wall is proposed on either side of the bridge. These walls may be cast-in-place gravity walls or mechanically stabilized earth walls.

Option 2B: This option locates the trail closer to Doran Road compared to Option 1B and allows for the existing box culvert to be extended with the trail pavement going over the extension. The existing box culvert is a dual barrel culvert 8 feet wide by 10 feet high and up to 5 feet of fill is anticipated. Using VDOT box culvert standards BCD-05 and BCW-21, concrete and rebar quantities were determined for an assumed 12 feet of culvert extension. A handrail would be required to protect trail users from the drop off near the culvert extension.

Option 3B: The bridge for this option is significantly longer than that of Options 1B and 2B due to the trail crossing location further downstream. The typical section is similar to that of Option 1B but is approximately 450 feet long to span the defined floodplain. The bridge also has a horizontal curve at one end, which limits the superstructure type to structural steel girders. A prefabricated truss may be used for the main span to clear the regulated floodway. Concrete piers and stub abutments on potentially deep foundations are anticipated for the substructure.

C. Utilities

Attachment C contains mapping depicting the approximate location of the existing utilities and potential conflicts. Comcast, Dominion Energy, City of Richmond Gas, and Verizon do not appear to have facilities in conflict with the proposed path design options. Below is a description of the possible conflicts with Colonial Pipeline Company, Henrico County Water, and Henrico County Sewer facilities.

Option 1A: There is a potential conflict with proposed excavation and the existing 16" water main from Sta. 107+50 to Sta. 108+50. Test holes are required to determine if the water main would need to be relocated to meet the minimum cover requirement.

Option 1B/4B: Two fire hydrants require adjustment right of stations 109+50 and 110+75 for the grading of the proposed ditch. A test station and vent for the Colonial Pipeline will require relocation right of station 115+75.

Option 2A/4A: No utility conflicts are anticipated.

Option 2B: Two fire hydrants require relocation right of stations 109+50 and 110+75 to avoid the proposed path. A test station and vent for the Colonial Pipeline will require relocation right of station 115+75. There is a potential conflict with the proposed Four Mile Creek culvert extension and the existing 18" HDPE water main. Test holes are required to determine if the water main would need to be relocated if there is inadequate clearance between the new culvert and the existing water main.

Option 3A: No utility conflicts are anticipated.

Option 3B: There is a potential conflict with proposed fill and the existing 16" sanitary sewer from Sta. 209+25 to Sta. 211+75. The fill is up to 25' at this location.

For all options under consideration, prior rights for these utilities are uncertain at this time and would need to be provided by the utility companies during the project UFI process.



D. Right-of-Way

Property boundaries were identified based on a review of Henrico County GIS parcel data. **Table 2** summarizes the anticipated property impacts with each option under consideration that would be refined as more precise survey information is available.

Table 2: Right of Way Impacts

Option	Property Impacted	Location	Acreage
1A	7701 Four Mile Run Parkway	Southern terminus of proposed trail - Northeast corner of Doran Road and Four Mile Run Parkway	0.054
1B/4B	6800 Kidwelly Lane	Northern terminus of proposed trail within Northwest area of Castleton Subdivision community property along Doran Road	0.244
2A/4A	7701 Four Mile Run Parkway	Southern terminus of proposed trail - Northeast corner of Doran Road and Four Mile Run Parkway	0.054
2B	6800 Kidwelly Lane	Northern terminus of proposed trail within Northwest area of Castleton Subdivision community property along Doran Road	0.150
3A	7626 King Eider Drive	Southern terminus of proposed trail	0.030
3B	6800 Kidwelly Lane	Northern terminus of proposed trail - Castleton Subdivision community pool parking lot	1.832

E. Hydraulics

Option 1B/4B: Due to the Fourmile Creek wide (400' to 500') floodplain and large flow area at this location next to Doran Road, Option 1B proposes a bridge/boardwalk arrangement. The clear span bridge segment would span completely over at least the Floodway width which is approximately 50' wide. This concept meets the requirement for a no-rise condition since it creates no fill or obstruction to the effective flow that is concentrated coming out of the existing box culvert under Doran Road. The box culvert hydraulic impact is already included in the current FEMA Floodplain model. The proposed bridge/structure will match elevations of the existing roadway to stay in the "shadow" of the Doran Road obstruction. The proposed bridge abutments will be outside the Floodway. Preliminary engineering judgement indicates there will be a 0.0' increase ("No Rise") for the proposed bridge conditions meeting FEMA 100-Year Floodplain regulations and Henrico County policy.

Option 2B: This option proposes an extension of the existing box culvert that will slightly constrict the existing floodway. This concept, with the existing box culvert being in outlet control, is expected to cause a slight rise to the 100-Year floodplain just upstream of Doran Road. The 100-Year storm hydraulic capacity is still contained in the existing box culvert with no adverse impact to the overtopping potential of the roadway. The proposed box culvert extension will accommodate the Trail at elevations equal to the existing roadway. At this preliminary stage,



detailed HEC-RAS modeling has not been performed; however, based on a review of the available information, it is anticipated there will be a slight increase in the flood elevation; however, this rise may be able to be contained within the right-of-way of Doran Road and thus not impact upstream properties.

Option 3B: This option proposes a bridge that will span the floodplain and not have any piers in the floodway. The 100-Year storm would not overtop the proposed bridge since the bridge low chord will be higher than 100-Year flood. The proposed bridge will span over the existing regulatory Floodway as currently modeled. At this preliminary stage, detailed HEC-RAS modeling has not been performed; however, based on a review of available information, it is anticipated there will be no rise in the flood elevation.

Options 1, 2, and 4: Regarding roadway drainage and stormwater management, the existing and proposed conditions are relatively straightforward. Trail runoff is by sheet flow to curb and gutter or sheet flow away from Doran Road. All project outfalls can be shown as adequate since they discharge directly to Fourmile Run which has a drainage area greater than 100 times the project outfall drainage (1% limits of analysis finding), thus no further analysis required for Water Quantity requirements. Roadway drainage costs are minimized under this concept due to maintaining existing drainage patterns.

All Options: Scour computations and analysis have not been performed for any of the preliminary bridge/structure concepts; however, scour under this concept is similar to existing conditions since the hydraulic opening is kept essentially the same or larger. Final design will need to include computations and account for any VDOT or other applicable scour requirements for pier scour, contraction scour, abutment scour, etc.

The treatment load for Water Quality (future final design) will be developed under the DEQ Part II-B regulations which relate the amount of proposed pavement and open space compared to existing. The anticipated disturbance area for the project will be within thresholds established on VDOT's IIM-LD-251.6 enabling future purchase of any required nutrient credits for the project.

F. Environmental

National Environmental Policy Act (NEPA)

When there is a federal action (i.e., use of federal funds) then a project must satisfy the requirements of NEPA. Based on the options under consideration and this preliminary evaluation of environmental resources, this project may qualify for a Categorical Exclusion should the project use federal funding.

Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and its implementing regulations (36 CFR §800) require federal agencies to consider the effects of their undertakings (e.g., projects using federal funds or requiring federal permits) on historic properties included in or eligible for the National Register of Historic Places (NRHP) and to provide the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. Coordination for historic and cultural resources is expected to occur during the environmental permitting process. Cultural resource surveys or other analysis may be conducted prior to permitting to better facilitate VDHR coordination during the permitting process. Resources identified by V-CRIS and the alignment options closest to each resource are listed in **Table 3**.



Table 3: VDHR V-CRIS Resources

DHR #	Resource	Name / Type	Eligibility Recommendation	Nearest Option
043-5071	Architectural	Darbytown & New Market Roads Battlefield / Fourmile Creek	Potentially Eligible	All Options
043-5072	Architectural	Alms House / Darbytown Road Battlefield	Potentially Eligible	All Options
043-5073	Architectural	Fair Oaks & Darbytown Road Battlefield	Potentially Eligible	All Options
44HE0186	Archaeological	Camp, Quarry	Not Evaluated	Options 1A, 1B, 2A, 2B, 4A, 4B
44HE0187	Archaeological	Camp, Lithic scatter, Quarry	Not Evaluated	Option 3B
44HE0188	Archaeological	Camp	Not Evaluated	Option 3A

Wetland and Streams

Due to the location of the proposed alignment options, there is the potential for impacts to jurisdictional waters, including waters of the U.S. (WOUS) and state surface waters. **Table 4** lists the amount of NWI wetlands and streams within each of the three alignment options that intersect mapped aquatic resources (1B, 2B, 3B, and 4B). Additional mapping is provided in **Attachment A**.

A delineation of jurisdictional waters (including wetlands) will need to be conducted to determine the limits of these aquatic resources. Impacts to jurisdictional waters should be avoided and minimized to the greatest extent practicable. Unavoidable impacts may need to be permitted by the United States Army Corps of Engineers (USACE), Virginia Department of Environmental Quality (VDEQ), and the Virginia Marine Resources Commission (VMRC).



Table 4: NWI Resources

Alignment Options	Aquatic Resource Type	NWI Cowardin Classification	Amount Located within the Option (AC)	Amount Located within the Option (LF)
Option 1B & 4B	Wetland	PEM1/SS1C	0.16	-
	Wetland	PFO1/4C	0.09	-
	Stream	R2UBH	0.02	25
	Option 1B & 4B Total		0.27	25
Option 2B	Wetland	PEM1/SS1C	0.15	-
	Wetland	PFO1/4C	0.09	-
	Stream	R2UBH	0.02	28
	Option 2B Total		0.26	28
Option 3B	Wetland	PEM1/SS1C	0.27	-
	Wetland	PFO1/4C	0.14	-
	Stream	R2UBH	0.03	52
	Option 3B Total		0.44	52

Wildlife

Pursuant to the federal Endangered Species Act of 1973 (16 U.S.C §1531 et seq., 87 Stat. 884), as amended (ESA) and to ensure project activities are not likely to jeopardize the continued existence of federally listed species or destroy or adversely modify designated critical habitat, projects involving a federal action (e.g., receiving federal funds or requiring a federal permit) are subject to the Section 7(a)(2) consultation requirements of the ESA. Projects not involving a federal action are still subject to the take prohibitions of the ESA.

All alignment options are greater than 34 miles from the nearest known northern long-eared bat (NLEB) maternity roost and 112 miles from the nearest NLEB hibernaculum (see **Attachment A**). Options 3A and 3B fall within a 3-mile capture buffer for the NLEB, according to the DWR NLEB mapper. All alignment options are greater than 87 miles from the nearest tri-colored bat hibernaculum. Coordination for all listed species is expected to occur during the environmental permitting process.

The bald eagle, though no longer a federal- or state-listed threatened or endangered species, is federally protected under the Bald and Golden Eagle Protection Act. The Center for Conservation Biology Mapping Portal was used to locate known eagle nests, and the USFWS Virginia Field Office's Bald Eagle Concentration Areas mapper was used to locate concentration areas. All alignment options are more than 2.8 miles from a bald eagle nest and 2.91 miles from a bald eagle concentration area. Therefore, it is not anticipated that an Eagle Act permit would be needed for any of the alignment options.



Hazardous Materials

The DEQ EDM identified one closed petroleum release site upgradient of the project within a 1-mile buffer from the study area vicinity, closest to Options 1A, 2A, and 4A as shown in **Table 4**.

Table 4: HazMat Sites within 1-Mile Buffer

Site Name	Pollution Complaint Number	Address	Type	Status	Proximity to Project
Massey Thomas Residence	20104404	7850 Doran Road	Petroleum Release Site	Closed	~.26 miles (closest to Options 1A, 2A, and 4A)

A Phase I Environmental Site Assessment is recommended for any potential right-of-way acquisition to investigate the previous ownership satisfying due diligence investigations. Project development should avoid, minimize, contain, or otherwise manage potential impacts from contamination or potential sources of contamination through developmental alignment shifts and changes. Where such impacts cannot feasibly be avoided, closure/remediation/mitigation and addressing the impacts either before project construction (e.g., underground storage tank closure) or during the construction would be required.

Chesapeake Bay Preservation Areas

Based on Henrico County GIS data, all alignment options are expected to intersect the RMA (see CBPA mapping in **Attachment A**). Options 1B, 2B, 3B, and 4B are expected to have RPA impacts due to crossing Fourmile Creek and the adjacent floodplain wetlands. Options 1A, 2A, 3A, and 4A may impact the RPA. A delineation would need to occur to determine resource limits.

According to the Henrico County Chesapeake Bay Preservation Ordinance, trails, pathways, and public utility structures are permitted within Chesapeake Bay Preservation Areas. This project is expected to be subject to the provisions of Sec. 24-5800 of the Henrico County Code and Chapter 6 of the Henrico County Environmental Compliance Manual.

G. Constructability

The primary constructability concerns will be related to building the structural elements for each option. For **Options 1B and 4B**, the bridge construction will need to proceed carefully to avoid impacts to both the existing water line and petroleum pipeline along Doran Road. The bridge construction will require temporary access and potential wetland impacts in the floodplain regions on either side of the stream. These impacts will need to be identified and mitigated during the permitting process.

For **Option 2B**, the primary constructability issue is the relocation of the existing water line away from the proposed fill and culvert extension along the downstream side of the existing roadway embankment. The next construction issue is to properly bench in the proposed embankment widening to the existing roadway embankment, requiring a significant amount of fill in potentially soft soils. Similar to Option 1B, wetlands are likely impacted and will need to be identified and mitigated during the permitting process.



For **Option 3B**, the long bridge construction is the primary constructability issue. This option is likely to have the most temporary environmental impacts due to the need for a temporary access route along the full length of the bridge and potentially a temporary stream crossing. This temporary access route will be required for the construction of multiple piers and setting of the bridge superstructure, which will require cranes to access most of the bridge length from alongside the proposed bridge alignment. Another potential construction issue is the overhead transmission line that crosses over the eastern portion of the proposed bridge. This power line will limit the contractor's ability to have large cranes in the immediate area and will require careful consideration of the clearance envelope for equipment used in these areas.

Other issues to be considered during construction of the trail with Options 1, 2, and 4 include the traffic control needed during construction along Doran Road. This existing two-lane facility will require periodic lane closures, flaggers, and maintaining the traffic flow and access/egress related to the Virginia Capital Trail. Additionally, please note that in reviewing the existing ground and subsurface conditions the soils are well suited to support the intended construction and installation of the trail connections for this project. Based on the anticipated soil types to be encountered, widespread subgrade remediation measures are not expected to be required for the ultimate project.

V. Cost Estimate

Cost estimates for the eight different options under consideration including documentation of calculations and assumptions is included in **Attachment D** and is summarized in **Table 5**. As shown, costs are provided for options both south (A options) and north (B options) of the Capital Trail. The combined cost for a trail connection from both the Castleton and Four Mile Run subdivisions to the Virginia Capital Trail will include selection and combining of one "A" option and one "B" option. As shown, for the options south of the Capital Trail ("A" options), Options 2A and 4A have the same cost and the cost is significantly lower than Options 1A and 3A. For the options north of the Capital Trail ("B" options), Options 1B, 2B, and 4B have similar costs whereas Option 3B has a significantly higher cost.

Table 5: Cost Estimate Summary

	Option							
	1A	1B	2A	2B	3A	3B	4A	4B
Preliminary Engineering Phase	\$ 115,000	\$ 504,000	\$ 57,000	\$ 487,000	\$ 153,000	\$ 1,210,000	\$ 57,000	\$ 509,000
Right of Way Phase	\$ 55,814	\$ 199,880	\$ 35,814	\$ 188,375	\$ 76,278	\$ 734,069	\$ 35,814	\$ 201,880
Construction Phase (without CEI)	\$ 381,276	\$ 1,677,817	\$ 187,090	\$ 1,621,467	\$ 507,946	\$ 6,045,343	\$ 187,090	\$ 1,696,347
Total CEI	\$ 103,000	\$ 454,000	\$ 51,000	\$ 438,000	\$ 138,000	\$ 1,633,000	\$ 51,000	\$ 459,000
Construction Phase (with CEI)	\$ 484,276	\$ 2,131,817	\$ 238,090	\$ 2,059,467	\$ 645,946	\$ 7,678,343	\$ 238,090	\$ 2,155,347
Environmental Compliance	\$ 20,000	\$ 86,000	\$ 10,000	\$ 83,000	\$ 27,000	\$ 289,000	\$ 10,000	\$ 86,000
Total Estimate	\$ 675,090	\$2,921,697	\$ 340,904	\$2,817,842	\$ 902,224	\$9,911,412	\$ 340,904	\$2,952,228



VI. Summary of Findings

Four options were identified and evaluated for the Doran Road Capital Trail Connector including options both north and south of the Capital Trail. Three options were evaluated along Doran Road and one option was evaluated between the Four Mile Run and Castleton subdivisions. The options also include sub-options “A” and “B” with “A” options located south of the Capital Trail and “B” options located north of the Capital Trail.

Based on a review of the identified potential impacts and project costs, Options 3A and 3B are recommended to be eliminated from consideration. Although these options provide a direct connection between the Castleton and Four Mile Run subdivisions and the Capital Trail, they have significantly higher project costs as well as greater environmental impacts compared to Options 1, 2 and 4 along Doran Road.

When comparing Options 1A and 1B to Options 2A and 2B, although Options 1A and 1B will result in greater impacts along Doran Road due to the wider typical section and higher costs, these options will provide a greater offset between trail users and the northbound Doran Road travel lane. This additional offset will provide a higher comfort level for trail users and will also minimize impacts at the trail crossing of Fourmile Run resulting in a “No Rise” condition for the proposed bridge meeting FEMA 100-Year Floodplain regulations and Henrico County policy. Options 1A and 1B were further refined as Options 4A and 4B to minimize impacts to utilities including the 16” waterline located along northbound Doran Road. Therefore, Options 4A and 4B are recommended as the preferred alternatives.

Attachments

Attachment A - Environmental Documentation

Attachment B - Concept Plans

Attachment C - Existing Utilities and Potential Conflicts

Attachment D - Conceptual Cost Estimate



Attachment A - Environmental Documentation

V-CRIS Results

Property Information

Property Names

Name Explanation	Name
Historic	Darbytown & New Market Roads Battlefield
Historic	Fourmile Creek

Property Evaluation Status

DHR Staff: Potentially Eligible

Property Addresses

Alternate - Route 5
Current - Strath Road

County/Independent City(s): Henrico (County)

Incorporated Town(s): *No Data*

Zip Code(s): 23150, 23231, 23250

Magisterial District(s): *No Data*

Tax Parcel(s): *No Data*

USGS Quad(s): DREWRY'S BLUFF, DUTCH GAP, SEVEN PINES

Additional Property Information

Architecture Setting: Suburban

Acreage: *No Data*

Site Description:

2007: As mapped, the field has two cores. The northern core is on Darbytown Road and Dorrey Park. Dorrey Park retains some of the original ground contours but sections have been regraded for ball fields, tennis courts and picnic areas. In the southern core, the fieldworks have been obliterated. One exceptional core parcel remains - a 60 acre soybean field and woodlot west of the intersection of Strath Road and Lampworth Road. This survival is potentially important as this is the vicinity of some of the heaviest fighting and General Gregg's death.

April 2013: The area surveyed at this time consists of the Pearces Creek Capital Bike Trail realignment. This alignment is approximately 720 feet long, and is located on the north side of Route 5 near Pearces Creek Lane. The southern end of the alignment begins just north of Battlefield Park Road and the alignment continues roughly 720 feet to the north where it terminates at a gravel access road to a structure. The majority of the project area is an open grassy field. No secondary resources were identified within the area surveyed at this time.

January 2015: The area surveyed at this time consists of one alignment, which encompasses approximately 1.7 acres, and is located to the south of Dorey Park. No secondary resources were identified within the area surveyed at this time.

July 2017: This survey included approximately approximately 17.69 acres located on the eastern side of Dorey Park Road. The Area of Potential Effect (APE) for archaeological and architectural resources is the approximately 17.69-acre project corridor. No secondary resources were noted within the area surveyed.

June 2018: The survey area encompasses approximately 581.50 acres, is bordered by a power line easement to the south, Reedy Branch to the north, Varina Road to the west, and rural residential lands to the east. The Area of Potential Effect (APE) for architectural resources is the project area footprint and a 1/2-mile radius from the project area boundaries. No secondary resources were noted within the area surveyed.

June 2020: The survey area consists of eleven shovel test pits located at strategic locations where direction drilling will occur in order to install a deep subsurface fiber optic cable. The proposed 3,000 ft. route of the fiber optic line extends west from Varina Rd. along the immediate north of Picnic Rd., turns and parallels Battlefield Park Rd. on the west and Maintenance Way on the north. It terminates after a short route along the east of the maintenance facility access road. The APE consists of the 3,000 ft. linear route of the proposed cable.

September 2022: Only a small portion of the battlefield just northwest of the intersection of Airport Drive and Pocahontas Parkway was subject to survey and evaluation as part of this effort. The landscape of the portion of battlefield in the survey area is generally flat with broad, gentle landforms bordering a shallow drainage. The roads that border the survey area, Airport Drive and Pocahontas Parkway, have been built up on graded berms. Other than the roads and some scattered commercial and residential development situated along roads further away, this portion of the battlefield is generally undeveloped and wooded. Several lines of Civil War-era earthworks and defenses are located within the portion of the battlefield in the survey area, including a short segment of breastworks in the southeast corner near the road intersection, a line of rifle pits that extends through the central portion of the area in a generally southwest-northeast configuration, and another short segment of breastworks in the extreme northwestern corner.

Surveyor Assessment:

April 2013: 043-5071 is identified as the circa 1864 Darbytown and New Market Roads Battlefield aka Fourmile Creek. As noted on the American Battlefield Protection Program (ABPP) map, the Pearces Creek corridor falls within this battlefield. During the course of the Phase I survey, no Civil War related artifacts were found within this corridor. The project as proposed would only add a trail corridor to the battlefield. Although little development exists along Route 5, development has occurred in and around the battlefield boundaries altering the battlefield landscape from its appearance in the 1860s. Therefore, Circa~ recommends no further survey work for this resource within the project area.

January 2015: 043-5071, the circa 1864 Darbytown and New Market Roads Battlefield aka Fourmile Creek was determined potentially eligible for the National Register of Historic Places. However, no Civil War resources were identified within the project areas and no remains of troop movements shown on Civil War era maps were found during the course of the survey. In addition, development has occurred throughout the battlefield boundaries thus altering the battlefield landscape from its appearance in the 1860s.

July 2017: 043-5071, the Battle of Darbytown and New Market Road is a circa 1864 Civil War battlefield that represents part of the Richmond Petersburg campaign. The battlefield consists of two core areas. The northern core is on Darbytown Road and Dorey Park, which retains some original ground contours, however, sections have been re-graded for ball fields, tennis courts, and picnic areas. The southern core has been obliterated with the exception of an approximately 60-acre soybean field and wooded lot west of the intersection of Strath Road and Lampworth Road. This site includes some of the heaviest fighting of the battle as well as the site of General Gregg's death. The battlefield was determined potentially eligible for listing on the National Register of Historic Places. However, no Civil War resources were identified within the project corridor. The project as proposed would remain close to the existing road and would only create a pedestrian trail with no further above ground infrastructure. In addition, the 20th century park development has been constructed within the battlefield boundaries, thus altering the battlefield landscape from its appearance in the 1860s. Taking this into account, while the project area proposed will add a pedestrian trail to the battlefield, it should not adversely affect the battlefield, the battlefield landscape, or the battlefield viewshed. Therefore, Circa~ recommends no further survey work for this resource within the project area.

June 2018: 043-5071, the Battle of Darbytown and New Market Road is a circa 1864 Civil War battlefield that represents part of the Richmond Petersburg campaign. The battlefield consists of two core areas. The northern core is on Darbytown Road and Dorey Park, which retains some original ground contours, however, sections have been re-graded for ball fields, tennis courts, and picnic areas. The southern core has been obliterated with the exception of an approximately 60-acre soybean field and wooded lot west of the intersection of Strath Road and Lampworth Road. This site includes some of the heaviest fighting of the battle as well as the site of General Gregg's death. The battlefield was determined potentially eligible for listing on the National Register of Historic Places. However, no Civil War resources were identified within the project corridor. The project as proposed would add infrastructure to the battlefield. However, in this area of the battlefield development has occurred including 20th century residential development, park development, and the construction of new roads and interstates, thus altering the battlefield landscape from its appearance in the 1860s. Taking this into account, while the project area proposed should not adversely affect the battlefield, the battlefield landscape, or the battlefield viewshed. Therefore, Circa~ recommends no further survey work for this resource within the project area.

June 2020:
The Phase I archeological survey of eleven 50-cm.-square shovel test pits and localized metal detecting at each of the eleven shovel test locations within the Ft. Harrison property in Henrico County, Virginia revealed both disturbance and artifacts associated with the nineteenth- and twentieth-century, including Civil War military artifacts. All artifacts were recovered from four shovel tests/metal detected areas in topsoil/plowzone contexts. No subsurface cultural features were identified in any of the eleven shovel test pits, and severe disturbance associated with the construction of Picnic Rd. was evident in five of the eleven shovel test units.

The project area lies within the Darbytown and New Market Road Battlefield Historic District (043-5071). Therefore, the recovered military and nineteenth-century artifacts from the topsoil/plowzone strata are considered as a contributing element to the historic district (043-5071) and are recommended as potentially eligible for listing in the NRHP. However, no subsurface cultural features were identified during the Phase I survey at the surface impact points. As such, the deep burial of the fiber optic line will not have an adverse effect on the Darbytown and New Market Road Battlefield Historic District (043-5071), and no further work in regard to cultural resources in recommended for this particular undertaking.

September 2022: Various portions of this battlefield have been subject to survey and evaluation on multiple occasions, all of which have found that the overall limits of the battlefield are heavily fractured by modern development and intrusion. It has illustrated some archaeological potential, however, through the retention of a variety of earthwork features, other defenses, and contemporary materials, and as such, was determined potentially eligible for listing in the NRHP by the VDHR in 2007, a recommendation which several later surveys upheld, most recently in 2020. While only a portion of the battlefield is within the survey area and subject to evaluation as part of this effort, it remains mostly undeveloped with several Civil War-era earthwork features and rifle pits. As such, D+A recommends that this portion of the battlefield continue to be treated as potentially eligible for listing in the NRHP.

Surveyor Recommendation: Recommended Potentially Eligible

Ownership

Ownership Category	Ownership Entity
Private	No Data
Public - Local	No Data

Primary Resource Information

Resource Category:	Defense
Resource Type:	Battle Site
NR Resource Type:	Site
Historic District Status:	No Data
Date of Construction:	Ca 1864
Date Source:	Site Visit
Historic Time Period:	Civil War (1861 - 1865)
Historic Context(s):	Military/Defense
Other ID Number:	No Data
Architectural Style:	Other

Form: *No Data*
Number of Stories: *No Data*
Condition: Poor
Threats to Resource: Development, Transportation Expansion
Cultural Affiliations: Euro-American
Cultural Affiliation Details:
No Data

Architectural Description:

2007: As mapped, the field has two cores. The northern core is on Darbytown Road and Dorrey Park. Dorrey Park retains some of the original ground contours but sections have been regraded for ball fields, tennis courts and picnic areas. In the southern core, the fieldworks have been obliterated. One exceptional core parcel remains - a 60 acre soybean field and woodlot west of the intersection of Strath Road and Lampworth Road. This survival is potentially important as this is the vicinity of some of the heaviest fighting and General Gregg's death.

April 2013: The area surveyed at this time consists of one Capital Bike trail realignment located on the north side of Route 5 near Pearces Creek Lane. The southern end of the alignment begins just north of Battlefield Park Road and the alignment continues roughly 720 feet to the north where it terminates at a gravel access road to a structure. This project area is located within the Atlantic Coastal Plain and is characterized by fairly level topography, with a southward slope and elevations ranging from approximately 150 feet above mean sea level (AMSL) on the southern end to 154 feet AMSL on the northern end. The majority of the project area is an open grassy field. The site can be accessed via Route 5.

January 2015: The area surveyed at this time consists of one alignment. This alignment is roughly 1,800 feet long by 50 feet wide, is located on the western side of Doran Road, and continues northwest through a utility easement to Dorey Park. The land is fairly level and drains to the east, west, and south.

July 2017: The portion of the battlefield surveyed at this time lies within the Atlantic Coastal Plain physiographic region. The project corridor consists of a fairly-level upland plain with the northern terminus of the proposed trail at approximately 138 feet above mean sea level (AMSL) and the southern portion of the trail at approximately 134 feet AMSL. The southern portion of the project corridor extends through a former borrow pit that has been backfilled and improved for use as open parkland. The northern and central portion of the project corridor extends through the center of a park in fields and lawn, with some forested areas with mixed hardwoods.

June 2018: The portion of the battlefield surveyed at this time lies within the Atlantic Coastal Plain physiographic region. Generally, the area is a gently-rolling upland with wide, ancient fluvial terraces along the lower part of the James River. Historically the project area consisted of an upland ridge between Ready Branch and Roundabout Creek. Since the mid-20th century, the project area was used for a sand and gravel mining operation. Historic elevations across the tract range from 110 feet above mean sea level (AMSL) to 140 feet AMSL, with current elevations ranging from 95 feet AMSL to 131 feet AMSL. The site can be accessed via Strath Road and Varina Road. The portion of the battlefield surveyed at this time contains a mix of open fields and 20th century residential housing. No Civil War related resources were found within the area surveyed.

June 2020: The proposed 3,000 ft. route of the fiber optic line extends west from Varina Rd. along the immediate north of Picnic Rd., turns and parallels Battlefield Park Rd. on the west and Maintenance Way on the north. It terminates after a short route along the east of the maintenance facility access road. The APE consists of the 3,000 ft. linear route of the proposed cable. The area is level and heavily wooded with scattered single family residences on the south side of Picnic Road.

September 2022: Only a small portion of the battlefield located just northwest of the intersection of Airport Drive and Pocahontas Parkway is located within the survey area and subject to inspection and evaluation as part of this effort. This consists of a small area in the northern portion of the battlefield located at the intersection of Airport Drive and Pocahontas Parkway. The portion of the battlefield within the survey area consists of an undeveloped wooded parcel that is bounded by additional undeveloped landscape to the north and west, and Airport Drive and Pocahontas Parkway to the east and south. Within the wooded area are several Civil War-era earthwork features and defenses that may have been utilized during the battle, however, the majority of the battle "Core Area" as delineated by the ABPP is situated to the south of the survey area for this effort.

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Anna White
Organization/Company: Dutton + Associates, LLC
Photographic Media: Digital
Survey Date: 9/7/2022
Dhr Library Report Number: *No Data*

Project Staff/Notes:
Survey and data entry performed by D+A architectural history staff.

Project Bibliographic Information:
D+A. Phase I Cultural Resource Survey of the Airport Drive Project Area. October 2022.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2020-0335
Investigator: Darby O'Donnell
Organization/Company: Darby O'Donnell, LLC
Photographic Media: Digital
Survey Date: 6/22/2020
Dhr Library Report Number: HE-423

Project Staff/Notes:
This project consists of the archeological excavation of eleven 50-cm.-square shovel test pits and localized metal detecting at eleven locations within the Ft. Harrison property in Henrico County, Virginia. These eleven shovel test pits are located at strategic locations where direction drilling will occur in order to install a subsurface fiber optic cable. The proposed route of the fiber optic line closely parallels Picnic Rd., Battlefield Park Rd., Maintenance Way, and a maintenance facility access road. The proposed directional drilling will install the cable in culturally sterile subsoil, well below any archeological layers. However, there are a series of proposed surface entry points for the directional drill, and it is those points that were tested via the eleven shovel test pits and localized metal detecting.

Project Bibliographic Information:
O'Donnell, Darby
July 2 2020 Phase I Archeological Survey and Localized Metal Detector Survey for a Proposed Fiber Optic Line Installation within the Ft. Harrison Property Richmond National Battlefield Park, Henrico County, Virginia. Prepared for the National Park Service. Prepared by Darby O'Donnell, LLC.
DHR Project No. 2020-0335
DHR Report No. HE-423

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: DHR Staff: Potentially Eligible

DHR ID: 043-5071
Staff Name: Roger Kirchen
Event Date: 2/5/2019

Staff Comment:
DHR Project File No. 2018-4153

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2018-4153
Investigator: Dawn Muir
Organization/Company: Circa~ Cultural Resource Management, LLC
Photographic Media: Digital
Survey Date: 5/8/2018
Dhr Library Report Number: HE-396

Project Staff/Notes:
June 2018: In the spring of 2018, Circa~ Cultural Resource Management, LLC (Circa~) conducted a Phase I architectural survey of the Turner Solar Site in Henrico County, Virginia. The project area, which encompasses approximately 581.50 acres, is bordered by a power line easement to the south, Reedy Branch to the north, Varina Road to the west, and rural residential lands to the east. The Area of Potential Effect (APE) for architectural resources is the project area footprint and a 1/2-mile radius from the project area boundaries. The archaeological resources identified within the project area boundaries were destroyed by the development of the tract as a quarry. No further archaeological survey work was

required.

The contribution of many individuals made the successful completion of the Phase I survey for the project possible. At Circa~, Carol D. Tyrer served as Project Manager for the project and photographed the resources. Dawn M. Muir, Architectural Historian, completed the historic context and architectural survey. Dawn M. Muir and Carol D. Tyrer prepared the report. At the Timmons Group (Timmons) Rick Thomas and Laura Major provided information and maps for the survey. Dawn M. Muir and Skye Hughes entered the information into the VDHR V-CRIS system.

Project Bibliographic Information:

Circa~

2018 Phase I Architectural Survey of Turner Solar Site, Henrico County, Virginia.
HE-396

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1864Map of the vicinity of Richmond and part of the Peninsula. Available online at <http://www.loc.gov/maps/collections>

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No date Map of the Frist Deep Bottom Battle.

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Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Dawn Muir-Frost
Organization/Company: Circa~ Cultural Resource Management, LLC
Photographic Media: Digital
Survey Date: 5/15/2017
Dhr Library Report Number: *No Data*

Project Staff/Notes:

July 2017: In May 2017, Circa~ Cultural Resource Management, LLC (Circa~) conducted a Phase I cultural resources survey of the Dorey Park pedestrian trail in Henrico County, Virginia. The project area, which encompasses approximately 17.69 acres, is located on the eastern side of Dorey Park Road. The Area of Potential Effect (APE) for archaeological and architectural resources is the approximately 17.69-acre project corridor.

At Circa~, Carol D. Tyrer served as Project Manager and Principal Investigator for the project and was assisted in the field by Charlie Rutledge, Eric Mai, Matt Carr, and McKenzie Kyger, Field Archaeologists. Dawn M. Muir-Frost served as the Historian and Architectural Historian for the project and completed the historic context and architectural survey. McKenzie Kyger, Archaeological Lab Technician, assisted in the processing of artifacts. Dawn M. Muir-Frost and Carol D. Tyrer prepared the report. The successful completion of the Phase I survey for the proposed development was made possible by the contribution of many individuals. Tim Davis with Vanasse Hangen Brustlin, Inc. (VHB) ensured that project information and maps were always available for the study. Carol D. Tyrer photographed and resources and Dawn M. Muir-Frost entered the information into the V-CRIS system.

Project Bibliographic Information:

Circa~

2017 Phase I Cultural Resources Survey of Dorey Park Pedestrian Trail, Henrico County, Virginia

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Civil War Preservation Trust

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Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2005-1527
Investigator: Dawn Muir-Frost
Organization/Company: Circa~ Cultural Resource Management, LLC
Photographic Media: Digital
Survey Date: 1/15/2015
Dhr Library Report Number: HE-329

Project Staff/Notes:

Carol D. Tyrer, Dawn M. Muir-Frost
Supplemental Phase I Cultural Resources Survey, Access Road Alignment of the Varina Park Phase, Virginia Capital Trail, Henrico County, Virginia
January 2015
HE-329
Project #2005-1527

January 2015: At Circa~, Carol D. Tyrer served as Project Manager and Principal Investigator for the project. She was assisted in the field by Charlie Rutledge, Eric Mai, Nick Bresin, and Matt Carr, Field Archaeologists. Dawn M. Muir-Frost served as the Historian for the project and completed the historic context. Mackenzie Kaiser, Archaeological Lab Technician, assisted in the processing of artifacts. Dawn M. Muir-Frost and Carol D. Tyrer prepared the report.

Project Bibliographic Information:

Advisory Council on Historic Preservation
1986"36 CFR Part 800: Protection of Historic Properties." Regulations of the Advisory Council on Historic Preservation Governing the Section 106 Review Process.

Brady, Ellen M.
2013Supplemental Archaeological Survey of Sites 44HE1164 and 44HE1165 and Archaeological Survey of Redesigned Segments of the Varina Park Phase Within Dorey Park, Addendum to A Cultural Resources Survey of the Varina Park Phase of Virginia Capital Trail, Henrico County, Virginia.

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Department of the Interior, National Park Service
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1990 Conserving Richmond's Battlefields.

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2011Guidelines for Conducting Historic Resources Survey in Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2005-1527
Investigator: Circa~
Organization/Company: Unknown (DSS)

Photographic Media: *No Data*
Survey Date: 4/1/2013
Dhr Library Report Number: Report on the Nation's Civil War Battlefields

Project Staff/Notes:

April 2013: In the fall of 2010, Cultural Resources, Inc. (CRI) conducted a Phase I cultural resources survey of the Varina portion of the Capital Bike Trail in Henrico and Charles City counties, Virginia. In April 2013, Atkins determined that four areas of the trail were not feasible and engineered re-routes in those areas. Atkins contracted Circa~ Cultural Resources Management, L.L.C. (Circa~) to conduct a Phase I cultural resources survey on the additional alignments. The purpose of this additional Phase I cultural resources survey was to identify and record all historic resources within the proposed alignment area prior to construction of the trails. This survey resulted in the identification of four isolated finds, two previously identified archaeological sites, no new archaeological sites, 15 previously identified architectural sites, and no new architectural resources within the project areas. Two of these realignments fall within several Civil War battlefields including this one. Carol D. Tyrer with Circa~ photographed the resource and Dawn M. Muir-Frost with Circa~ entered the updated information into the DSS system.

Project Bibliographic Information:

Name: CRI
DHR CRM Report Number: HE-308
Record Type: Report
Bibliographic Notes: A Cultural Resources Survey of the Varina Park Phase of the Virginia Capital Trail, Henrico County, Virginia. 2013.

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013 Addendum to A Cultural Resources Survey of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, A Cultural Resources Survey of the Northern Alignment of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, and A Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia

Name: CRI, Inc
DHR CRM Report Number: HE-233
Record Type: Report
Bibliographic Notes: HE-233: A Phase I Cultural Resources Sureby for the Proposed Wilton Parkway Covering Approximately 16.3 Acres in Henrico County, VA

Prepared for: HHH Hunt Communities

Prepared by: Magoon, Lee, Kiser, and Pitts of CRI, INC

June 2006

Name: CRI
DHR CRM Report Number: HE-272
Record Type: Report
Bibliographic Notes: HE-272: Phase I Archaeological Survey for Proposed Improvements to the Dominion Power Electrical Utility Corridor, Richmond National Battlefield Park, Henrico County, Virginia, August 2010. #2010-1583

Name: Civil War Sites Advisory Commission
DHR CRM Report Number: Report on the Nation's Civil War Battlefields
Record Type: Book
Bibliographic Notes: Includes 3 books - Report, Volume I: Appendices, and Volume II: Battle Summaries

Name: Trudeau, Noah Andre
Record Type: Article
Bibliographic Notes: Darbytown Road Debacle. America's Civil War, May 1992 pp. 30-36. Leesburg, VA: Empire Press.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Other

Project Review File Number: 2005-0128
Investigator: Wilson, Joanna
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 3/20/2007
Dhr Library Report Number: Report on the Nation's Civil War Battlefields

Project Staff/Notes:

VDHR concurs with CRI that the Wilton Parkway may effect this potentially eligible historic district. VDHR recommends further reseach be done to evaluate the APE of the Parkway in the historic district.

Project Bibliographic Information:

Name: CRI
DHR CRM Report Number: HE-308
Record Type: Report
Bibliographic Notes: A Cultural Resources Survey of the Varina Park Phase of the Virginia Capital Trail, Henrico County, Virginia. 2013.

Name: Circa~

Record Type: Report
Bibliographic Notes: 2013Addendum to A Cultural Resources Survey of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, A Cultural Resources Survey of the Northern Alignment of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, and A Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia

Name: CRI, Inc
DHR CRM Report Number: HE-233
Record Type: Report
Bibliographic Notes: HE-233: A Phase I Cultural Resources Sureby for the Proposed Wilton Parkway Covering Approximately 16.3 Acres in Henrico County, VA

Prepared for:HHHunt Communities

Prepared by: Magoon, Lee, Kiser, and Pitts of CRI, INC

June 2006

Name: CRI
DHR CRM Report Number: HE-272
Record Type: Report
Bibliographic Notes: HE-272: Phase I Archaeological Survey for Proposed Improvements to the Dominion Power Electrical Utility Corridor, Richmond National Battlefield Park, Henrico County, Virginia, August 2010. #2010-1583

Name: Civil War Sites Advisory Commission
DHR CRM Report Number: Report on the Nation's Civil War Battlefields
Record Type: Book
Bibliographic Notes: Includes 3 books - Report, Volume I: Appendices, and Volume II: Battle Summaries

Name: Trudeau, Noah Andre
Record Type: Article
Bibliographic Notes: Darbytown Road Debacle. America's Civil War, May 1992 pp. 30-36. Leesburg, VA: Empire Press.

Surveyor's NR Criteria A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic
Recommendations: Information

Event Type: DHR Staff: Potentially Eligible

DHR ID: 043-5071
Staff Name: ABPP
Event Date: 1/24/2007

Staff Comment

Preliminary survey data from American Battlefield Protection Program (ABPP) indicates that this historic Civil War battlefield is likely eligible for listing in the National Register of Historic Places and likely deserving of future preservation efforts. This survey information should be reassessed during future Section 106/NEPA compliance reviews.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2005-0128
Investigator: CRI
Organization/Company: Unknown (DSS)
Photographic Media: No Data
Survey Date: 6/1/2006
Dhr Library Report Number: Report on the Nation's Civil War Battlefields

Project Staff/Notes:

No Data

Project Bibliographic Information:

Name: CRI
DHR CRM Report Number: HE-308
Record Type: Report
Bibliographic Notes: A Cultural Resources Survey of the Varina Park Phase of the Virginia Capital Trail, Henrico County, Virginia. 2013.

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013Addendum to A Cultural Resources Survey of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, A Cultural Resources Survey of the Northern Alignment of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, and A Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia

Name: CRI, Inc
DHR CRM Report Number: HE-233
Record Type: Report
Bibliographic Notes: HE-233: A Phase I Cultural Resources Sureby for the Proposed Wilton Parkway Covering Approximately 16.3 Acres in

Henrico County, VA

Prepared for: HHHunt Communities

Prepared by: Magoon, Lee, Kiser, and Pitts of CRI, INC

June 2006

Name: CRI

DHR CRM Report Number: HE-272

Record Type: Report

Bibliographic Notes: HE-272: Phase I Archaeological Survey for Proposed Improvements to the Dominion Power Electrical Utility Corridor, Richmond National Battlefield Park, Henrico County, Virginia, August 2010. #2010-1583

Name: Civil War Sites Advisory Commission

DHR CRM Report Number: Report on the Nation's Civil War Battlefields

Record Type: Book

Bibliographic Notes: Includes 3 books - Report, Volume I: Appendices, and Volume II: Battle Summaries

Name: Trudeau, Noah Andre

Record Type: Article

Bibliographic Notes: Darbytown Road Debacle. America's Civil War, May 1992 pp. 30-36. Leesburg, VA: Empire Press.

**Surveyor's NR Criteria
Recommendations:**

A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: CWSAC - VA097

Investigator: CWSAC

Organization/Company: Unknown (DSS)

Photographic Media: *No Data*

Survey Date: 1/1/1993

Dhr Library Report Number: Report on the Nation's Civil War Battlefields

Project Staff/Notes:

Civil War Sites Advisory Commission Survey Form - no photos submitted - not dated or signed, but surveys occurred during the period between 1991 and 1993.

Project Bibliographic Information:

Name: CRI

DHR CRM Report Number: HE-308

Record Type: Report

Bibliographic Notes: A Cultural Resources Survey of the Varina Park Phase of the Virginia Capital Trail, Henrico County, Virginia. 2013.

Name: Circa~

Record Type: Report

Bibliographic Notes: 2013 Addendum to A Cultural Resources Survey of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, A Cultural Resources Survey of the Northern Alignment of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, and A Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia

Name: CRI, Inc

DHR CRM Report Number: HE-233

Record Type: Report

Bibliographic Notes: HE-233: A Phase I Cultural Resources Sureby for the Proposed Wilton Parkway Covering Approximately 16.3 Acres in Henrico County, VA

Prepared for: HHHunt Communities

Prepared by: Magoon, Lee, Kiser, and Pitts of CRI, INC

June 2006

Name: CRI

DHR CRM Report Number: HE-272

Record Type: Report

Bibliographic Notes: HE-272: Phase I Archaeological Survey for Proposed Improvements to the Dominion Power Electrical Utility Corridor, Richmond National Battlefield Park, Henrico County, Virginia, August 2010. #2010-1583

Name: Civil War Sites Advisory Commission

DHR CRM Report Number: Report on the Nation's Civil War Battlefields

Record Type: Book

Bibliographic Notes: Includes 3 books - Report, Volume I: Appendices, and Volume II: Battle Summaries

Name: Trudeau, Noah Andre

Record Type: Article

Bibliographic Notes: Darbytown Road Debacle. America's Civil War, May 1992 pp. 30-36. Leesburg, VA: Empire Press.

**Surveyor's NR Criteria
Recommendations:**

A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Bibliographic Information

Bibliography:

Dutton + Associates - Robert J. Taylor, Jr., David H. Dutton
Phase I Cultural Resources Survey of The ±1.7-Hectare (4.26-Acre) Varina Substation Project, Henrico County, Virginia
November 2020
DHR Report No. HE-430
DHR Project No. 2020-4149

Advisory Council on Historic Preservation
1986“36 CFR Part 800: Protection of Historic Properties.” Regulations of the Advisory Council on Historic Preservation Governing the Section 106 Review Process.

O'Donnell, Darby
2020 Phase I Archeological Survey and Localized Metal Detector Survey for a Proposed Fiber Optic Line Installation within the Ft. Harrison Property Richmond National Battlefield Park, Henrico County, Virginia. Prepared for the National Park Service. Prepared by Darby O'Donnell, LLC.

Brady, Ellen M.
2013Supplemental Archaeological Survey of Sites 44HE1164 and 44HE1165 and Archaeological Survey of Redesigned Segments of the Varina Park Phase Within Dorey Park, Addendum to A Cultural Resources Survey of the Varina Park Phase of Virginia Capital Trail, Henrico County, Virginia.

Civil War Sites Advisory Commission.
2009Update to the Civil War Sites Advisory Commission Report on the Nations' Civil War Battlefields.

Department of the Interior, National Park Service
1983Archaeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines. Federal Register 48:44716-44762.

199136 CFR Part 79: Curation of Federally-Owned and Administered Archaeological Collections.

Leithoff, Aimee J., Sandra DeChard, and Ellen M. Brady
2013A Cultural Resources Survey of the Varina Park Phase of the Virginia Capital Trail, Henrico County, Virginia.

National Park Service
1990National Register of Historic Places Bulletin 15: How to Apply the National Register of Historic Places Criteria for Evaluation.

1990 Conserving Richmond's Battlefields.

Natural Resources Conservation Service
2015Online soils data. Available at <http://soils.usda.gov/>.

Virginia Department of Historic Resources
2011Guidelines for Conducting Historic Resources Survey in Virginia.






Property Notes:

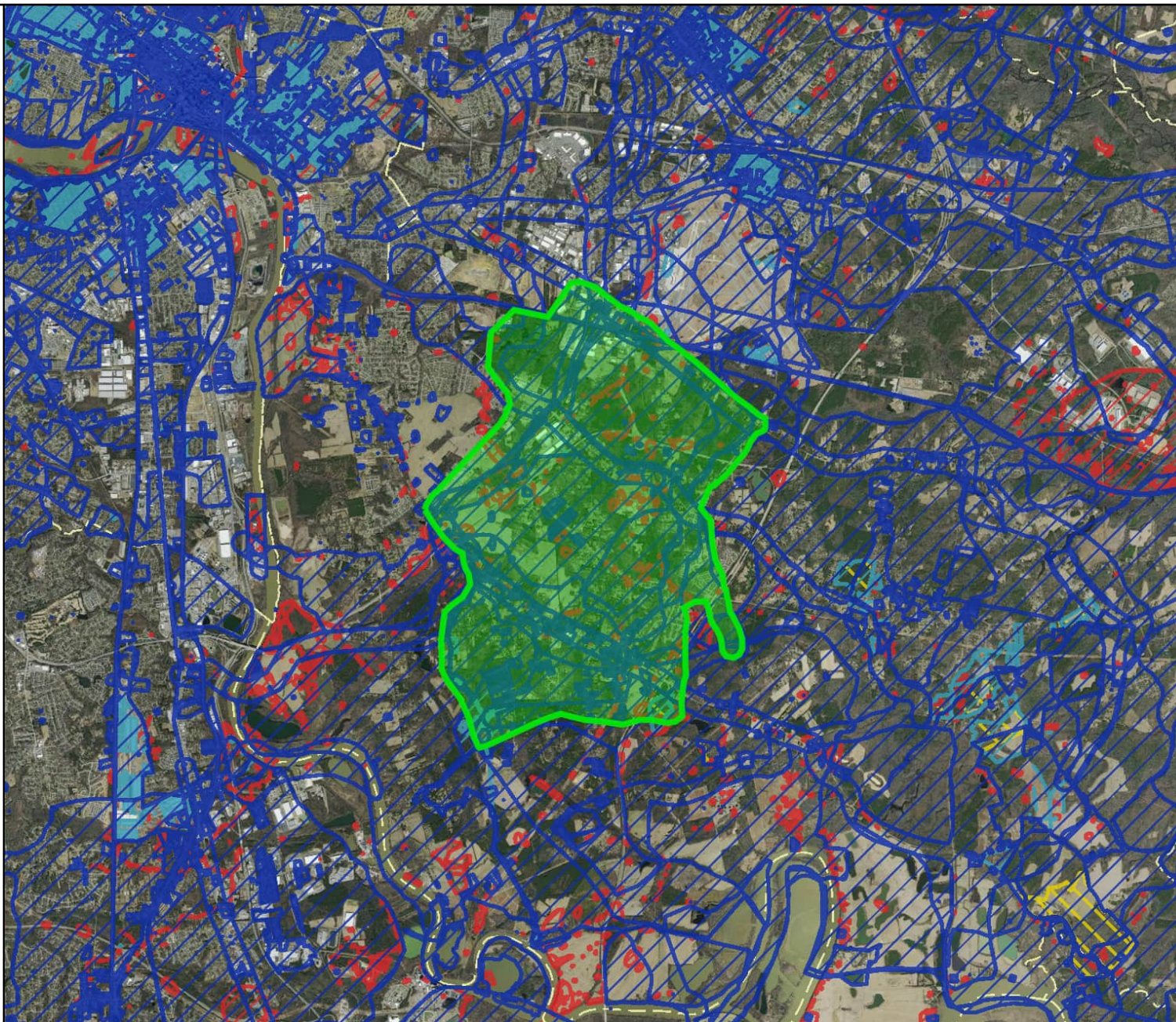
Start Year: 1864
Date Source: Written Data
Type: Historical Event

Responding to the loss of Fort Harrison and the increasing Federal threat against Richmond, General Robert E. Lee directed an offensive against the Union far right flank on October 7. After routing the Federal cavalry from their position covering Darbytown Road, Field's and Hoke's divisions assaulted the main Union defensive line along New Market Road and were repulsed. Confederate General John Gregg of the Texas brigade was killed. The Federals were not dislodged, and Lee withdrew into the Richmond defenses.



Legend

-  Architecture Resources
-  Individual Historic District Properties
-  Archaeological Resources
-  DHR Easements
-  County Boundaries



Miles



1:144,448 / 1"=2 Miles

Title: Architecture Labels

Date: 11/17/2023

DISCLAIMER: Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions. The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites: Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Property Information

Property Names

Name Explanation	Name
Historic	Alms House
Historic	Darbytown Road Battlefield

Property Evaluation Status

DHR Staff: Potentially Eligible

Property Addresses

Current - Darbytown Road
Alternate - Miller Road

County/Independent City(s):	Henrico (County)
Incorporated Town(s):	No Data
Zip Code(s):	23150, 23231, 23250
Magisterial District(s):	No Data
Tax Parcel(s):	No Data
USGS Quad(s):	DREWRY'S BLUFF, DUTCH GAP, SEVEN PINES

Additional Property Information

Architecture Setting: Suburban

Acreage: 100

Site Description:

The battlefield setting is primarily residential with commercial and industrial enclaves. Several undeveloped parcels of dense woodland remain. The area north and east of the intersection of Darbytown and Miller roads is the area where the heaviest fighting of the day occurred. Confederate fieldworks may well survive in these woods, although the ground could not be surveyed. This area is actually quite large (est. 100 acres) and much of it was wooded at the time of the battle.

April 2013: The area surveyed at this time included one realignment of the Capital Bike Trail. The Pearces Creek alignment (near I-895) is approximately 720 feet long, and is located on the north side of Route 5 near Pearces Creek Lane. The southern end of the alignment begins just north of Battlefield Park Road and the alignment continues roughly 720 feet to the north where it terminates at a gravel access road to a structure. The majority of the project area is an open grassy field.

There are no secondary resources associated with this resource within the area surveyed.

January 2015: The area surveyed at this time consists of one alignment. This alignment is roughly 1,800 feet long by 50 feet wide, is located on the western side of Doran Road, and continues northwest through a utility easement to Dorey Park.

There are no secondary resources associated with this resource within the area surveyed.

July 2017: This survey included approximately 17.69 acres located on the eastern side of Dorey Park Road. The Area of Potential Effect (APE) for archaeological and architectural resources is the approximately 17.69-acre project corridor. No secondary resources were noted within the area surveyed.

September 2022: Only a small portion of the battlefield just northwest of the intersection of Airport Drive and Pocahontas Parkway was subject to survey and evaluation as part of this effort. The landscape of the portion of battlefield in the survey area is generally flat with broad, gentle landforms bordering a shallow drainage. The roads that border the survey area, Airport Drive and Pocahontas Parkway, have been built up on graded berms. Other than the roads and some scattered commercial and residential development situated along roads further away, this portion of the battlefield is generally undeveloped and wooded. Several lines of Civil War-era earthworks and defenses are located within the portion of the battlefield in the survey area, including a short segment of breastworks in the southeast corner near the road intersection, a line of rifle pits that extends through the central portion of the area in a generally southwest-northeast configuration, and another short segment of breastworks in the extreme northwestern corner.

Surveyor Assessment:

Start Year: 1864
Date Source: Site Visit
Type: Historical Event

On October 13, Union forces advanced to find and feel the new Confederate defensive line in front of Richmond. While mostly a battle of skirmishes, a Federal brigade assaulted fortifications north of Darbytown Road and was repulsed with heavy casualties. The Federals retired to their entrenched lines along New Market Road.

April 2013: VDHR #043-5072 is identified as the circa 1864 Darbytown Road Battlefield aka Alms House. As noted on the American Battlefield Protection Program (ABPP) map, the Pearces Creek corridor falls within this battlefield. During the course of the Phase I survey, no Civil War related artifacts were found within this corridor. The project as proposed would only add a trail corridor to the battlefield. Although little development exists along Route 5, development has occurred in and around the battlefield boundaries altering the battlefield landscape from its appearance in the 1860s. Therefore, Circa~ recommends no further survey work for this resource within the project area.

January 2015: Architectural Resource 043-5072, the circa 1864 Darbytown Road Battlefield aka Alms House, was determined potentially eligible for the National Register of Historic Places. However, no Civil War resources were identified within the project areas and no remains of troop movements shown on Civil War era maps were found during the course of the survey. In addition, development has occurred throughout the battlefield boundaries thus altering the battlefield landscape from its appearance in the 1860s.

July 2017: Site 043-5072 is identified as the circa 1864 Darbytown Road Battlefield that represents part of the Richmond Petersburg campaign. The battlefield was determined potentially eligible for listing on the National Register of Historic Places. However, no Civil War resources were identified within the project corridor. The project as proposed would remain close to the existing road and would only create a pedestrian trail with no further above ground infrastructure. In addition, the 20th century park development has been constructed within the battlefield boundaries, thus altering the battlefield landscape from its appearance in the 1860s. Taking this into account, while the project area proposed will add a pedestrian trail to the battlefield, it should not adversely affect the battlefield, the battlefield landscape, or the battlefield viewshed. Therefore, Circa~ recommends no further survey work for this resource within the project area.

September 2022: Various portions of this battlefield have been subject to survey and evaluation on multiple occasions, all of which have found that the overall limits of the battlefield are heavily fractured by modern development and intrusion. It has illustrated some archaeological potential, however, through the retention of a variety of earthwork features, other defenses, and contemporary materials, and as such, was determined potentially eligible for listing in the NRHP by the VDHR in 2007, a recommendation which several later surveys upheld, most recently in 2017. While only a portion of the battlefield is within the survey area and subject to evaluation as part of this effort, it remains mostly undeveloped with several Civil War-era earthwork features and rifle pits. As such, D+A recommends that this portion of the battlefield continue to be treated as potentially eligible for listing in the NRHP.

Surveyor Recommendation: Recommended Potentially Eligible

Ownership

Ownership Category

Private

Ownership Entity

No Data

Primary Resource Information

Resource Category: Defense
Resource Type: Battle Site
NR Resource Type: Site
Historic District Status: No Data
Date of Construction: Ca 1864
Date Source: Site Visit
Historic Time Period: Civil War (1861 - 1865)
Historic Context(s): Military/Defense
Other ID Number: No Data
Architectural Style: Other
Form: No Data
Number of Stories: No Data
Condition: Poor
Threats to Resource: Development, Transportation Expansion
Cultural Affiliations: Euro-American
Cultural Affiliation Details:

No Data

Architectural Description:

The battlefield setting is primarily residential with commercial and industrial enclaves. Several undeveloped parcels of dense woodland remain. The area north and east of the intersection of Darbytown and Miller roads is the area where the heaviest fighting of the day occurred. Confederate fieldworks may well survive in these woods, although the ground could not be surveyed. This area is actually quite large (est. 100 acres) and much of it was wooded at the time of the battle.

Darbytown Road follows old alignment with some straightening. There exists a surviving segment of Richmond outer defenses at the western boundary of Dorrey Park. Sections of the Confederate picket lines assaulted by the Federals may survive in a dense woodland north and east of the intersection of Darbytown and Miller Roads. The county poor house was south of Darbytown Road. This area is partially wooded and may retain some archeological integrity.

April 2013: The area surveyed at this time includes one realignment of the Capital Bike Trail. The Pearces Creek project corridor is located on the north side of Route 5 near Pearces Creek Lane. The southern end of the alignment begins just north of Battlefield Park Road and the alignment continues roughly 720 feet to the north where it terminates at a gravel access road to a structure. This project area is located within the Atlantic Coastal Plain and is characterized by fairly level topography, with a southward slope and elevations ranging from approximately 150 feet AMSL on the southern end to 154 feet AMSL on the northern end. The majority of the project area is an open grassy field. The site can be accessed via Route 5.

January 2015: The area surveyed at this time consists of one alignment. This alignment is roughly 1,800 feet long by 50 feet wide, is located on the western side of Doran Road, and continues northwest through a utility easement to Dorey Park. The land is fairly level and drains to the east,

west, and south.

July 2017: The portion of the battlefield surveyed at this time lies within the Atlantic Coastal Plain physiographic region. The project corridor consists of a fairly-level upland plain with the northern terminus of the proposed trail at approximately 138 feet above mean sea level (AMSL) and the southern portion of the trail at approximately 134 feet AMSL. The southern portion of the project corridor extends through a former borrow pit that has been backfilled and improved for use as open parkland. The northern and central portion of the project corridor extends through the center of a park in fields and lawn, with some forested areas with mixed hardwoods.

September 2022: Only a small portion of the battlefield just northwest of the intersection of Airport Drive and Pocahontas Parkway is located within the survey area and subject to inspection and evaluation as part of this effort. This consists of a small area in the central portion of the battlefield located at the intersection of Airport Drive and Pocahontas Parkway. The portion of the battlefield within the survey area consists of an undeveloped wooded parcel that is bounded by additional undeveloped landscape to the north and west, and Airport Drive and Pocahontas Parkway to the east and south. Within the wooded area are several Civil War-era earthwork features and defenses that were likely used during the battle as this area is situated centrally within the battle "Core Area" as delineated by the ABPP.

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Anna White
Organization/Company: Dutton + Associates, LLC
Photographic Media: Digital
Survey Date: 9/7/2022
Dhr Library Report Number: *No Data*

Project Staff/Notes:

Survey and data entry performed by D+A architectural history staff.

Project Bibliographic Information:

D+A. Phase I Cultural Resource Survey of the Airport Drive Project Area. October 2022.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Dawn Muir-Frost
Organization/Company: Circa~ Cultural Resource Management, LLC
Photographic Media: Digital
Survey Date: 5/15/2017
Dhr Library Report Number: *No Data*

Project Staff/Notes:

July 2017: In May 2017, Circa~ Cultural Resource Management, LLC (Circa~) conducted a Phase I cultural resources survey of the Dorey Park pedestrian trail in Henrico County, Virginia. The project area, which encompasses approximately 17.69 acres, is located on the eastern side of Dorey Park Road. The Area of Potential Effect (APE) for archaeological and architectural resources is the approximately 17.69-acre project corridor.

At Circa~, Carol D. Tyrer served as Project Manager and Principal Investigator for the project and was assisted in the field by Charlie Rutledge, Eric Mai, Matt Carr, and McKenzie Kyger, Field Archaeologists. Dawn M. Muir-Frost served as the Historian and Architectural Historian for the project and completed the historic context and architectural survey. McKenzie Kyger, Archaeological Lab Technician, assisted in the

processing of artifacts. Dawn M. Muir-Frost and Carol D. Tyrer prepared the report. The successful completion of the Phase I survey for the proposed development was made possible by the contribution of many individuals. Tim Davis with Vanasse Hangen Brustlin, Inc. (VHB) ensured that project information and maps were always available for the study. Carol D. Tyrer photographed and resources and Dawn M. Muir-Frost entered the information into the V-CRIS system.

Project Bibliographic Information:

Circa~

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1990 A Phase I Cultural Resources Survey of The Proposed Eastern Henrico Lateral Pipeline, Hanover, Chesterfield, and Henrico Counties, Virginia. College of William and Mary Center for Archaeological Research, Williamsburg, Virginia.

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1993 Phase III Archaeological Data Recovery for Mitigation of Adverse Effects to Site 44HN204 Associated with the VNG Mechanicsville to Kingsmill Lateral Pipeline, Hanover County, Virginia. College of William and Mary Center for Archaeological Research, Williamsburg, Virginia.

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1994 Phase I Archaeological Survey of the Capital Region Airport Commission Wetland Mitigation Site, New Kent County, Virginia.

1995 Phase IA Cultural Resources Assessment of the Capital Region Airport Commission Property in New Kent County, Virginia.

McLearn, Douglas C.
1987 Archaeology in Henrico Volume 5.

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1991 Phase II Archaeological Evaluations of Twenty-three Sites Along the Proposed Eastern Henrico Lateral Pipeline, Hanover, Henrico, and Chesterfield Counties, Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2005-1527
Investigator: Dawn Muir-Frost
Organization/Company: Circa~ Cultural Resource Management, LLC
Photographic Media: Digital
Survey Date: 1/15/2015
Dhr Library Report Number: HE-329

Project Staff/Notes:

Carol D. Tyrer, Dawn M. Muir-Frost
Supplemental Phase I Cultural Resources Survey, Access Road Alignment of the Varina Park Phase, Virginia Capital Trail, Henrico County, Virginia
January 2015
HE-329
Project #2005-1527

January 2015: At Circa~, Carol D. Tyrer served as Project Manager and Principal Investigator for the project. She was assisted in the field by Charlie Rutledge, Eric Mai, Nick Bresin, and Matt Carr, Field Archaeologists. Dawn M. Muir-Frost served as the Historian for the project and completed the historic context. Mackenzie Kaiser, Archaeological Lab Technician, assisted in the processing of artifacts. Dawn M. Muir-Frost and Carol D. Tyrer prepared the report.

Project Bibliographic Information:

Advisory Council on Historic Preservation
1986"36 CFR Part 800: Protection of Historic Properties." Regulations of the Advisory Council on Historic Preservation Governing the Section 106 Review Process.

Brady, Ellen M.
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1990 Conserving Richmond's Battlefields.

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2011Guidelines for Conducting Historic Resources Survey in Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2005-1527
Investigator: Circa~
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 4/1/2013
Dhr Library Report Number: Report on the Nation's Civil War Battlefields

Project Staff/Notes:

April 2013: In the fall of 2010, Cultural Resources, Inc. (CRI) conducted a Phase I cultural resources survey of the Varina portion of the Capital Bike Trail in Henrico and Charles City counties, Virginia. In April 2013, Atkins determined that four areas of the trail were not feasible and engineered re-routes in those areas. Atkins contracted Circa~ Cultural Resources Management, L.L.C. (Circa~) to conduct a Phase I cultural resources survey on the additional alignments. The purpose of this additional Phase I cultural resources survey was to identify and record all historic resources within the proposed alignment area prior to construction of the trails. This survey resulted in the identification of four isolated finds, two previously identified archaeological sites, no new archaeological sites, 15 previously identified architectural sites, and no new architectural resources within the project areas. One of these realignments falls within several Civil War battlefields, including this one. Carol D. Tyrer with Circa~ photographed the resource and Dawn M. Muir-Frost with Circa~ entered the updated information into the DSS system.

Project Bibliographic Information:

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013Addendum to A Cultural Resources Survey of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, A Cultural Resources Survey of the Northern Alignment of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, and A Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia

Name: Civil War Sites Advisory Commission
DHR CRM Report Number: Report on the Nation's Civil War Battlefields
Record Type: Book
Bibliographic Notes: Includes 3 books - Report, Volume I: Appendices, and Volume II: Battle Summaries

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: DHR Staff: Potentially Eligible

DHR ID: 043-5072
Staff Name: ABPP
Event Date: 1/24/2007
Staff Comment

Preliminary survey data from American Battlefield Protection Program (ABPP) indicates that this historic Civil War battlefield is likely eligible for listing in the National Register of Historic Places and likely deserving of future preservation efforts. This survey information should be reassessed during future Section 106/NEPA compliance reviews.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: CWSAC - VA078
Investigator: CWSAC
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 1/1/1993
Dhr Library Report Number: Report on the Nation's Civil War Battlefields

Project Staff/Notes:

Civil War Sites Advisory Commission Survey Form - no photos submitted - not dated or signed, but surveys occurred during the period between 1991 and 1993.

Project Bibliographic Information:

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013Addendum to A Cultural Resources Survey of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, A Cultural Resources Survey of the Northern Alignment of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, and A Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia

Name: Civil War Sites Advisory Commission
DHR CRM Report Number: Report on the Nation's Civil War Battlefields
Record Type: Book
Bibliographic Notes: Includes 3 books - Report, Volume I: Appendices, and Volume II: Battle Summaries

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Bibliographic Information

Bibliography:

Advisory Council on Historic Preservation
1986“36 CFR Part 800: Protection of Historic Properties.” Regulations of the Advisory Council on Historic Preservation Governing the Section 106 Review Process.

Brady, Ellen M.
2013Supplemental Archaeological Survey of Sites 44HE1164 and 44HE1165 and Archaeological Survey of Redesigned Segments of the Varina Park Phase Within Dorey Park, Addendum to A Cultural Resources Survey of the Varina Park Phase of Virginia Capital Trail, Henrico County, Virginia.

Civil War Sites Advisory Commission.
2009Update to the Civil War Sites Advisory Commission Report on the Nations’ Civil War Battlefields.

Department of the Interior, National Park Service
1983Archaeology and Historic Preservation; Secretary of the Interior’s Standards and Guidelines. Federal Register 48:44716-44762.

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Leithoff, Aimee J., Sandra DeChard, and Ellen M. Brady
2013A Cultural Resources Survey of the Varina Park Phase of the Virginia Capital Trail, Henrico County, Virginia.

National Park Service
1990National Register of Historic Places Bulletin 15: How to Apply the National Register of Historic Places Criteria for Evaluation.

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Natural Resources Conservation Service
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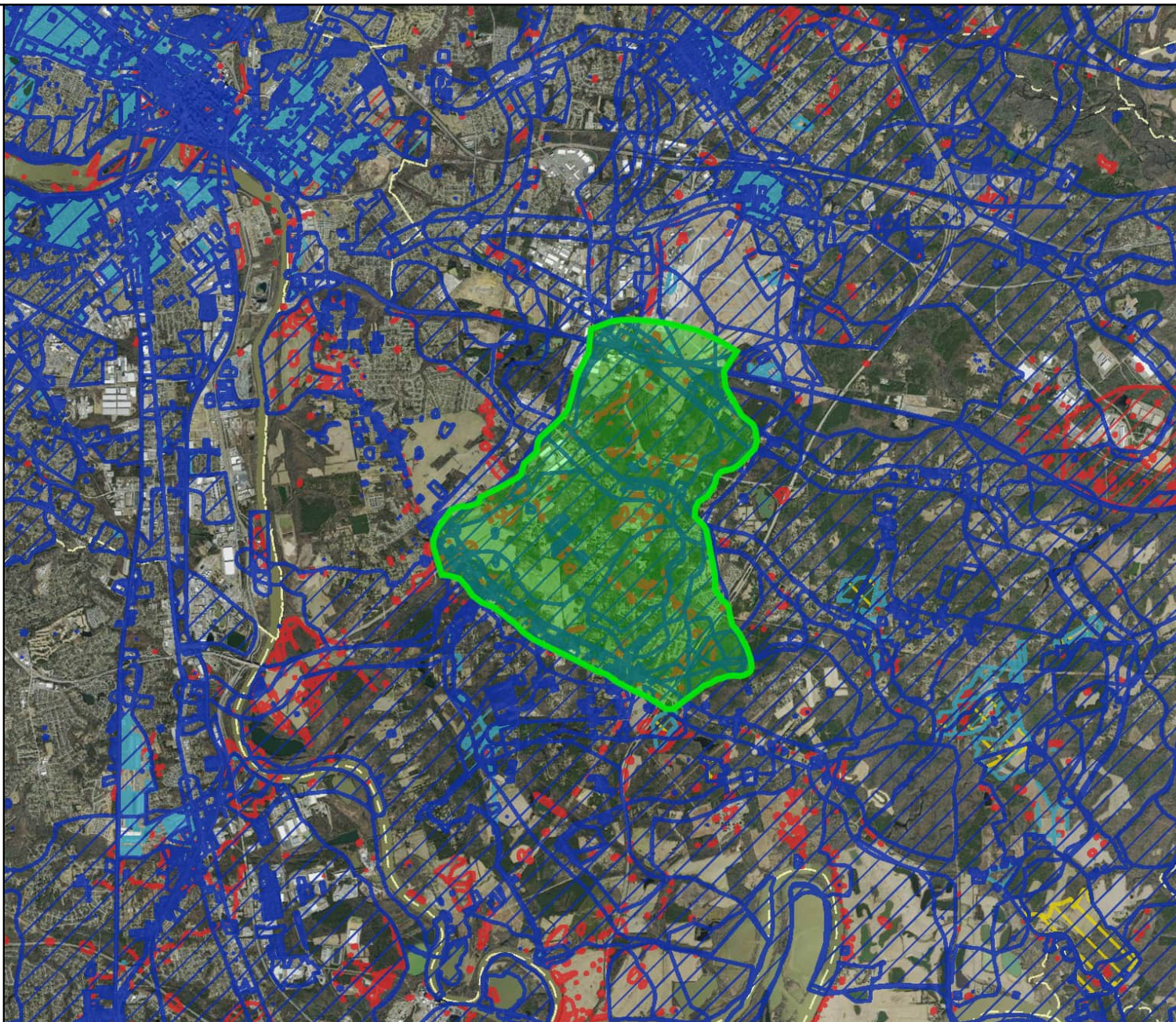
Property Notes:

Name: Mike Andrus
Title: Historian
Company 1: National Park Service
City: Richmond
State: Virginia
Phone 1: 804-226-1981
Ext: 0000
Surveyor Notes: Richmond National Battlefield Park
Owner Relationship: Informant

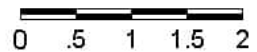


Legend

-  Architecture Resources
-  Individual Historic District Properties
-  Archaeological Resources
-  DHR Easements
-  County Boundaries



Miles



1:144,448 / 1"=2 Miles

Title: Architecture Labels

Date: 11/17/2023

DISCLAIMER: Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions. The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites: Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Property Information

Property Names

Name Explanation	Name
Historic	Fair Oaks & Darbytown Road Battlefield

Property Evaluation Status

DHR Staff: Potentially Eligible

Property Addresses

Current - Williamsburg Road Route 60
Alternate - Darbytown Road
Alternate - Charles City Road

County/Independent City(s):	Henrico (County)
Incorporated Town(s):	Highland Springs
Zip Code(s):	23075, 23150, 23223, 23231, 23250
Magisterial District(s):	No Data
Tax Parcel(s):	No Data
USGS Quad(s):	DREWRY'S BLUFF, DUTCH GAP, SEVEN PINES

Additional Property Information

Architecture Setting: Suburban

Acreage: No Data

Site Description:

1993: The site is located between Charles City and Darbytown Road from approximately 2 miles east along Darbytown Road, then northwest, west, and southwest from a point (area) where Darbytown intersects with Monahan Road and Britton Road. Except for the Confederate trench line west of Dorrey Park, the area is developed with a mix of residential homes and light industry.

The Fair Oaks Williamsburg Road) area, just west of Seven Pines, along Route 60 (north of the airport), is entirely gone. Heavy residential, commercial and light industrial development is observed.

April 2013: This survey included 15 trail alignments that total 25,500 feet along Route 5 from Fourmile Creek to Kimages Road. These areas included cut and fill areas on both sides of Route 5. No secondary resources were noted within the areas surveyed at this time.

The area surveyed at this time included two realignments of the Capital Bike Trail. The Fourmile Creek project corridor is approximately 4,170 feet long, and is located on the northern side of Route 5, just west of the intersection of Kingsland Road and Route 5. Roughly 1/2 of the project area is an open grassy area and the remaining section is wooded. A utility right-of-way covers a portion of the area. The Pearces Creek project corridor (near I-895) is approximately 720 feet long, and is located on the north side of Route 5 near Pearces Creek Lane. The southern end of the alignment begins just north of Battlefield Park Road and the alignment continues roughly 720 feet to the north where it terminates at a gravel access road to a structure. The majority of the project area is an open grassy field. No secondary resources were noted within the areas surveyed at this time.

September 2014: This survey included approximately 89 acres in the northwestern quadrant of the intersection of Buffin Road and Kingsland Road. No secondary resources were noted within the area surveyed at this time.

July 2017: This survey included approximately approximately 17.69 acres located on the eastern side of Dorey Park Road. The Area of Potential Effect (APE) for archaeological and architectural resources is the approximately 17.69-acre project corridor. No secondary resources were noted within the area surveyed.

June 2018: The survey area encompasses approximately 581.50 acres, is bordered by a power line easement to the south, Reedy Branch to the north, Varina Road to the west, and rural residential lands to the east. The Area of Potential Effect (APE) for architectural resources is the project area footprint and a 1/2-mile radius from the project area boundaries. No secondary resources were noted within the area surveyed.

February 2019: The area surveyed at this time encompasses approximately 20 acres, and is bordered to the south by South Airport Drive, to the north by the Highland Springs High School, to the east by the Shoppers Value strip mall, and to the west by a residential development. No secondary resources were noted within this area.

September 2022: Only a small portion of the battlefield just northwest of the intersection of Airport Drive and Pocahontas Parkway is located within the survey area and subject to evaluation as part of this effort. The landscape of the portion of battlefield in the survey area is generally flat with broad, gentle landforms bordering a shallow drainage. The roads that border the survey area, Airport Drive and Pocahontas Parkway, have been built up on graded berms. Other than the roads and some scattered commercial and residential development situated along roads further away, this portion of the battlefield is generally undeveloped and wooded. Several lines of Civil War-era earthworks and defenses are located within the portion of the battlefield in the survey area, including a short segment of breastworks in the southeast corner near the road intersection, a line of rifle pits that extends through the central portion of the area in a generally southwest-northeast configuration, and another short segment of breastworks in the extreme northwestern corner.

Surveyor Assessment:

Start Year: 1864

End Year: 1864
Date Source: Site Visit
Type: Historical Event

1993: In combination with moves against the Boydton Plank Road in Petersburg, Major General Benjamin Butler attacked the Richmond defenses along Darbytown Road with the X Corps. The XVIII Corps marched north to Fair Oaks where it was soundly repulsed by Field's Confederate division. Confederate forces counterattacked, taking some 600 prisoners. The Richmond defenses remained intact. Of Grant's offenses north of the James River, this was repulsed most easily.

April 2013: VDHR #043-5073 is identified as the circa 1864 Fair Oaks and Darbytown Road Battlefield. As noted on the American Battlefield Protection Program (ABPP) map, the alignments surveyed at this time fall within this battlefield. During the course of the Phase I survey, no Civil War related artifacts were found within this corridor. The project as proposed would only add a trail corridor to the battlefield. Although little development exists along Route 5, development has occurred in and around the battlefield boundaries altering the battlefield landscape from its appearance in the 1860s. Therefore, Circa~ recommends no further survey work for this resource within the project area.

April 2013: VDHR #043-5073 is identified as the circa 1864 Fair Oaks and Darbytown Road Battlefield. As noted on the ABPP map, the Fourmile Creek and Peaces Creek corridor falls within this battlefield. During the course of the Phase I survey, no Civil War related artifacts were found within these corridors. The project as proposed would only add a trail corridor to the battlefield. Although little development exists along Route 5, development has occurred in and around the battlefield boundaries altering the battlefield landscape from its appearance in the 1860s. Therefore, Circa~ recommends no further survey work for this resource within the project area.

September 2014: Site 043-5073, the Fair Oaks and Darbytown Road Battlefield, was recommended potentially eligible for the National Register of Historic Places. However, no Civil War resources were identified within the project area and no remains of troop movements shown on Civil War era maps were found during the course of the survey. In addition, 20th century residences line Buffin Road and Kingsland Road and the surrounding roads thus altering the battlefield landscape from its appearance in the 1860s. Taking this into account, the project should not adversely affect the battlefield, the battlefield landscape, or the battlefield viewshed. Therefore, Circa~ recommends no further architectural survey work for this resource within the project area.

July 2017: Site 043-5073 is identified as the circa 1864 Fair Oaks and Darbytown Road Battlefield that represents part of the Richmond Petersburg campaign. The battlefield was determined potentially eligible for listing on the National Register of Historic Places. However, no Civil War resources were identified within the project corridor. The project as proposed would remain close to the existing road and would only create a pedestrian trail with no further above ground infrastructure. In addition, the 20th century park development has been constructed within the battlefield boundaries, thus altering the battlefield landscape from its appearance in the 1860s. Taking this into account, while the project area proposed will add a pedestrian trail to the battlefield, it should not adversely affect the battlefield, the battlefield landscape, or the battlefield viewshed. Therefore, Circa~ recommends no further survey work for this resource within the project area.

June 2018: Site 043-5073 is identified as the circa 1864 Fair Oaks and Darbytown Road Battlefield that represents part of the Richmond Petersburg campaign. The battlefield was determined potentially eligible for listing on the National Register of Historic Places. However, no Civil War resources were identified within the project corridor. The project as proposed would add infrastructure to the south of the battlefield, but not directly within the battlefield boundaries. Further, development has occurred within the battlefield boundaries including 20th century residential development, park development, and the construction of new roads and interstates, thus altering the battlefield landscape from its appearance in the 1860s. Taking this into account, while the project area proposed should not adversely affect the battlefield, the battlefield landscape, or the battlefield viewshed. Therefore, Circa~ recommends no further survey work for this resource within the project area.

February 2019: Site 043-5073 is identified as the circa 1864 Fair Oaks and Darbytown Road Battlefield that represents part of the Richmond Petersburg campaign. The battlefield was determined potentially eligible for listing on the National Register of Historic Places. No Civil War resources were identified within the project area during the course of this survey. The project as proposed would construct a new school within the battlefield boundaries. However, an existing school is located just to the west of the site. In addition, the 20th century residential, commercial, and educational development has been constructed within the battlefield boundaries, thus altering the battlefield landscape from its appearance in the 1860s. Taking this into account, while the project area proposed will add new infrastructure to the battlefield, it should not adversely affect the battlefield, the battlefield landscape, or the battlefield viewshed. Therefore, Circa~ recommends no further survey work for this resource within the project area.

September 2022: Various portion of this battlefield have been subject to survey and evaluation on multiple occasions, all of which have found that the overall limits of the battlefield are heavily fractured by modern development and intrusion. It has illustrated some archaeological potential, however, through the retention of a variety of earthwork features, other defenses, and contemporary materials, and as such, was determined potentially eligible for listing in the NRHP by the VDHR in 2015, a recommendation which several later surveys upheld, most recently in 2019. While only a portion of the battlefield is within the survey area and subject to evaluation as part of this effort, it remains mostly undeveloped with several Civil War-era earthwork features and rifle pits. As such, D+A recommends that this portion of the battlefield continue to be treated as potentially eligible for listing in the NRHP.

Surveyor Recommendation: Recommended Potentially Eligible

Ownership

Ownership Category	Ownership Entity
Private	No Data
Public - Local	No Data

Primary Resource Information

Resource Category: Defense
Resource Type: Battle Site

NR Resource Type: Site
Historic District Status: *No Data*
Date of Construction: Ca 1864
Date Source: Site Visit
Historic Time Period: Civil War (1861 - 1865)
Historic Context(s): Military/Defense
Other ID Number: *No Data*
Architectural Style: No discernible style
Form: *No Data*
Number of Stories: *No Data*
Condition: Poor
Threats to Resource: Development, Transportation Expansion
Cultural Affiliations: Euro-American

Cultural Affiliation Details:

No Data

Architectural Description:

1993: The site is located between Charles City and Darbytown Road from approximately 2 miles east along Darbytown Road, then northwest, west, and southwest from a point (area) where Darbytown intersects with Monahan Road and Britton Road. Except for the Confederate trench line west of Dorrey Park, the area is developed with a mix of residential homes and light industry.

The Fair Oaks Williamsburg Road area, just west of Seven Pines, along Route 60 (north of the airport), is entirely gone. Heavy residential, commercial and light industrial development is observed.

The current site is comprised of monuments/plaques, earthworks and trenches. The current land usage is residential, industrial and commercial.

April 2013: The areas of the battlefield surveyed at this time is located within the Atlantic Coastal Plain and is characterized by fairly-level to rolling topography, with elevations ranging from approximately nine feet to 79 feet above mean sea level (AMSL). Vegetation is mixed with agricultural fields and woods.

April 2013: The areas surveyed at this time include two realignments of the Capital Bike Trail. The Fourmile Creek project corridor is located on the northern side of Route 5, just west of the intersection of Kingsland Road and Route 5.

This project area is located within the Atlantic Coastal Plain and is characterized by fairly level topography, with a high knoll in the center and eastward and southward slopes with elevations ranging from approximately 65 feet above mean sea level (AMSL) on the central portion falling to 45 feet AMSL on either end. Roughly 1/2 of the project area is an open grassy area and the remaining section is wooded. A utility right-of-way covers a portion of the area. The site can be accessed via Route 5.

The Pearces Creek project corridor (near I-895) is located on the north side of Route 5 near Pearces Creek Lane. The southern end of the alignment begins just north of Battlefield Park Road and the alignment continues roughly 720 feet to the north where it terminates at a gravel access road to a structure. This project area is located within the Atlantic Coastal Plain and is characterized by fairly level topography, with a southward slope and elevations ranging from approximately 150 feet AMSL on the southern end to 154 feet AMSL on the northern end. The majority of the project area is an open grassy field. The site can be accessed via Route 5.

September 2014: This survey included approximately 89 acres in the northwestern quadrant of the intersection of Buffin Road and Kingsland Road. This area falls within the southern portion of the study area and partially within the area determined potentially eligible for the National Register of Historic Places. This area is located within the upper Atlantic Coastal Plain and is characterized by fairly level topography, with elevations ranging from approximately 77 feet to 110 feet above mean sea level (AMSL). The majority of the project area is in an overgrown agricultural field with a fringe of woods in the center of the field around the house site. An above ground electrical utility easement runs east to west across the tract. Another underground utility runs north to south across the middle of the tract.

July 2017: The portion of the battlefield surveyed at this time lies within the Atlantic Coastal Plain physiographic region. The project corridor consists of a fairly-level upland plain with the northern terminus of the proposed trail at approximately 138 feet above mean sea level (AMSL) and the southern portion of the trail at approximately 134 feet AMSL. The southern portion of the project corridor extends through a former borrow pit that has been backfilled and improved for use as open parkland. The northern and central portion of the project corridor extends through the center of a park in fields and lawn, with some forested areas with mixed hardwoods.

June 2018: The portion of the battlefield surveyed at this time lies within the Atlantic Coastal Plain physiographic region. Generally, the area is a gently-rolling upland with wide, ancient fluvial terraces along the lower part of the James River. Historically the project area consisted of an upland ridge between Ready Branch and Roundabout Creek. Since the mid-20th century, the project area was used for a sand and gravel mining operation. Historic elevations across the tract range from 110 feet above mean sea level (AMSL) to 140 feet AMSL, with current elevations ranging from 95 feet AMSL to 131 feet AMSL. The site can be accessed via Strath Road and Varina Road. The portion of the battlefield surveyed at this time contains a mix of open fields and 20th century residential housing. No Civil War related resources were found within the area surveyed.

February 2019: The project area surveyed at this time lies within the Atlantic Coastal Plain and is characterized by varied topography, with elevations ranging from approximately 25 feet to 120 feet above mean sea level (AMSL). The property is forested with a large wetland area located in the center of the tract. A road runs from South Airport Road north to the back of the fields behind the school. The site can be accessed via Osborn Turnpike. Because the project area falls within four Civil War battlefields, Circa~ completed a metal-detecting survey of the project area. Circa~ staff did not notice any previous metal-detecting activities from relic hunters in the area. There was numerous trash noted along the edge of South Airport Road and the first transect for the metal detecting was offset from the road and ditch by 30 feet. The metal-detecting survey recorded 16 hits and 26 artifacts. The artifacts included three iron pin flags, one stainless steel lug nut, three wire nails, four aluminum soda cans, 12 beer cans, and three aluminum pop tops. None of the artifacts date to the Civil War period.

September 2022: Only a small portion of the battlefield just northwest of the intersection of Airport Drive and Pocahontas Parkway is located within the survey area and subject to inspection and evaluation as part of this effort. This consists of a small area in the central portion of the battlefield located at the intersection of Airport Drive and Pocahontas Parkway. The portion of the battlefield within the survey area consists of an undeveloped wooded parcel that is bounded by additional undeveloped landscape to the north and west, and Airport Drive and Pocahontas Parkway to the east and south. Within the wooded area are several Civil War-era earthwork features and defenses that were likely used during the battle as this area is situated centrally within the battle "Core Area" as delineated by the ABPP.

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Anna White
Organization/Company: Dutton + Associates, LLC
Photographic Media: Digital
Survey Date: 9/7/2022
Dhr Library Report Number: *No Data*

Project Staff/Notes:

Survey and data entry performed by D+A architectural history staff.

Project Bibliographic Information:

D+A. Phase I Cultural Resource Survey of the Airport Drive Project Area. October 2022.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: DHR Staff: Potentially Eligible

DHR ID: 043-5073
Staff Name: Roger Kirchen
Event Date: 2/5/2019

Staff Comment

DHR Project File No. 2018-4153

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2019-3179
Investigator: Dawn Muir
Organization/Company: Circa~ Cultural Resource Management, LLC
Photographic Media: Digital
Survey Date: 1/7/2019
Dhr Library Report Number: HE-397

Project Staff/Notes:

Circa~
Carol D. Tyrer, Dawn M. Muir
Feb 2019 Phase I Cultural Resources Survey of the Highland Springs School Site, Henrico County, Virginia.
DHR Report No. HE-397
DHR Project No. 2019-3179

February 2019: In December 2018, Circa~ Cultural Resource Management, LLC (Circa~) conducted a Phase I cultural resources survey of the Highland Springs School site in Henrico County, Virginia. The project area, which encompasses approximately 20 acres, is bordered to the south by South Airport Drive, to the north by the Highland Springs High School, to the east by the Shoppers Value strip mall, and to the west by a residential development. The Area of Potential Effect (APE) for archaeological and architectural resources is the approximately 20-acre project area.

At Circa~, Carol D. Tyrer served as Project Manager and Principal Investigator for the project and was assisted in the field by Charlie Rutledge, Diana Johnson, Pam Wood, Shayne Spears, Michael Foley, Jake Stanley, Matt Carr, and McKenzie Kyger, Field Archaeologists. Dawn M. Muir served as the Historian and Architectural Historian for the project and completed the historic context and architectural survey. Simone Sattler and Skye Hughes completed the graphics. McKenzie Kyger, Archaeological Lab Technician, assisted in the processing of artifacts. Carol D. Tyrer and Dawn M. Muir prepared the report. The successful completion of the Phase I survey for the proposed development was made possible by the contribution of many individuals. Brian Breissing with the Timmons Group ensured that project information and maps were always available for the study. In addition, Carol D. Tyrer photographed the resources and Dawn M. Muir entered the information in to the VDHR VCRIS system.

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Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2018-4153
Investigator: Dawn Muir
Organization/Company: Circa~ Cultural Resource Management, LLC
Photographic Media: Digital
Survey Date: 5/8/2018
Dhr Library Report Number: HE-396

Project Staff/Notes:

June 2018: In the spring of 2018, Circa~ Cultural Resource Management, LLC (Circa~) conducted a Phase I architectural survey of the Turner Solar Site in Henrico County, Virginia. The project area, which encompasses approximately 581.50 acres, is bordered by a power line easement to the south, Reedy Branch to the north, Varina Road to the west, and rural residential lands to the east. The Area of Potential Effect (APE) for architectural resources is the project area footprint and a 1/2-mile radius from the project area boundaries. The archaeological resources identified within the project area boundaries were destroyed by the development of the tract as a quarry. No further archaeological survey work was required.

The contribution of many individuals made the successful completion of the Phase I survey for the project possible. At Circa~, Carol D. Tyrer served as Project Manager for the project and photographed the resources. Dawn M. Muir, Architectural Historian, completed the historic context and architectural survey. Dawn M. Muir and Carol D. Tyrer prepared the report. At the Timmons Group (Timmons) Rick Thomas and Laura Major provided information and maps for the survey. Dawn M. Muir and Skye Hughes entered the information into the VDHR V-CRIS system.

Project Bibliographic Information:

Circa~
2018 Phase I Architectural Survey of Turner Solar Site, Henrico County, Virginia.
HE-396

Advisory Council on Historic Preservation
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United States Army Corps of Engineers
1864Henrico, Co., Virginia, with additions showing the defensive lines and works of Richmond.

Virginia Department of Historic Resources
2017 Guidelines for Conducting Historic Resources Survey in Virginia.

**Surveyor's NR Criteria
Recommendations:**

A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Dawn Muir-Frost
Organization/Company: Circa~ Cultural Resource Management, LLC
Photographic Media: Digital
Survey Date: 5/15/2017
Dhr Library Report Number: *No Data*

Project Staff/Notes:

July 2017: In May 2017, Circa~ Cultural Resource Management, LLC (Circa~) conducted a Phase I cultural resources survey of the Dorey Park pedestrian trail in Henrico County, Virginia. The project area, which encompasses approximately 17.69 acres, is located on the eastern side of Dorey Park Road. The Area of Potential Effect (APE) for archaeological and architectural resources is the approximately 17.69-acre project corridor.

At Circa~, Carol D. Tyrer served as Project Manager and Principal Investigator for the project and was assisted in the field by Charlie Rutledge, Eric Mai, Matt Carr, and McKenzie Kyger, Field Archaeologists. Dawn M. Muir-Frost served as the Historian and Architectural Historian for the project and completed the historic context and architectural survey. McKenzie Kyger, Archaeological Lab Technician, assisted in the processing of artifacts. Dawn M. Muir-Frost and Carol D. Tyrer prepared the report. The successful completion of the Phase I survey for the proposed development was made possible by the contribution of many individuals. Tim Davis with Vanasse Hangen Brustlin, Inc. (VHB) ensured that project information and maps were always available for the study. Carol D. Tyrer photographed and resources and Dawn M. Muir-Frost entered the information into the V-CRIS system.

Project Bibliographic Information:

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1992 Cavaliers and Pioneers: Abstracts of Virginia Land Patents and Grants, Vol. 1: 1623-1666.
- Pullins, Steven C., and Joseph Schuldenrein
1993 Phase III Archaeological Data Recovery for Mitigation of Adverse Effects to Site 44HN203 Associated with the VNG Mechanicsville to Kingsmill Lateral Pipeline, Hanover County, Virginia.
- Rutman, Darret B., and Anita H. Rutman
1984 A Place in Time: Middlesex County, Virginia, 1650-1750.
- Salmon, John S.
2001 The Official Virginia Civil War Battlefield Guide.
- Smith, John
1606 Virginia / discovered and discribed
- Sommers, Richard
2014 The Battle of First Deep Bottom. Available at <http://www.civilwar.org/battlefields/first-deep-bottom>
- Turner, E. Randolph, III and Antony Opperman
1995 "Searching for Virginia Company Period Sites: An Assessment of Surviving Archaeological Manifestations of Powhatan-English Interactions, A.D. 1607-1624." Draft manuscript, Virginia Department of Historic Resources.
- United States Army Corps of Engineers
1864 Henrico, Co., Virginia, with additions showing the defensive lines and works of Richmond.
- United States Geological Survey
1894 7.5' Bermuda Hundred Quadrangle.
- 1938 7.5' Dutch Gap Quadrangle.
- 1952 7.5' Dutch Gap Quadrangle.
- 1969 7.5' Dutch Gap Quadrangle.
- 1987 7.5' Dutch Gap Quadrangle.
- Virginia Department of Historic Resources
2011 Guidelines for Conducting Historic Resources Survey in Virginia.
- William and Mary Center for Archaeological Research
1991 Phase II Archaeological Evaluations of Twenty-three Sites Along the Proposed Eastern Henrico Lateral Pipeline, Hanover, Henrico, and Chesterfield Counties, Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: DHR Staff: Potentially Eligible

DHR ID: 043-5073
Staff Name: Marc Holma
Event Date: 1/12/2015
Staff Comment:
VDHR File # 2014-1303

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2014-1303
Investigator: Dawn Muir-Frost
Organization/Company: Circa~ Cultural Resource Management, LLC
Photographic Media: Digital
Survey Date: 9/2/2014
Dhr Library Report Number: HE-379

Project Staff/Notes:

DHR Project No. 2014-1303
DHR Report No. HE-379
Carol D. Tyrer, Dawn M. Muir-Frost
Phase I Cultural Resources Survey of Kingsland Green Subdivision, Henrico County, Virginia - March 2015
Circa~ Cultural Resource Management, LLC

September 2014: In the summer of 2014, Circa~ Cultural Resource Management, LLC (Circa~) conducted a Phase I cultural resources survey of the Kingsland Green Subdivision in Henrico County, Virginia (Figure 1). The project area, which encompasses approximately 89 acres, is located in an overgrown agricultural field and is bordered by Buffin Road and undeveloped land to the north, Kingsland Road to the south, Undeveloped land to the west, and Buffin Road to the east. The Area of Potential Effect (APE) for archaeological resources and architectural resources is approximately 60 developable acres within the overall 89-acre tract prior to the development of the tract.

At Circa~, Carol D. Tyrer served as Project Manager and Principal Investigator for the project and was assisted in the field by Charlie Rutledge, Eric Mai, Matt Carr, and Cameron Crowell-Schoch, Field Archaeologists. Dawn M. Muir-Frost, Registered Professional Archaeologist (RPA), served as the Historian and Architectural Historian for the project and completed the historic context and architectural survey. Mackenzie Caldwell, Archaeological Lab Technician, assisted in the processing of artifacts. Dawn M. Muir-Frost and Carol D. Tyrer prepared the report.

Because the area fell within several Civil War battlefields, Circa conducted a metal-detecting survey of the area in addition to shovel testing. Circa~ staff did not notice any previous metal-detecting activities from relic hunters in the project area. Using Fisher Model #1266-XB Deep Search and Mine-Wolf Deep Search metal detectors, Circa~ archaeologists slowly walked along a 50-foot grid overlapping from south to north and from west to east. As the archaeologists walked along the grid line, they slowly swung the head of the metal detector perpendicular with each transect being walked. Each time the metal detector alerted the archaeologist to the presence of a ground surface or sub-ground surface metallic object, a non-metallic pin flag was placed on the suspect location. After total transect completion, each suspect area and the ground surface immediately surrounding the suspect area were again metal detected for additional hits. Following the completion of this procedure, each suspect area was excavated using a round shovel and/or trowel and all soils were screened through ¼-inch hardware cloth until artifacts were recovered. All excavated soils and all areas surrounding the excavation were continually surveyed using the metal detector until the unit registered no alerts as to the presence of metallic artifacts at which point, at that location, the metal detector survey was concluded. All artifacts were removed from the field, and modern artifacts discarded at the office.

Project Bibliographic Information:

Advisory Council on Historic Preservation
1986“36 CFR Part 800 – Protection of Historic Properties (incorporating amendments effective August 5, 2004)” Regulations of the Advisory Council on Historic Preservation Governing the Section 106 Review Process.

Anonymous
1894Battle of Chaffin's Farm, Sept. 29th 1864: topography of 1894: roads, houses, trees, etc. of 1864 from Campbell and Chambliss maps: positions and routes assumed from descriptions in official records.

Blanton, Dennis B.
1992Phase II Archaeological Evaluations of Twenty-three Sites along the Proposed Eastern Henrico Lateral Pipeline, Hanover, Chesterfield and Henrico Counties, Virginia. William and Mary Center for Archaeological Research, Williamsburg, Virginia.

Blanton, Dennis B., and Don Linebaugh
1991“Eastern Henrico Lateral Pipeline.” Virginia Archaeologist 8(2).

Boye, Herman
1825A map of the state of Virginia, constructed in conformity to law from the late surveys authorized by the legislature and other original and authentic documents.

Campbell, A. H.
1864Map of the vicinity of Richmond and part of the Peninsula.

Carr, Lois Green, and Lorena S. Walsh
1994“Changing Lifestyles and Consumer Behavior in the Colonial Chesapeake,” in Cary Carson, Ronald Hoffman, and Peter J. Albert (eds.),

Of Consuming Interests: The Style of Life in the Eighteenth Century.

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2009Update to the Civil War Sites Advisory Commission Report on the Nations' Civil War Battlefields.

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Fry, Joshua and Peter Jefferson

1751A map of the most inhabited part of Virginia containing the whole province of Maryland with part of Pensilvania, New Jersey and North Carolina.

Henrico County

No date Deed, wills, inventories, surveyors records, plat books, tax assessors books, land tax records, personal property tax records.

Herrmann, Augustine

1670Virginia and Maryland in 1670.

Hughes, William C.

1865Hughes topographical military map of Richmond and Petersburg [sic] cities with adjacent country in perspective showing the rebel fortifications

Hunter, Robert B. Jr., and Dennis B. Blanton

1990A Phase I Cultural Resources Survey of The Proposed Eastern Henrico Lateral Pipeline, Hanover, Chesterfield, and Henrico Counties, Virginia. College of William and Mary Center for Archaeological Research, Williamsburg, Virginia.

Jones, Joe B., and Dennis B. Blanton

1993Phase III Archaeological Data Recovery for Mitigation of Adverse Effects to Site 44HN204 Associated with the VNG Mechanicsville to Kingsmill Lateral Pipeline, Hanover County, Virginia. College of William and Mary Center for Archaeological Research, Williamsburg, Virginia.

Kaplan, Barbara Beigun

1993Land and Heritage in the Virginia Tidewater: A History of King and Queen County.

Kulikoff, Allan

1986Tobacco and Slaves: The Development of Southern Cultures in the Chesapeake, 1680-1800.

Manarin, Louis H., and Clifford Dowdey

1984The History of Henrico County.

McAvoy, Joseph M.

1974"A Probable Paleo-Indian Site in Hanover County, Virginia." Quarterly Bulletin Archeological Society of Virginia 29(2).

McDonald, Bradley, and Martha McCartney

1994Phase I Archaeological Survey of the Capital Region Airport Commission Wetland Mitigation Site, New Kent County, Virginia.

1995Phase IA Cultural Resources Assessment of the Capital Region Airport Commission Property in New Kent County, Virginia.

McLearn, Douglas C.

1987Archaeology in Henrico Volume 5.

1999aPhase I Archaeological Survey of Proposed and Potential Wetlands Mitigation Areas on Capital Region Airport Commission Property in New Kent County, Virginia.

1999bPhase II Archaeological Significance Evaluation of 44NK189, 44NK199, and 44NK201 Associated with Potential Wetlands Mitigation Areas on Capital Region Airport Commission Property in New Kent County, Virginia.

McLearn, Douglas C., and L. Daniel Mouer

1989Middle Woodland II Typology and Chronology in the Lower James River Valley of Virginia. Paper presented at the Middle Atlantic Archaeological Conference, Rehoboth Beach, Delaware.

Michler, N.

1867Bermuda Hundred. 1864-1865.

Mouer, L. Daniel

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1986bArchaeology in Henrico Volume 3.

1986cArchaeology in Henrico Volume 4.

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Mouer, L. Daniel, Douglas C. McLearn and Martha W. McCartney

1989Archaeology in Henrico Volume 6.

Mouer, L. Daniel, Robert R. Hunter, Elizabeth G. Johnson, Laurence W. Lindberg, and John Saunders

1980 Archaeology in Henrico.

Mouer, L. Daniel, William C. Johnson, and Frederic W. Gleach
1985Richmond Metropolitan Area Archeological Survey. Virginia Commonwealth University.

National Park Service
1990National Register of Historic Places Bulletin 15: How to Apply the National Register of Historic Places Criteria for Evaluation.
1990 Conserving Richmond's Battlefields.

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1992Cavaliers and Pioneers: Abstracts of Virginia Land Patents and Grants, Vol. 1: 1623-1666.

Pullins, Steven C., and Joseph Schuldenrein
1993Phase III Archaeological Data Recovery for Mitigation of Adverse Effects to Site 44HN203 Associated with the VNG Mechanicsville to Kingsmill Lateral Pipeline, Hanover County, Virginia.

Rutman, Darret B., and Anita H. Rutman
1984A Place in Time: Middlesex County, Virginia, 1650-1750.

Salmon, John S.
2001The Official Virginia Civil War Battlefield Guide.

Smith, John
1606Virginia / discovered and discribed

Turner, E. Randolph, III and Antony Opperman
1995"Searching for Virginia Company Period Sites: An Assessment of Surviving Archaeological Manifestations of Powhatan-English Interactions, A.D. 1607-1624." Draft manuscript, Virginia Department of Historic Resources.

United States Army Corps of Engineers
1864Henrico, Co., Virginia, with additions showing the defensive lines and works of Richmond.

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1860Census Data. Available at <http://www.ancestry.com>
1860Census Data, Slave Schedules. Available at <http://www.ancestry.com>
1880Census Data. Available at <http://www.ancestry.com>
1900Census Data. Available at <http://www.ancestry.com>

Virginia Department of Historic Resources
2011Guidelines for Conducting Historic Resources Survey in Virginia.

William and Mary Center for Archaeological Research
1991Phase II Archaeological Evaluations of Twenty-three Sites Along the Proposed Eastern Henrico Lateral Pipeline, Hanover, Henrico, and Chesterfield Counties, Virginia.

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2005-1527
Investigator: Circa~
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 4/1/2013
Dhr Library Report Number: Report on the Nation's Civil War Battlefields
Project Staff/Notes:

April 2013: In March 2013, Atkins and the Virginia Department of Transportation (VDOT) determined that additional portions of the Capital Bike Trail were not feasible and engineered re-routes in those areas or that the areas of cut-and-fill were not originally surveyed. Atkins contracted Circa~ to conduct a Phase I cultural resources survey on 15 additional alignments that included cut and fill areas outside the original surveyed 50-foot alignment and reroutes. These reroutes fell within this battlefield. Carol D. Tyrer with Circa~ photographed the resource and Dawn M. Muir-Frost with Circa~ entered the updated information into the DSS system.

Project Bibliographic Information:

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013Addendum to A Cultural Resources Survey of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, A Cultural Resources Survey of the Northern Alignment of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, and A Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia

Name: Civil War Sites Advisory Commission
DHR CRM Report Number: Report on the Nation's Civil War Battlefields
Record Type: Book
Bibliographic Notes: Includes 3 books - Report, Volume I: Appendices, and Volume II: Battle Summaries

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013A Supplemental Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia.

Name: Trudeau, Noah Andre
Record Type: Article
Bibliographic Notes: The Last Citadel -- Petersburg, Virginia June 1864-April 1865. map on page 219. Louisiana State University Press. 1993

Name: Faust, Patricia L.
Record Type: Book
Bibliographic Notes: Darbytown (Deep Bottom; New Market Road; Strawbetty Plains) entry on p. 204-205. Historical Times Illustrated Encyclopedia of the Civil War. New York: Harper & Row, Publishers

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2005-1527
Investigator: Circa~
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 4/1/2013
Dhr Library Report Number: Report on the Nation's Civil War Battlefields

Project Staff/Notes:

April 2013: In the fall of 2010, Cultural Resources, Inc. (CRI) conducted a Phase I cultural resources survey of the Varina portion of the Capital Bike Trail in Henrico and Charles City counties, Virginia. In April 2013, Atkins determined that four areas of the trail were not feasible and engineered re-routes in those areas. Atkins contracted Circa~ Cultural Resources Management, L.L.C. (Circa~) to conduct a Phase I cultural resources survey on the additional alignments. The purpose of this additional Phase I cultural resources survey was to identify and record all historic resources within the proposed alignment area prior to construction of the trails. This survey resulted in the identification of four isolated finds, two previously identified archaeological sites, no new archaeological sites, 15 previously identified architectural sites, and no new architectural resources within the project areas. Two of these realignments fall within several Civil War battlefields including this one. Carol D. Tyrer with Circa~ photographed the resource and Dawn M. Muir-Frost with Circa~ entered the updated information into the DSS system.

Project Bibliographic Information:

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013Addendum to A Cultural Resources Survey of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, A Cultural Resources Survey of the Northern Alignment of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, and A Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia

Name: Civil War Sites Advisory Commission
DHR CRM Report Number: Report on the Nation's Civil War Battlefields
Record Type: Book
Bibliographic Notes: Includes 3 books - Report, Volume I: Appendices, and Volume II: Battle Summaries

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013A Supplemental Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia.

Name: Trudeau, Noah Andre
Record Type: Article
Bibliographic Notes: The Last Citadel -- Petersburg, Virginia June 1864-April 1865. map on page 219. Louisiana State University Press. 1993

Name: Faust, Patricia L.
Record Type: Book
Bibliographic Notes: Darbytown (Deep Bottom; New Market Road; Strawbetty Plains) entry on p. 204-205. Historical Times Illustrated Encyclopedia of the Civil War. New York: Harper & Row, Publishers

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Event Type: DHR Staff: Potentially Eligible

DHR ID: 043-5073
Staff Name: ABPP
Event Date: 1/24/2007
Staff Comment

Preliminary survey data from American Battlefield Protection Program (ABPP) indicates that sections of this historic Civil War battlefield is likely eligible for listing in the National Register of Historic Places and likely deserving of future preservation efforts. This survey information should be reassessed during future Section 106/NEPA compliance reviews.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: CWSAC - VA080
Investigator: CWSAC
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: 1/1/1993
Dhr Library Report Number: Report on the Nation's Civil War Battlefields
Project Staff/Notes:

Civil War Sites Advisory Commission Survey Form - no photos submitted - not dated or signed, but surveys occurred during the period between 1991 and 1993.

Project Bibliographic Information:

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013Addendum to A Cultural Resources Survey of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, A Cultural Resources Survey of the Northern Alignment of the Varina Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia, and A Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia

Name: Civil War Sites Advisory Commission
DHR CRM Report Number: Report on the Nation's Civil War Battlefields
Record Type: Book
Bibliographic Notes: Includes 3 books - Report, Volume I: Appendices, and Volume II: Battle Summaries

Name: Circa~
Record Type: Report
Bibliographic Notes: 2013A Supplemental Cultural Resources Survey of the New Market Heights Phase of the Virginia Capital Trail, Henrico and Charles City Counties, Virginia.

Name: Trudeau, Noah Andre
Record Type: Article
Bibliographic Notes: The Last Citadel -- Petersburg, Virginia June 1864-April 1865. map on page 219. Louisiana State University Press. 1993

Name: Faust, Patricia L.
Record Type: Book
Bibliographic Notes: Darbytown (Deep Bottom; New Market Road; Strawbetty Plains) entry on p. 204-205. Historical Times Illustrated Encyclopedia of the Civil War. New York: Harper & Row, Publishers

Surveyor's NR Criteria Recommendations: A - Associated with Broad Patterns of History, D - Potential to Yield Important Historic and/or Pre-Historic Information

Bibliographic Information

Bibliography:

No Data

Property Notes:

Name: Edwin W. Besch
Title: Consultant
Company 1: NCSHPO
Address 1: 23232 Staley Road
City: Reston
State: Virginia
ZIP: 22091
Phone 1: 703-476-1654
Owner Relationship: Informant

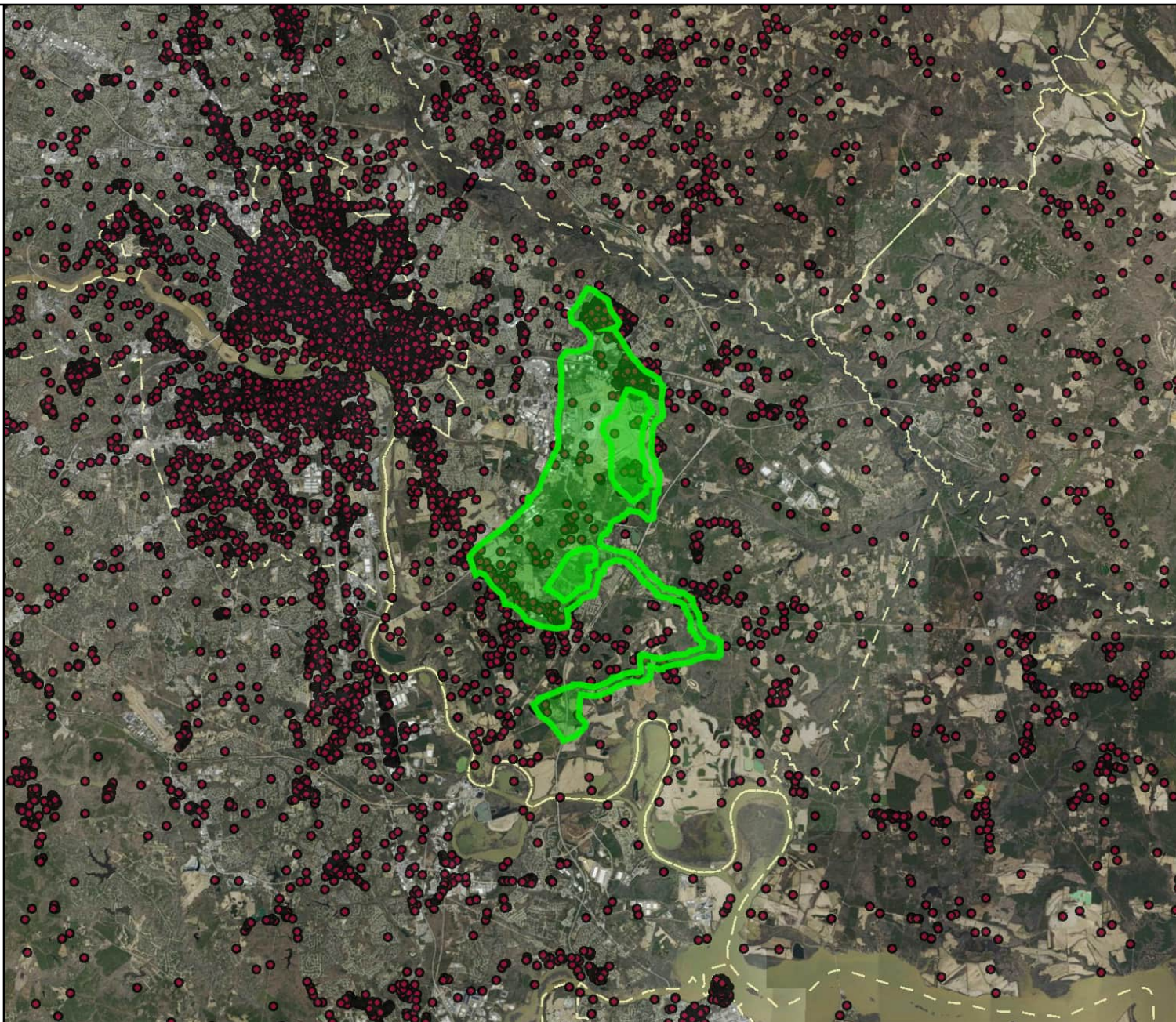
Name: Kenneth A. Bako
Title: Consultant
Company 1: NCSHPO

Address 1: P.O. Box 121
City: Catharpin
State: Virginia
ZIP: 22018
Phone 1: 703-754-9361
Owner Relationship: Informant



Legend

- Architecture Points
- Archaeology Points
- County Boundaries



Miles



1:288,895 / 1"=5 Miles

Title: Architecture Labels

Date: 11/17/2023

DISCLAIMER: Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions. The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites: Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Snapshot

Date Generated: November 17, 2023

Site Name: No Data
Site Classification: Terrestrial, open air
Year(s): 15000 B.C.E - 1606 C.E
Site Type(s): Camp, Quarry
Other DHR ID: No Data
Temporary Designation: No Data

Site Evaluation Status

Not Evaluated

Locational Information

USGS Quad: DUTCH GAP
County/Independent City: Henrico (County)
Physiographic Province: No Data
Elevation: No Data
Aspect: No Data
Drainage: No Data
Slope: No Data
Acreage: No Data
Landform: Other
Ownership Status: No Data
Government Entity Name: No Data

Site Components

Component 1

Category: No Data
Site Type: No Data
Cultural Affiliation: Native American
Cultural Affiliation Details: No Data
DHR Time Period: Pre-Contact
Start Year: -15000
End Year: 1606
Comments: No Data

Component 2

Category: Domestic
Site Type: Camp
Cultural Affiliation: No Data
Cultural Affiliation Details: No Data
DHR Time Period: No Data
Start Year: No Data
End Year: No Data
Comments: No Data

Component 3

Category: Industry/Processing/Extraction
Site Type: Quarry
Cultural Affiliation: No Data
Cultural Affiliation Details: No Data
DHR Time Period: No Data
Start Year: No Data

End Year:	No Data
Comments:	No Data

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

CRM Events

Event Type: Other

Project Staff/Notes:

Archaic as temporal removed- no diagnostics listed.

Project Review File Number: No Data
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: WMCAR
Survey Date: 3/31/1997

Survey Description:

Highly disturbed and eroded. Large cores and FCR abundant. Probably no depth.

Threats to Resource: No Data
Site Conditions: Site Condition Unknown
Survey Strategies: Surface Testing
Specimens Collected: No
Specimens Observed, Not Collected: No

Artifacts Summary and Diagnostics:

grooved quartzite axe

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: No Data
Permanent Curation Repository: No Data
Field Notes: No
Field Notes Repository: No Data
Photographic Media: No Data
Survey Reports: No Data

Survey Report Information:

"2013
Aimee Leithoff, Sandra DeChard, Ellen Brady, John Salmon
A Cultural Resources Survey of the Varina Park Phase of the Virginia Capital Trail, Henrico County, Virginia"

VCU Survey Records

Survey Report Repository: DHR, VCU
DHR Library Reference Number: HE-308
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:

No Data

Project Review File Number: No Data
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: Hunter, R., Johnson, B.
Survey Date: 3/5/1979

Survey Description:

No Data

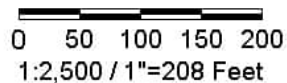
Threats to Resource:	No Data
Site Conditions:	No Data
Survey Strategies:	No Data
Specimens Collected:	No Data
Specimens Observed, Not Collected:	No Data
Artifacts Summary and Diagnostics:	
No Data	
Summary of Specimens Observed, Not Collected:	
No Data	
Current Curation Repository:	No Data
Permanent Curation Repository:	No Data
Field Notes:	No Data
Field Notes Repository:	No Data
Photographic Media:	No Data
Survey Reports:	No Data
Survey Report Information:	
No Data	
Survey Report Repository:	No Data
DHR Library Reference Number:	No Data
Significance Statement:	No Data
Surveyor's Eligibility Recommendations:	No Data
Surveyor's NR Criteria Recommendations, :	No Data
Surveyor's NR Criteria Considerations:	No Data

Legend

- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries



Feet



Title: Archaeological Resources

Date: 11/17/2023

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Snapshot

Date Generated: November 17, 2023

Site Name: No Data
Site Classification: Terrestrial, open air
Year(s): 15000 B.C.E - 1606 C.E
Site Type(s): Camp, Lithic scatter, Quarry
Other DHR ID: No Data
Temporary Designation: DR-2-O

Site Evaluation Status

Not Evaluated

Locational Information

USGS Quad: DUTCH GAP
County/Independent City: Henrico (County)
Physiographic Province: Coastal Plain
Elevation: 100
Aspect: No Data
Drainage: James River
Slope: 2 - 6
Acreage: No Data
Landform: Other, Sideslope
Ownership Status: Private
Government Entity Name: No Data

Site Components

Component 1

Category: No Data
Site Type: No Data
Cultural Affiliation: Native American
Cultural Affiliation Details: No Data
DHR Time Period: Pre-Contact
Start Year: -15000
End Year: 1606
Comments: No Data

Component 2

Category: Industry/Processing/Extraction
Site Type: Quarry
Cultural Affiliation: No Data
Cultural Affiliation Details: No Data
DHR Time Period: No Data
Start Year: No Data
End Year: No Data
Comments: No Data

Component 3

Category: Domestic
Site Type: Camp
Cultural Affiliation: No Data
Cultural Affiliation Details: No Data
DHR Time Period: No Data
Start Year: No Data

End Year: No Data
Comments: No Data

Component 4

Category: Industry/Processing/Extraction
Site Type: Lithic scatter
Cultural Affiliation: No Data
Cultural Affiliation Details: No Data
DHR Time Period: No Data
Start Year: No Data
End Year: No Data
Comments: No Data

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:

CRI 2009: Survey was conducted for sewer line and APE was limited to wetland crossings only. Wetland Crossing falls in the middle of site as previously recorded. Site was not fully investigated. Artifacts recovered were consistent with previous survey and included 14 lithic artifacts. Due to noted lack of integrity based on original survey notes in site form and current disturbances of adjacent sewer line it is recommended that there will be no adverse effect to this site.

Project Review File Number: No Data
Sponsoring Organization: Private Developer
Organization/Company: CRI (DSS)
Investigator: Leithoff, Aimee
Survey Date: 10/1/2009

Survey Description:

[1979] Extremely poor condition. Shoveling indicated low density of FCR and lcores. Threatened by construction.

CRI 2009: Testing was limited to wetland crossings within proposed sewer line corridor. Small wetland falls within middle of mapped site. Eight shovel tests were placed surrounding the wetland all were positive for cultural material. Since site was not fully investigated due to limited scope of project site dimensions and UTM's are based on DHR GIS mapping of the site. Portion of the site as previously mapped has been destroyed due to new housing development. Existing sewer line cut is adjacent to the proposed corridor. Proposed corridor has been disturbed.

Threats to Resource: Public Utility Expansion
Site Conditions: Site Condition Unknown, Unknown Portion of Site Destroyed
Survey Strategies: Subsurface Testing
Specimens Collected: Yes
Specimens Observed, Not Collected: No

Artifacts Summary and Diagnostics:

CRI 2009: 14 artifacts recovered includes 6 quartzite tested cobbles, 1 quartz FCR, 3 quartzite FCR, 2 quartzite primary flakes, and 2 quartzite shatter.

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: CRI 2009: CRI Glen Allen
Permanent Curation Repository: No Data
Field Notes: Yes
Field Notes Repository: CRI 2009: CRI Norfolk
Photographic Media: No Data
Survey Reports: Yes

Survey Report Information:

"2013
Aimee Leithoff, Sandra DeChard, Ellen Brady, John Salmon
A Cultural Resources Survey of the Varina Park Phase of the Virginia Capital Trail, Henrico County, Virginia"

CRI 2009: A PHASE I ARCHAEOLOGICAL SURVEY
OF WETLAND CROSSINGS FOR THE FOUR MILE CREEK
TRUNK SEWER LINE, HENRICO COUNTY, VIRGINIA
Leithoff, Klein, and Brady 2009

VCU Survey Records

Survey Report Repository: DHR, VCU, VDHR, CRI Glen Allen
DHR Library Reference Number: HE-308
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Event Type: Other

Project Staff/Notes:

Archaic as temporal removed- no diagnostics listed.

Project Review File Number:	No Data
Sponsoring Organization:	No Data
Organization/Company:	Unknown (DSS)
Investigator:	WMCAR
Survey Date:	3/31/1997
Survey Description:	No Data
Threats to Resource:	No Data
Site Conditions:	No Data
Survey Strategies:	No Data
Specimens Collected:	No Data
Specimens Observed, Not Collected:	No Data
Artifacts Summary and Diagnostics:	No Data
Summary of Specimens Observed, Not Collected:	No Data
Current Curation Repository:	No Data
Permanent Curation Repository:	No Data
Field Notes:	No Data
Field Notes Repository:	No Data
Photographic Media:	No Data
Survey Reports:	No Data
Survey Report Information:	No Data
Survey Report Repository:	No Data
DHR Library Reference Number:	No Data
Significance Statement:	No Data
Surveyor's Eligibility Recommendations:	No Data
Surveyor's NR Criteria Recommendations, :	No Data
Surveyor's NR Criteria Considerations:	No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:	No Data
Project Review File Number:	No Data
Sponsoring Organization:	No Data
Organization/Company:	Unknown (DSS)
Investigator:	Hunter, R., Johnson,B.
Survey Date:	3/5/1979
Survey Description:	No Data
Threats to Resource:	No Data
Site Conditions:	No Data
Survey Strategies:	No Data
Specimens Collected:	No Data
Specimens Observed, Not Collected:	No Data
Artifacts Summary and Diagnostics:	No Data
Summary of Specimens Observed, Not Collected:	No Data

Current Curation Repository:	No Data
Permanent Curation Repository:	No Data
Field Notes:	No Data
Field Notes Repository:	No Data
Photographic Media:	No Data
Survey Reports:	No Data
Survey Report Information:	
No Data	
Survey Report Repository:	No Data
DHR Library Reference Number:	No Data
Significance Statement:	No Data
Surveyor's Eligibility Recommendations:	No Data
Surveyor's NR Criteria Recommendations, :	No Data
Surveyor's NR Criteria Considerations:	No Data

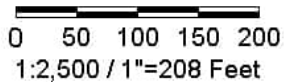


Legend

- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries



Feet



Title: Archaeological Resources

Date: 11/17/2023

DISCLAIMER: Records of the Virginia Department of Historic Resources (DHR) have been gathered over many years from a variety of sources and the representation depicted is a cumulative view of field observations over time and may not reflect current ground conditions. The map is for general information purposes and is not intended for engineering, legal or other site-specific uses. Map may contain errors and is provided "as-is". More information is available in the DHR Archives located at DHR's Richmond office.

Notice if AE sites: Locations of archaeological sites may be sensitive to the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

Snapshot

Date Generated: November 17, 2023

Site Name: No Data
Site Classification: Terrestrial, open air
Year(s): 15000 B.C.E - 1606 C.E
Site Type(s): Camp
Other DHR ID: No Data
Temporary Designation: DR-4-A

Site Evaluation Status

Not Evaluated

Locational Information

USGS Quad: DUTCH GAP
County/Independent City: Henrico (County)
Physiographic Province: No Data
Elevation: No Data
Aspect: No Data
Drainage: No Data
Slope: No Data
Acreage: No Data
Landform: Other
Ownership Status: No Data
Government Entity Name: No Data

Site Components

Component 1

Category: Domestic
Site Type: Camp
Cultural Affiliation: Native American
Cultural Affiliation Details: No Data
DHR Time Period: Pre-Contact
Start Year: -15000
End Year: 1606
Comments: No Data

Bibliographic Information

Bibliography:

No Data

Informant Data:

No Data

CRM Events

Event Type: Other

Project Staff/Notes:

Archaic as temporal removed - no diagnostics listed

Project Review File Number: No Data
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: WMCAR
Survey Date: 3/31/1997

Survey Description:

Densely wooded terrace and slope with exposed cobbles. Low density of FCR and flakes.

Threats to Resource: No Data
Site Conditions: Site Condition Unknown
Survey Strategies: Observation
Specimens Collected: No
Specimens Observed, Not Collected: No
Artifacts Summary and Diagnostics:

No Data

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: No Data
Permanent Curation Repository: No Data
Field Notes: No
Field Notes Repository: No Data
Photographic Media: No Data
Survey Reports: Yes
Survey Report Information:
VCU Survey Records
Survey Report Repository: VCU
DHR Library Reference Number: No Data
Significance Statement: No Data
Surveyor's Eligibility Recommendations: No Data
Surveyor's NR Criteria Recommendations, : No Data
Surveyor's NR Criteria Considerations: No Data

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:

No Data

Project Review File Number: No Data
Sponsoring Organization: No Data
Organization/Company: Unknown (DSS)
Investigator: Hunter, R., Johnson,B.
Survey Date: 3/5/1979

Survey Description:

No Data

Threats to Resource: No Data
Site Conditions: No Data
Survey Strategies: No Data

Specimens Collected:	No Data
Specimens Observed, Not Collected:	No Data
Artifacts Summary and Diagnostics:	
No Data	
Summary of Specimens Observed, Not Collected:	
No Data	
Current Curation Repository:	No Data
Permanent Curation Repository:	No Data
Field Notes:	No Data
Field Notes Repository:	No Data
Photographic Media:	No Data
Survey Reports:	No Data
Survey Report Information:	
No Data	
Survey Report Repository:	No Data
DHR Library Reference Number:	No Data
Significance Statement:	No Data
Surveyor's Eligibility Recommendations:	No Data
Surveyor's NR Criteria Recommendations, :	No Data
Surveyor's NR Criteria Considerations:	No Data

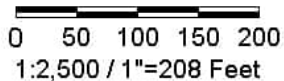


Legend

- Architecture Labels
- Individual Historic District Properties
- Archaeological Resources
- Archaeology Labels
- DHR Easements
- County Boundaries



Feet



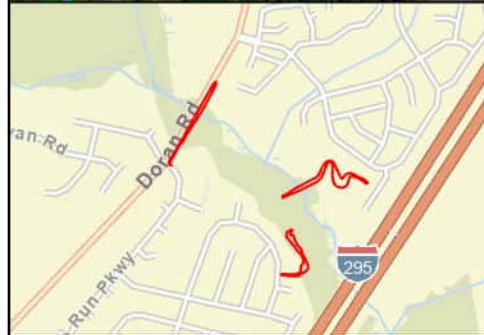
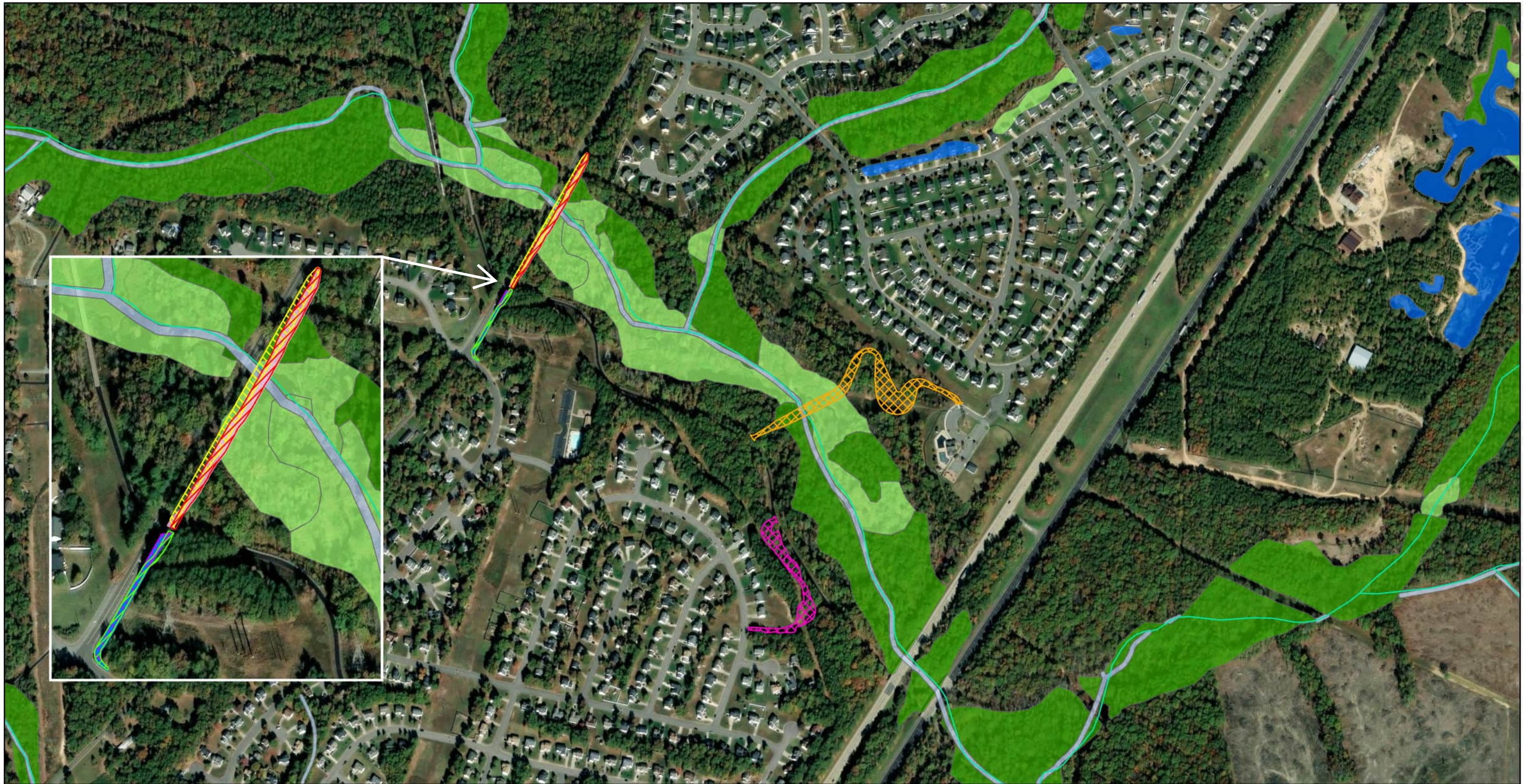
Title: Archaeological Resources

Date: 11/17/2023

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Notice if AE sites: Locations of archaeological sites may be sensitive the National Historic Preservation Act (NHPA), and the Archaeological Resources Protection Act (ARPA) and Code of Virginia §2.2-3705.7 (10). Release of precise locations may threaten archaeological sites and historic resources.

NWI Mapping



<ul style="list-style-type: none"> Alternative 1A Alternative 1B Alternative 2A Alternative 2B Alternative 3A Alternative 3B Alternative 4A Alternative 4B 	<p>— NHD Flowline</p> <p>NWI</p> <p>NWI Classification</p> <ul style="list-style-type: none"> Freshwater Emergent Wetland Freshwater Forested/Shrub Wetland Freshwater Pond Riverine
--	--

Doran Road Capital Trail Connector Alternatives
Henrico County, VA

1 inch equals 500 feet

NWI/NHD Map

Source: ESRI, NHD, NWI

April 2024

Threatened and Endangered Database Results and Mapping



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project Code: 2024-0018114
Project Name: Doran Road Capital Trail Connector Alternatives

November 20, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see <https://www.fws.gov/program/migratory-bird-permit/what-we-do>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office

6669 Short Lane

Gloucester, VA 23061-4410

(804) 693-6694

PROJECT SUMMARY

Project Code: 2024-0018114
Project Name: Doran Road Capital Trail Connector Alternatives
Project Type: Recreation - New Construction
Project Description: The purpose of the Doran Road Capital Trail Connector Path is to perform a feasibility study and prepare a conceptual design and cost estimate for adding a trail connection between the Four Mile Run and Castleton subdivisions that would also connect to the Virginia Capital Trail. Two alignment alternatives will be considered – one along the east side of Doran Road between Four Mile Run Parkway (Four Mile Run subdivision) and the sidewalk located south of Macallan Parkway (Castleton subdivision) that would be approximately 1,200 feet and one between the Four Mile Run Subdivision at 7622 King Eider Drive and the Castleton Subdivision community pool area at 6800 Kidwelly Lane that would be approximately 1,400 feet long depending on the alignment. Shapefiles uploaded collectively show all the possible areas that could be impacted, final design and implementation will be less than what is uploaded.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@37.4516657,-77.325138870294,14z>



Counties: Henrico County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [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.

MAMMALS

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

FLOWERING PLANTS

NAME	STATUS
Swamp Pink <i>Helonias bullata</i> Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4333	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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 OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act¹ and the Migratory Bird Treaty Act².

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats³, should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

-
1. The [Bald and Golden Eagle Protection Act](#) of 1940.
 2. The [Migratory Birds Treaty Act](#) of 1918.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> 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. https://ecos.fws.gov/ecp/species/1626	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 the supplemental information and specifically the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

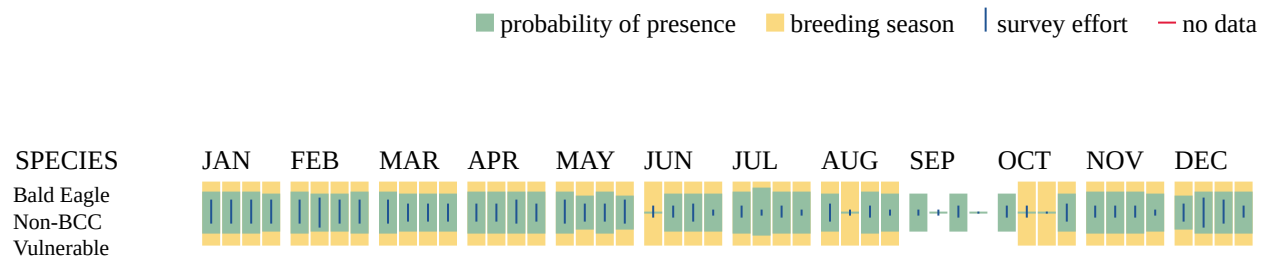
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

Vertical black lines; 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.



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-incident-take-migratory-birds>
- Nationwide conservation 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>

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats³ should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> 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. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Canada Warbler <i>Cardellina canadensis</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9643	Breeds May 20 to Aug 10
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Hudsonian Godwit <i>Limosa haemastica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9482	Breeds elsewhere
Lesser Yellowlegs <i>Tringa flavipes</i> 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

NAME	BREEDING SEASON
<p>Pectoral Sandpiper <i>Calidris melanotos</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9561</p>	Breeds elsewhere
<p>Prairie Warbler <i>Dendroica discolor</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9513</p>	Breeds May 1 to Jul 31
<p>Prothonotary Warbler <i>Protonotaria citrea</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9439</p>	Breeds Apr 1 to Jul 31
<p>Red-headed Woodpecker <i>Melanerpes erythrocephalus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9398</p>	Breeds May 10 to Sep 10
<p>Rusty Blackbird <i>Euphagus carolinus</i></p> <p>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA</p> <p>https://ecos.fws.gov/ecp/species/9478</p>	Breeds elsewhere
<p>Short-billed Dowitcher <i>Limnodromus griseus</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9480</p>	Breeds elsewhere
<p>Wood Thrush <i>Hylocichla mustelina</i></p> <p>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.</p> <p>https://ecos.fws.gov/ecp/species/9431</p>	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 the supplemental information and specifically the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

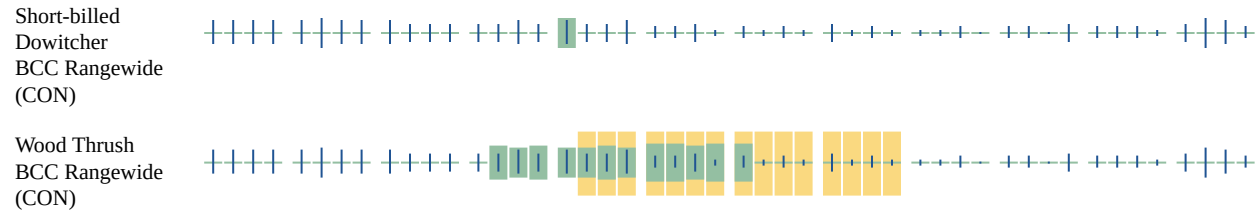
Survey Effort (|)

Vertical black lines; 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.





Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
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- Nationwide conservation 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>

IPAC USER CONTACT INFORMATION

Agency: Whitman, Requardt & Associates
Name: Daniel San Nicolas
Address: 9030 Stony Point Parkway
Address Line 2: Suite 220
City: Richmond
State: VA
Zip: 23235
Email: dsannicolas@wrallp.com
Phone: 7034742415



Virginia Department of Wildlife Resources

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Species Information

[By Name](#)

[By Land Management](#)

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VaFWIS Initial Project Assessment Report Compiled on 11/17/2023, 12:42:10 PM

Known or likely to occur within a **2 mile radius around point 37,27,10.7 -77,19,56.6**
in **087 Henrico County, VA**

[View Map of Site Location](#)

474 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 20) (18 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
050022	FEST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060017	FESE	Ia	Spiny mussel, James	Parvaspina collina		BOVA
060003	FESE	Ia	Wedgemussel, dwarf	Alasmidonta heterodon		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
060173	FTST	Ia	Pigtoe, Atlantic	Fusconaia masoni		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA
040092		Ia	Eagle, golden	Aquila chrysaetos		BOVA
060084		Ib	Pigtoe, Virginia	Lexingtonia subplana		BOVA
040052		Ila	Duck, American black	Anas rubripes		BOVA
040029		Ila	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		Ila	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040320		Ila	Warbler, cerulean	Setophaga cerulea		BOVA
040140		Ila	Woodcock, American	Scolopax minor		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
010131		IIIa	Eel, American	Anguilla rostrata	Yes	BOVA,SppObs
030068		IIIa	Turtle, woodland box	Terrapene carolina carolina	Yes	BOVA,SppObs

To view **All 474 species** [View 474](#)

*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 Wildlife 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 ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Colonial Water Bird Survey

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

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Public Holdings:

N/A

Compiled on 11/17/2023, 12:42:10 PM | #538598.0 | report#PA | searchType=R | dist= 3218 | poi= 37.27,10.7+77.19,56.6
FinalSize=64, Anadromous=0.018597, BECAR=0.016824, Bats=0.017711, Buffer=0.064059, County=0.050783, Impediments=0.015298, Int=0.093809, PublicLands=0.023867, SppObs=0.228498, TEWaters=0.019869, TierReaches=0.021225, TierTerrestrial=0.038214, Total=0.724044, Tracking_BOVA=0.165783, Trout=0.020228

VAFWIS - Department of Wildlife Resources



37,27,10.7 -77,19,56.6

is the Search Point

Submit Cancel

Refresh Browser Page

Map Click

Pan

Map Scale

In

Zoom

Out

Screen Size

Small

Size

Big

Help

Search Point

- Change to "clicked" map point
- Fixed at 37,27,10.7 -77,19,56.6

Show Position Rings

- Yes No
- 1 mile and 1/4 mile at the Search Point

Show Search Area

- Yes No
- 2 Search distance miles radius

Search Point is at map center

Base Map Choices

Topography

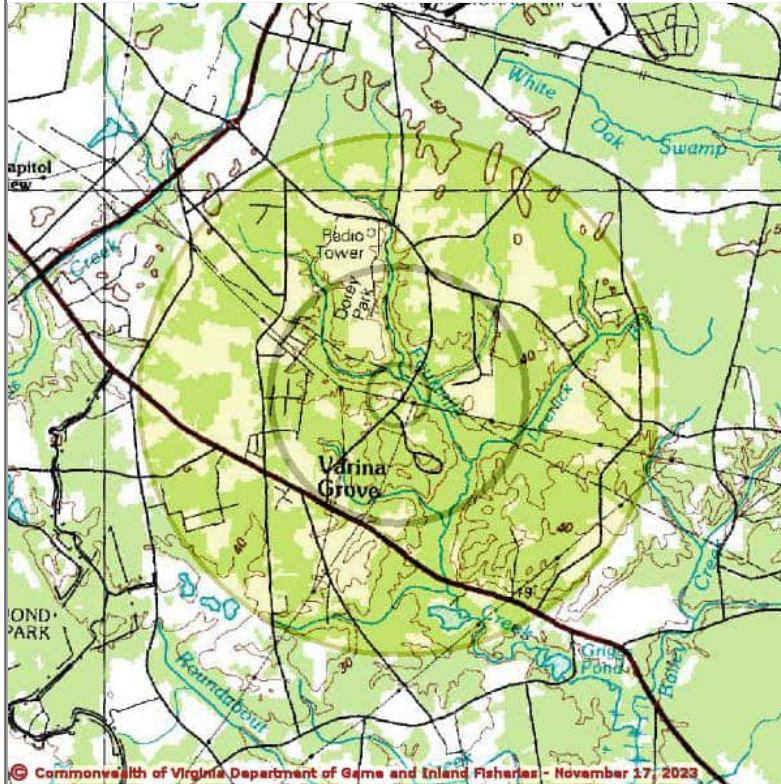
Map Overlay Choices

Current List: Position, Search

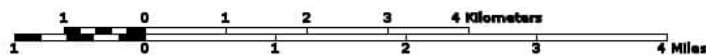
Map Overlay Legend

Position Rings 1 mile and 1/4 mile at the Search Point

2 mile radius Search Area



© Commonwealth of Virginia, Department of Game and Inland Fisheries - November 17, 2023



Point of Search 37,27,10.7 -77,19,56.6

Map Location 37,27,10.7 -77,19,56.6

- Select **Coordinate System:**
- Degrees, Minutes, Seconds Latitude - Longitude
 - Decimal Degrees Latitude - Longitude
 - Meters UTM NAD83 East North Zone
 - Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see [Microsoft terraserver-usa.com](http://Microsoft.terraserver-usa.com) for details)

Map projection is UTM Zone 18 NAD 1983 with left 288898 and top 4152478. Pixel size is 16 meters. Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixels. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+- are from the United States Department of the Interior, United States Geological Survey. Color aerial photography acquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network. Shaded topographic maps are from TOPO! ©2006 National Geographic <http://www.national.geographic.com/topo> All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.

map assembled 2023-11-17 12:53:16 (qa/qc March 21, 2016 12:20 - tn=1538614 dist=3218 I) \$poi=37.4529722 -77.3323888

Natural Heritage Resources

Your Criteria

Watershed (8 digit HUC): 02080206 - Lower James River

Subwatershed (12 digit HUC): JL04 - Fourmile Creek

Search Run: 11/16/2023 12:40:48 PM

Result Summary

Total Species returned: 2

Total Communities returned: 1

Click scientific names below to go to NatureServe report.

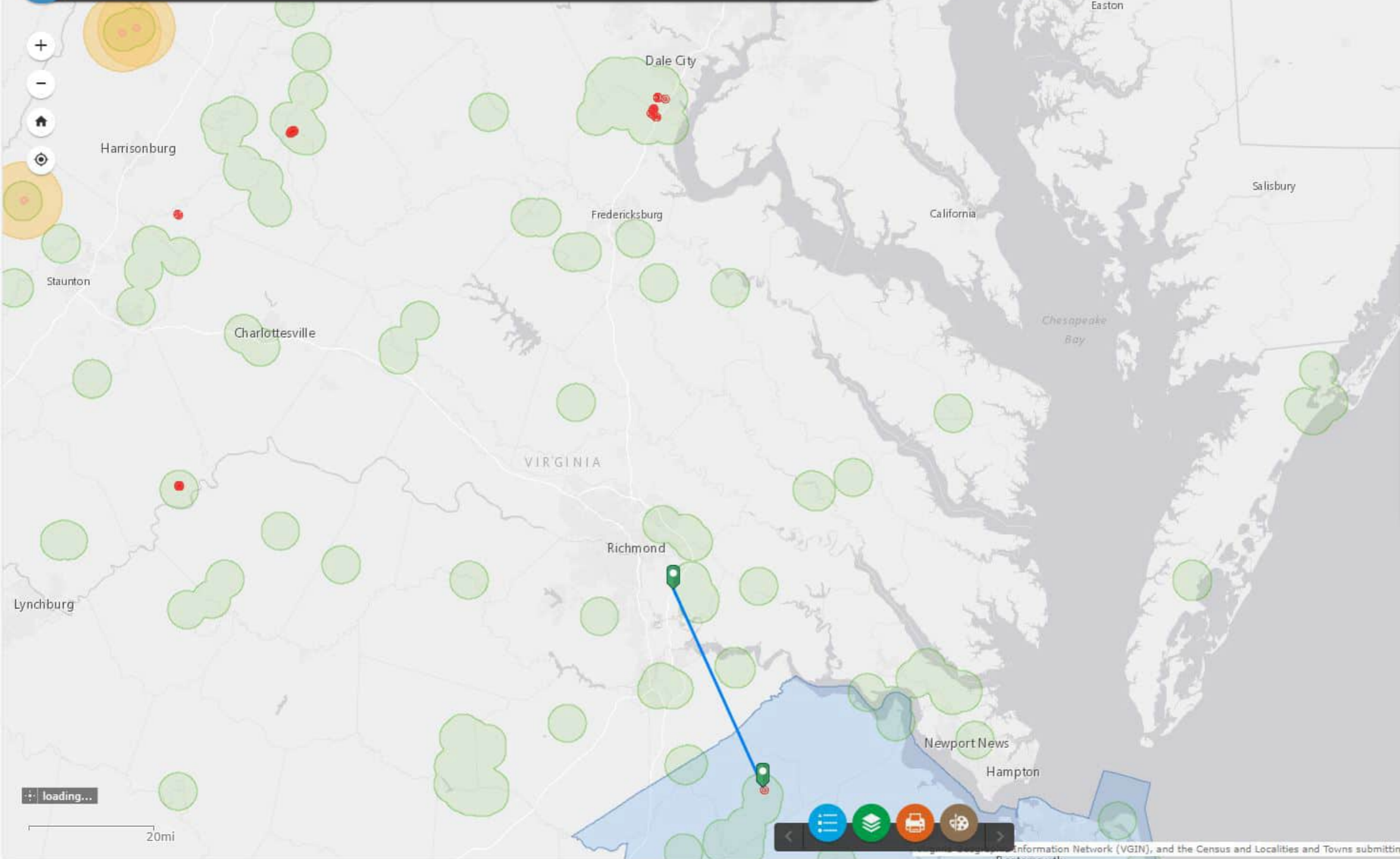
Click column headings for an explanation of species and community ranks.

Common Name/Natural Community	Scientific Name	Scientific Name Linked	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status	Statewide Occurrences	Virginia Coastal Zone
Lower James								
Fourmile Creek								
AQUATIC NATURAL COMMUNITY								
NC-Lower James	NC-Lower James	<i>NC-Lower James</i>	G2G3	S2S3	None	None	4	Y
Third Order Stream	Third Order Stream	<i>Third Order Stream</i>						
BIRDS								
Northern Harrier	Circus hudsonius	Circus hudsonius	G5	S1S2B,S3N	None	None	15	Y
FISH								
Atlantic Sturgeon	Acipenser oxyrinchus	Acipenser oxyrinchus	G3	S2	LE	LE	4	Y

Note: On-line queries provide basic information from DCR's databases at the time of the request. They are NOT to be substituted for a project review or for on-site surveys required for environmental assessments of specific project areas.

For Additional Information on locations of Natural Heritage Resources please submit an [information request](#).

To Contribute information on locations of natural heritage resources, please fill out and submit a [rare species sighting form](#).



Measurement

Miles

Measurement Result

34.5 Miles

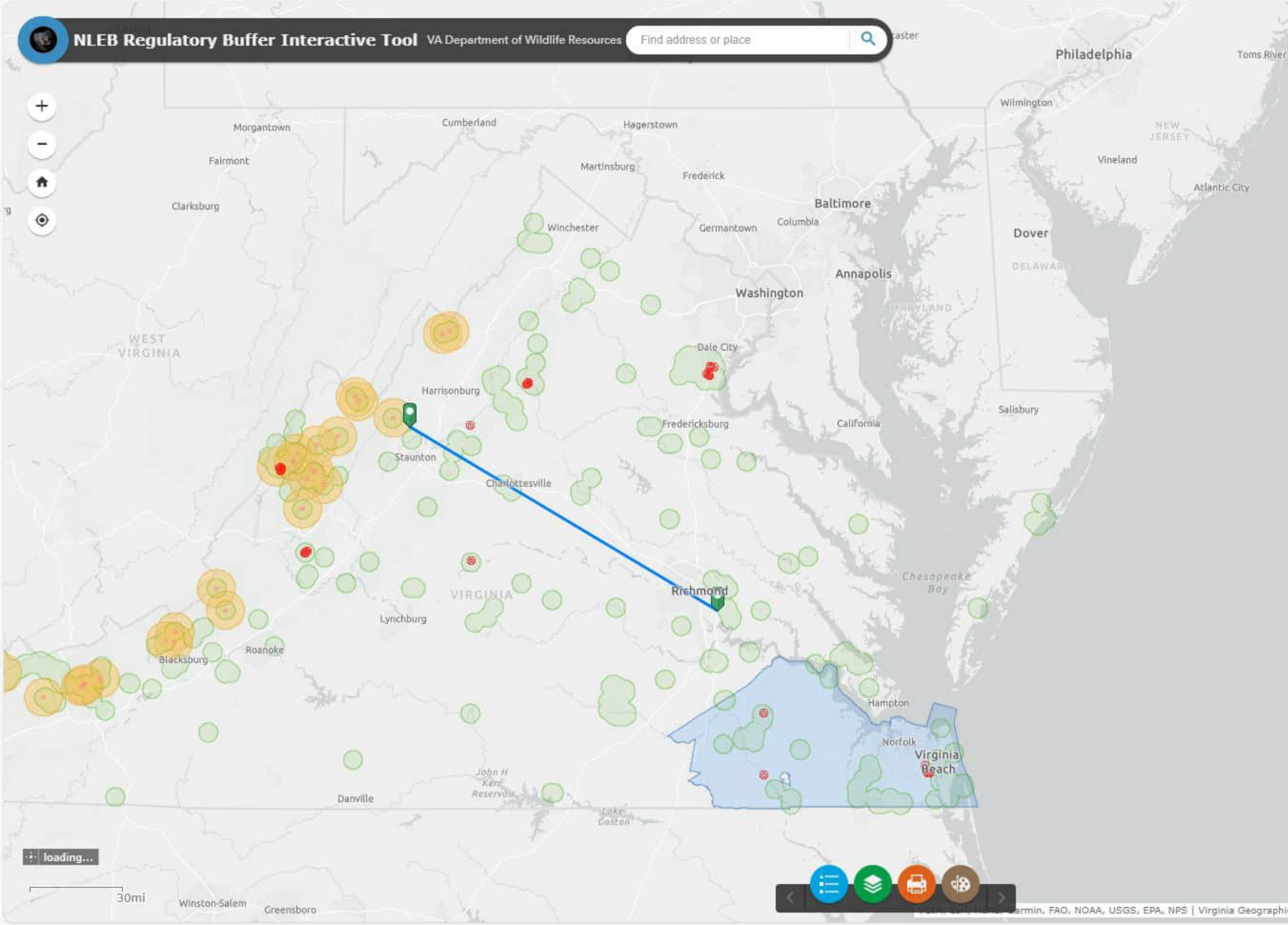
Clear

Press CTRL to enable snapping

loading...

20mi





Measurement [Close]

[Map Icon] [Measure Icon] [Copy Icon]

Miles [Dropdown]

Measurement Result

112.9 Miles

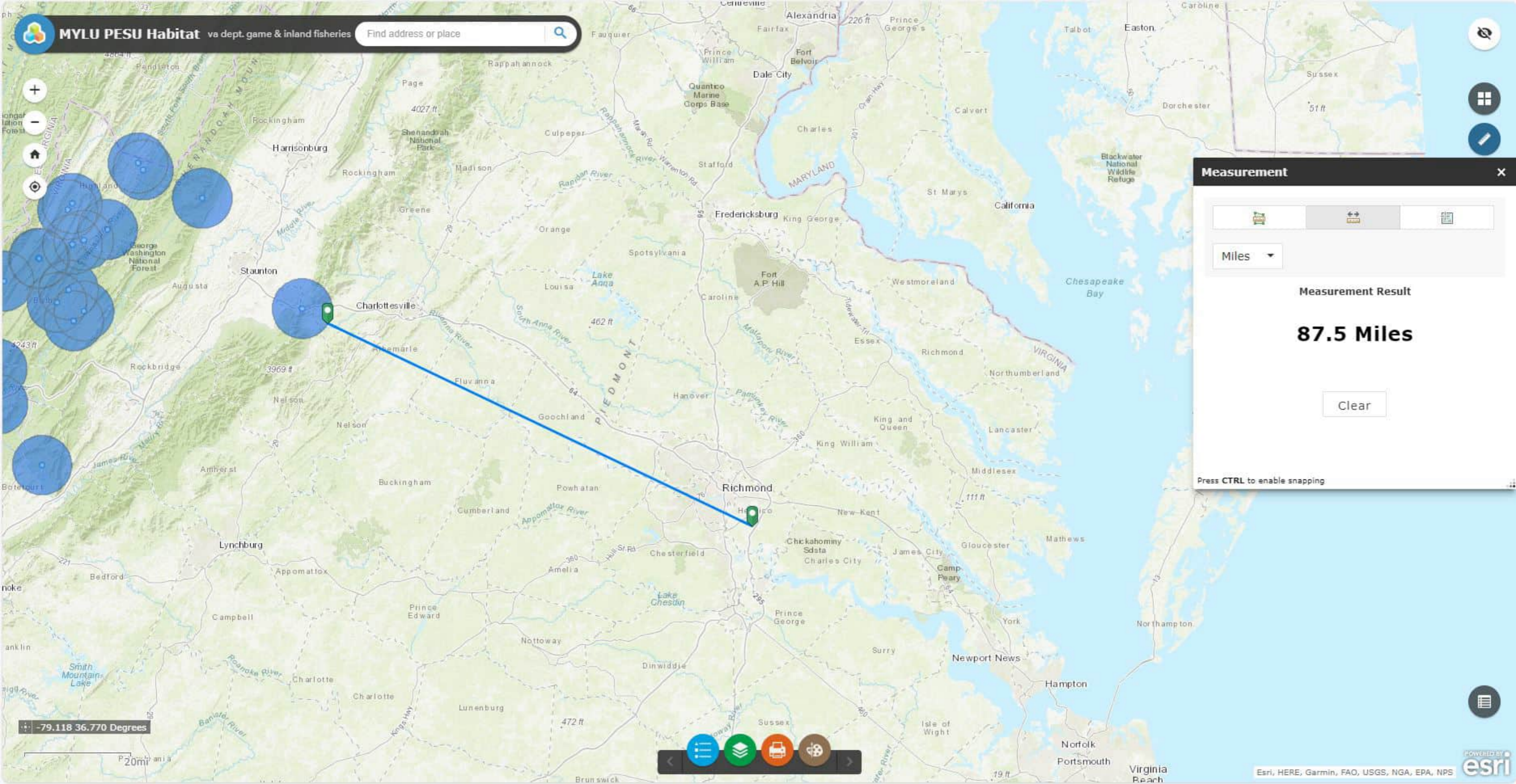
[Clear]

Press CTRL to enable snapping

loading...

30mi Winston-Salem Greensboro





Measurement

Miles

Measurement Result

87.5 Miles

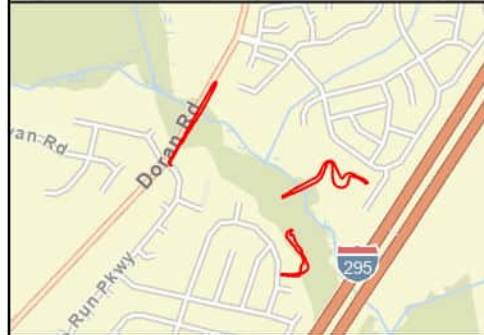
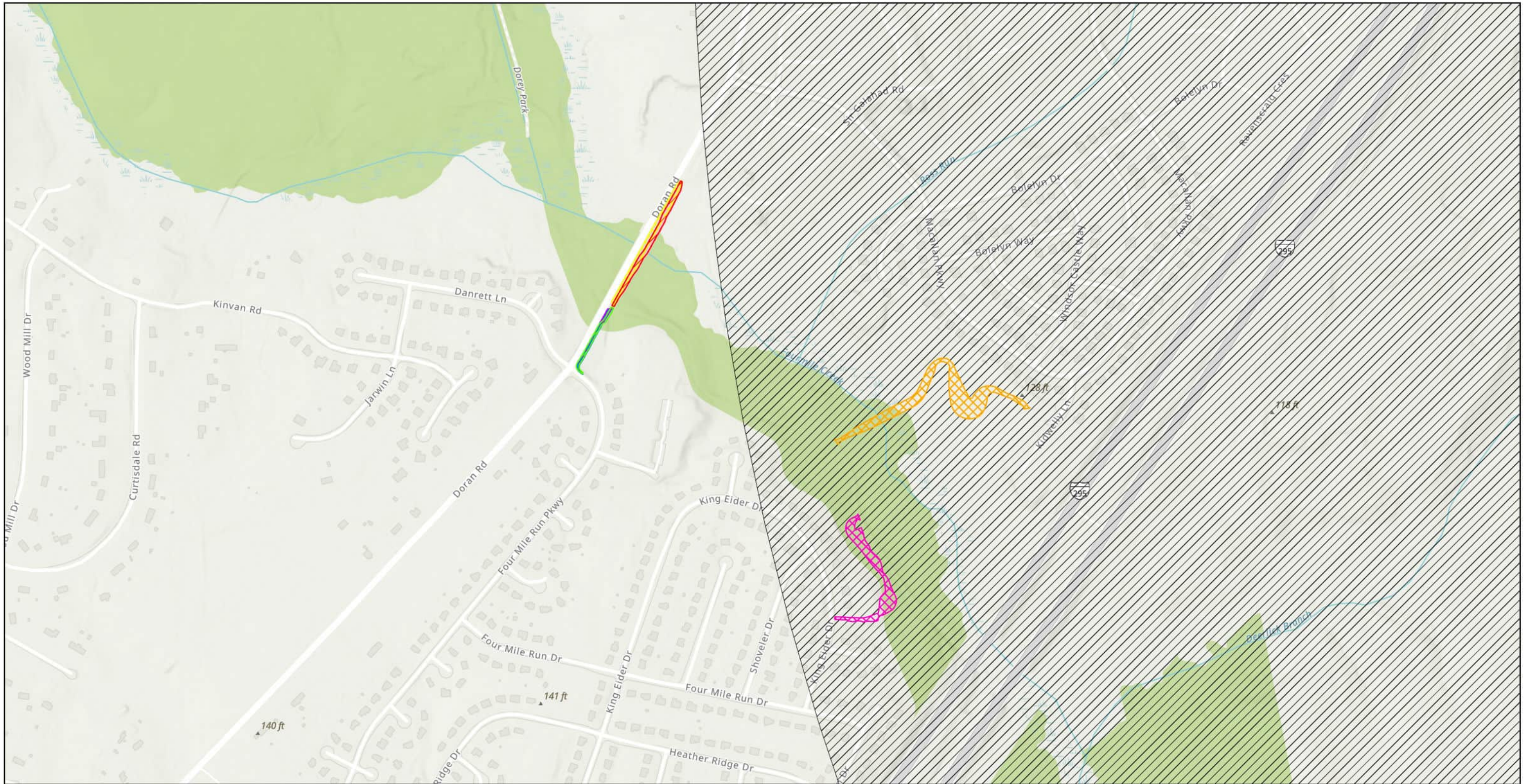
Clear

Press CTRL to enable snapping

-79.118 36.770 Degrees

20mi





- | | |
|----------------|---------------------|
| Alternative 1A | Alternative 3B |
| Alternative 1B | Alternative 4A |
| Alternative 2A | Alternative 4B |
| Alternative 2B | NLEB Capture Buffer |
| Alternative 3A | |



Doran Road Capital Trail Connector Alternatives
Henrico County, VA

1 inch equals 500 feet
0 250 500 1,000 Feet

NLEB 3-Mile Capture Buffer Map

Source: ESRI, VDWR

April 2024

Bald Eagle Mapping



CCB MAPPING PORTAL

[Help / FAQ](#)

Layers

Bald Eagle

VA Eagle Nest Locator

[Zoom to Extents](#)

Most recent data CCB has on bald eagle nest locations in Virginia. Data is largely from two annual aerial flights conducted in winter and spring of all tributaries of the lower Chesapeake Bay and other prominent bodies of water. Reported ground survey data is also included.

[More info](#)

VA Eagle Nest Buffers

Eagle Roosts

Eagle Roost Polygons

Eagle Roost Buffers

Eagle Roosts by Topoquad

Waterbirds

Shorebird Roost Registry

Colonial Waterbirds 2018

Colonial Waterbirds 2013

Chesapeake Bay Herons 2013

Colonial Waterbirds 2008

Colonial Waterbirds 2003

Osprey

OspreyWatch Nests

Chesapeake Bay Osprey Nests 1995-1996

Nightjars

Nightjar Survey Network Routes

[Toggle Draw Tools](#)

[Generate Link](#)

[Print Report](#)

[Search](#)

1 km
3000 ft



Linear Measurement

15,010 Feet

2.84 Miles

[Center on this Line](#) [Delete](#)

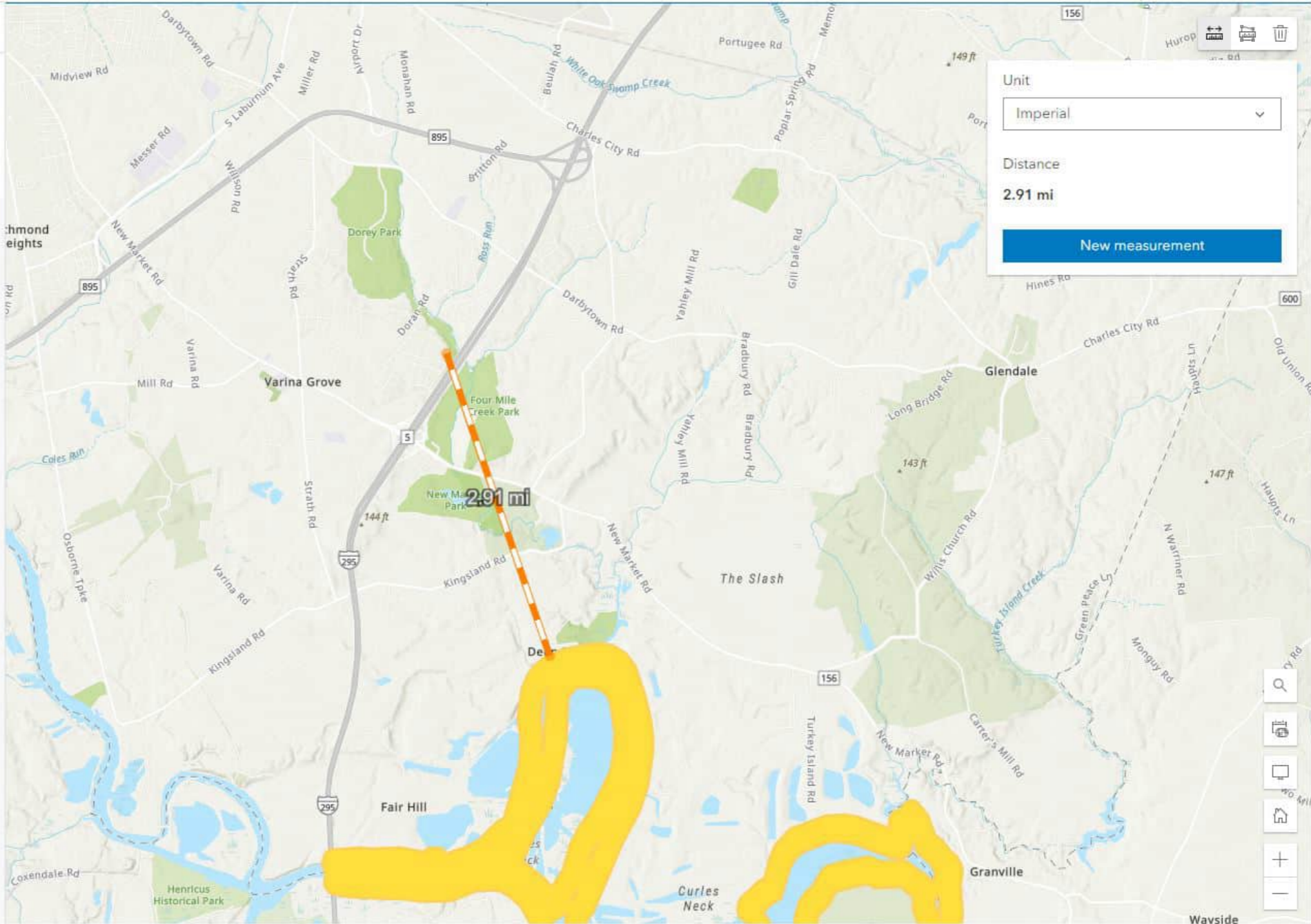
Leaflet | © OpenStreetMap contributors, CartoDB attribution

BALD EAGLE

Legend

Bald Eagle Concentration Areas - Virginia

- December 15 to March 15
- May 15 to August 31 and December 15 to March 15



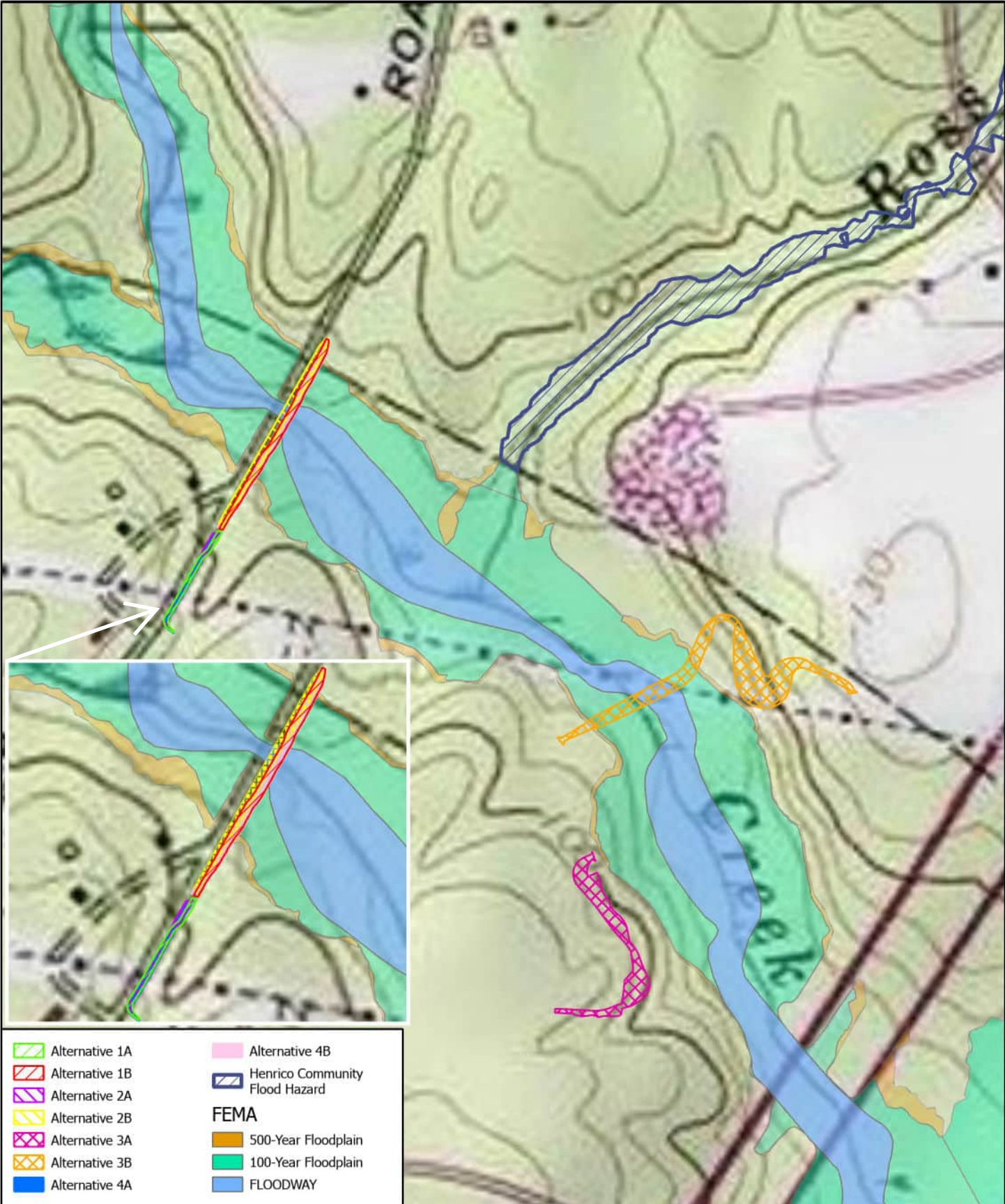
Unit
Imperial

Distance
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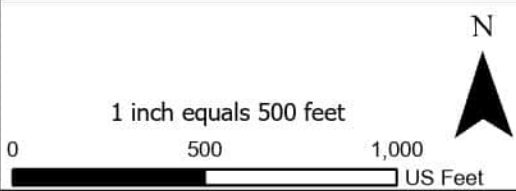
[New measurement](#)

- Properties
- Styles
- Filter
- Effects
- Pop-ups
- Fields
- Labels
- Configure charts
- Analysis
- Add sketch
- Map tools

CBPA Mapping



Alternative 1A	Alternative 4B
Alternative 1B	Henrico Community Flood Hazard
Alternative 2A	FEMA
Alternative 2B	500-Year Floodplain
Alternative 3A	100-Year Floodplain
Alternative 3B	FLOODWAY
Alternative 4A	



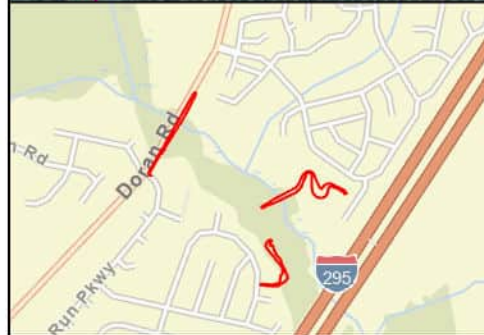
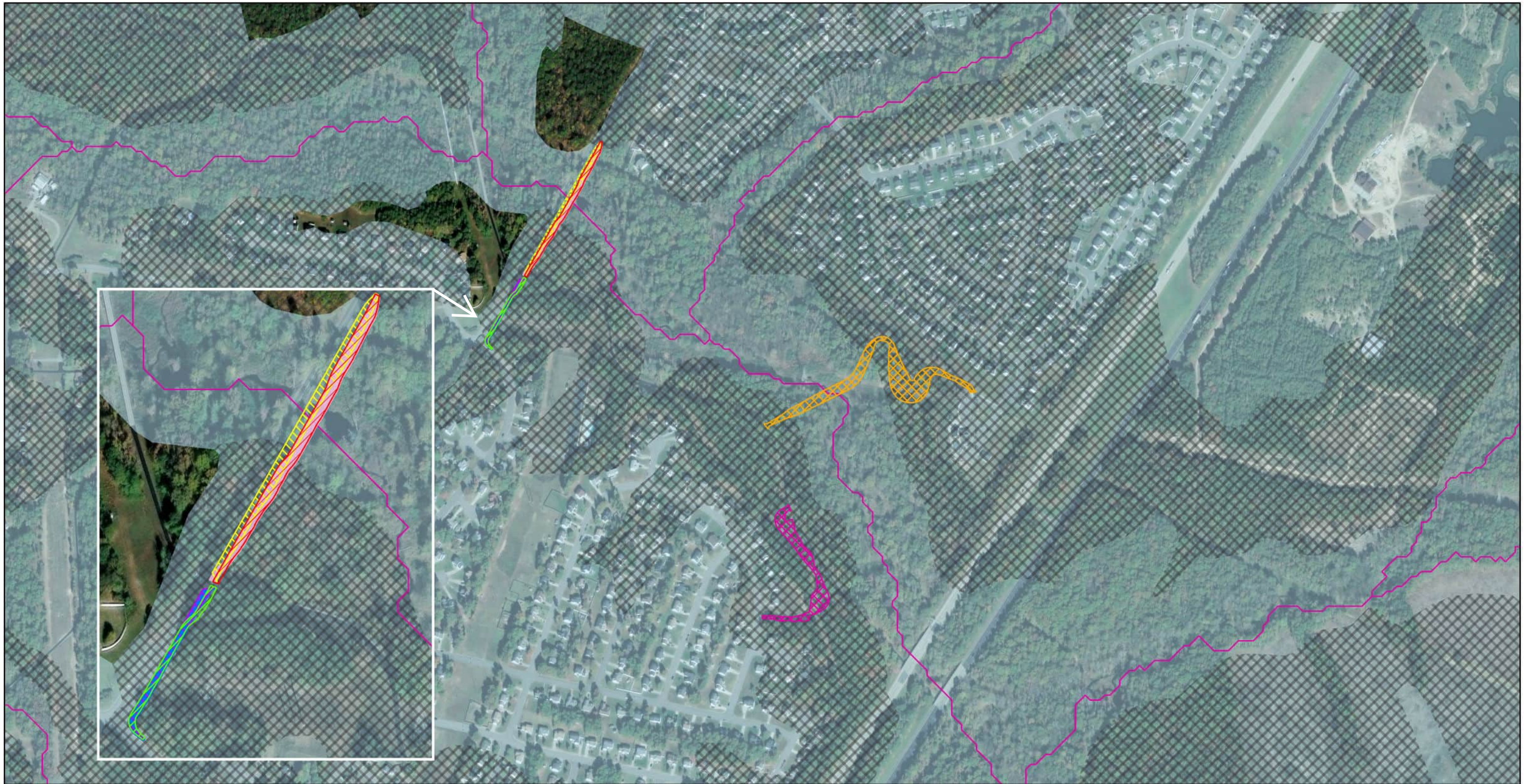


Doran Road Capital Trail
Connector Alternatives
Henrico County, VA

Source: ESRI, FEMA, Henrico County, USGS

**USGS Topography/
FEMA Floodplain/
Henrico Flood Data**

Quadrangle: Dutch Gap, VA
April 2024



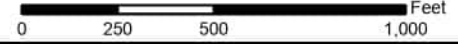
- Alternative 1A
- Alternative 1B
- Alternative 2A
- Alternative 2B
- Alternative 3A
- Alternative 3B
- Alternative 4A
- Alternative 4B
- Streams with Drainage over 100 acres
- Highly Erodible Soils
- Permeable Soils



Doran Road Capital Trail Connector Alternatives

Henrico County, VA

1 inch equals 500 feet



Henrico County Soils/Streams Data Map

Source: ESRI, Henrico County

April 2024

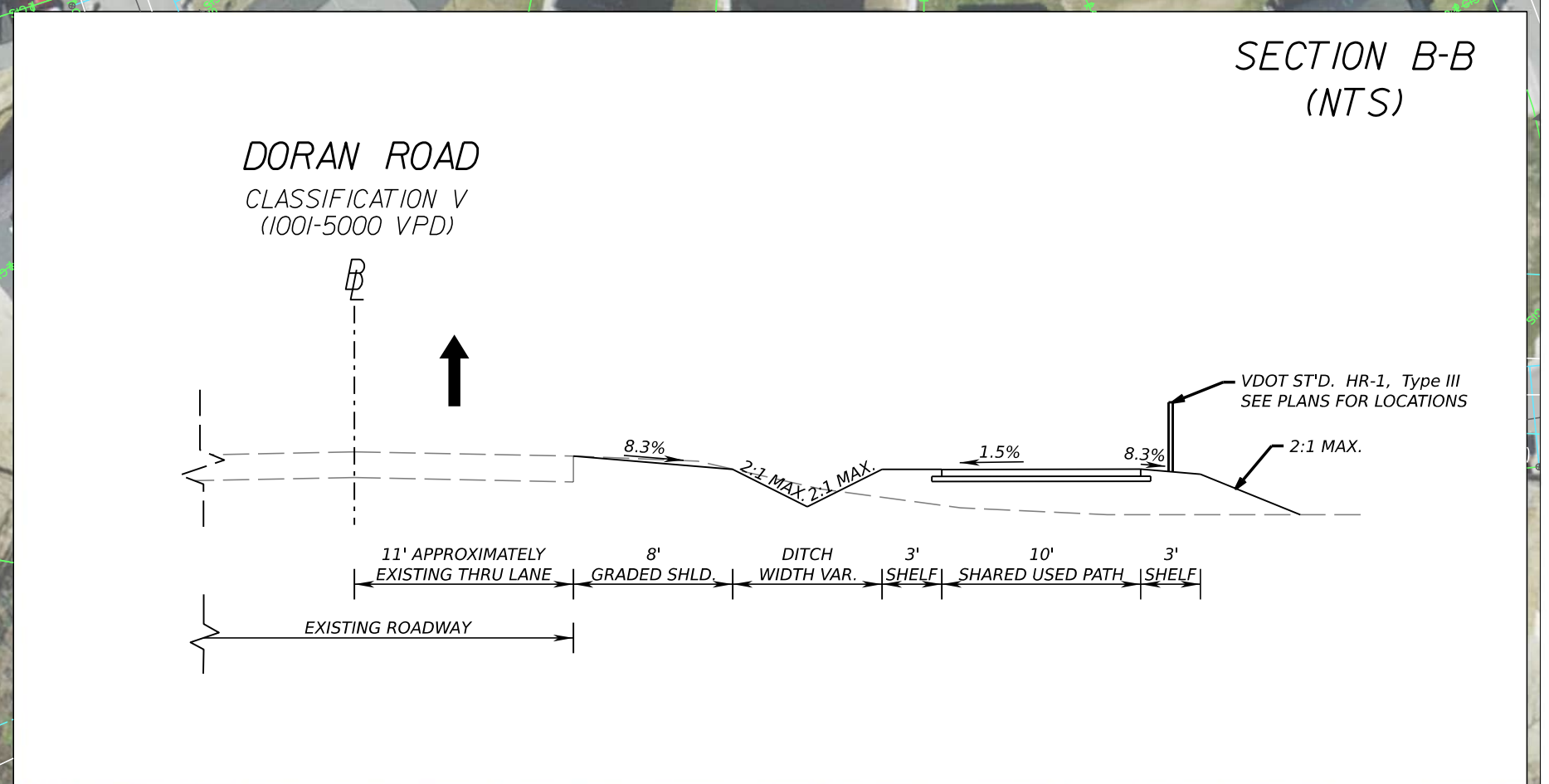
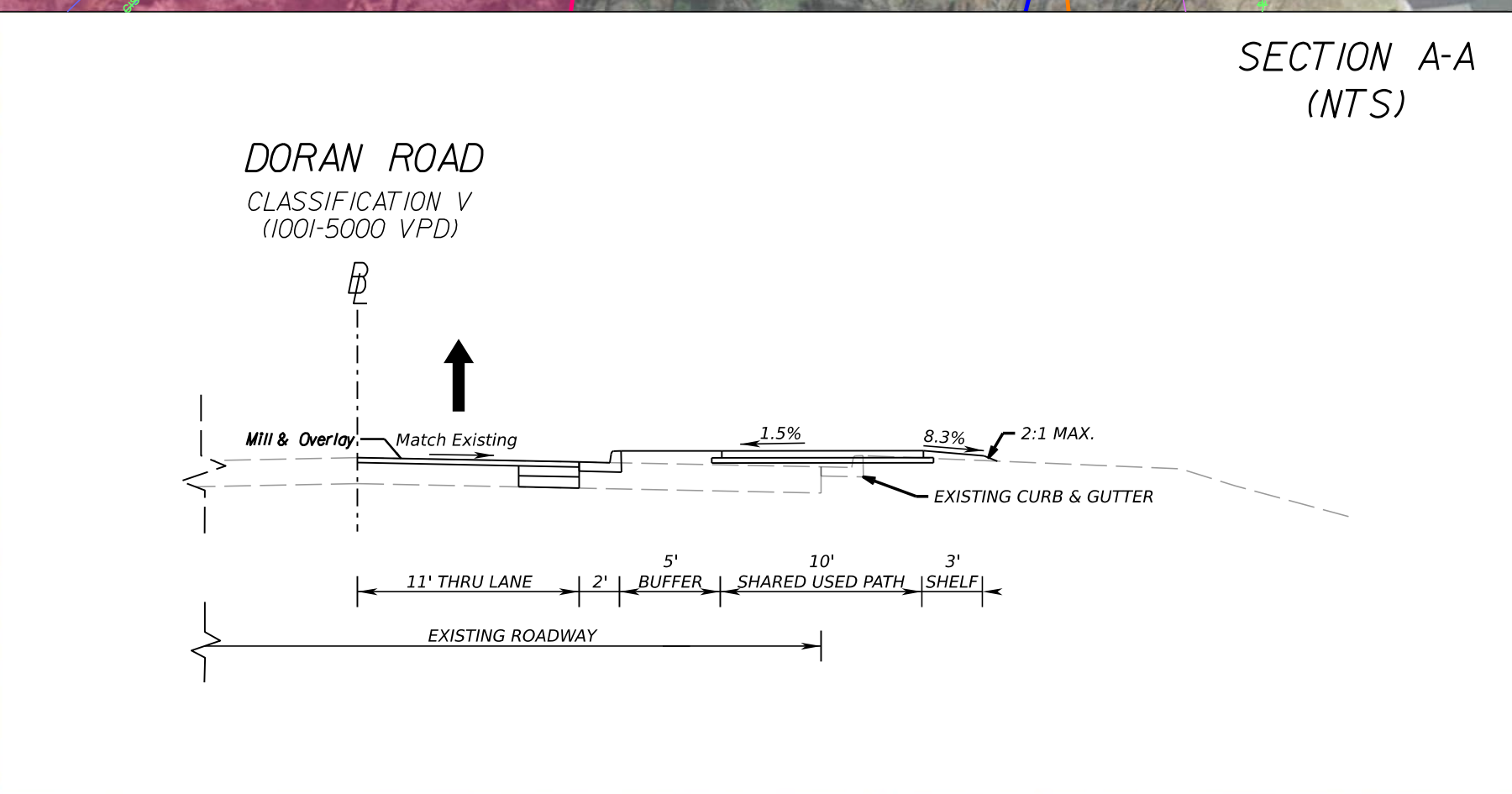
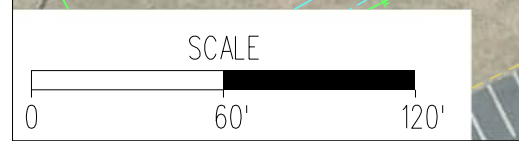
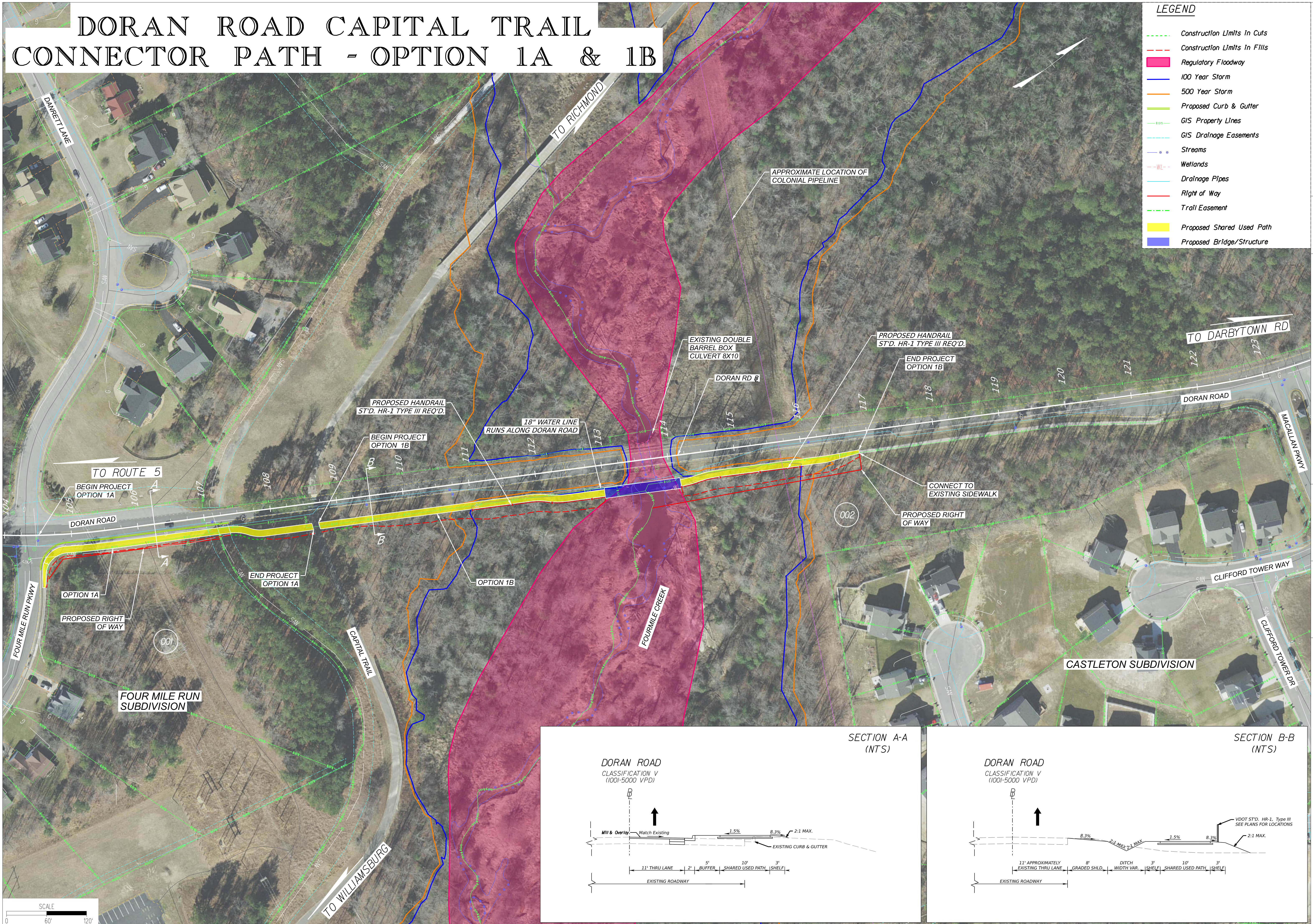


Attachment B - Concept Plans

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH - OPTION 1A & 1B

LEGEND

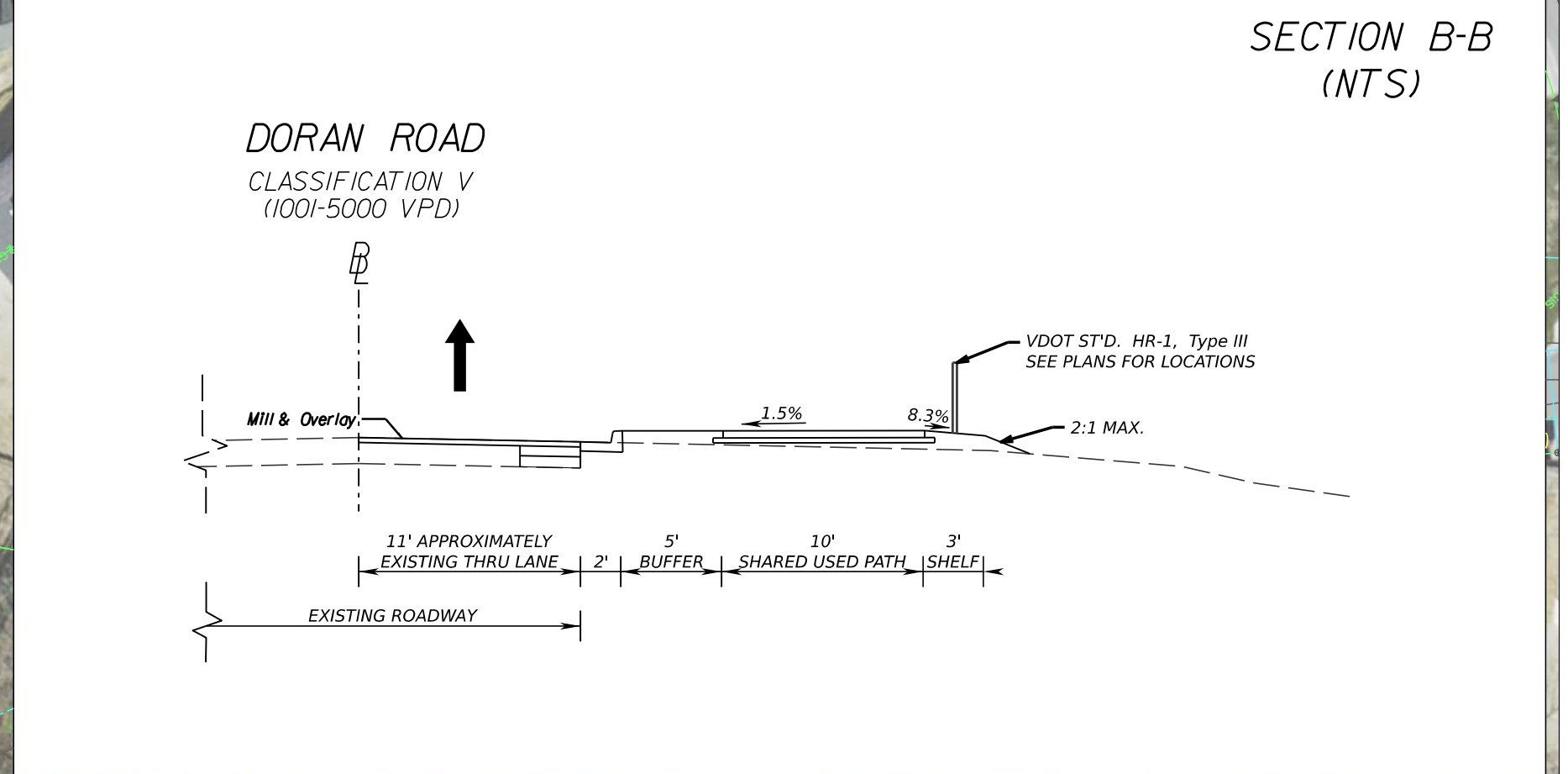
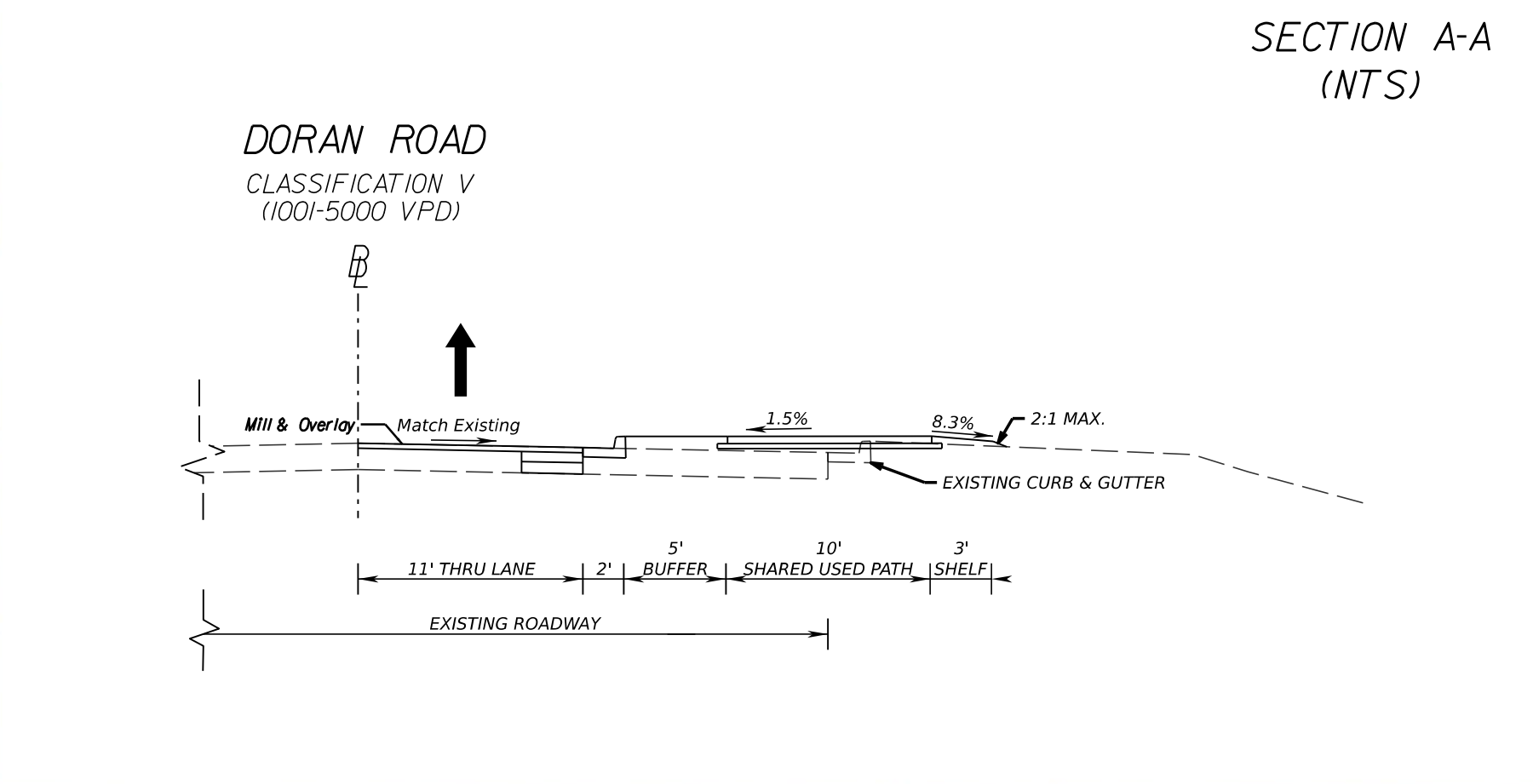
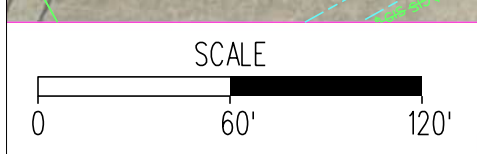
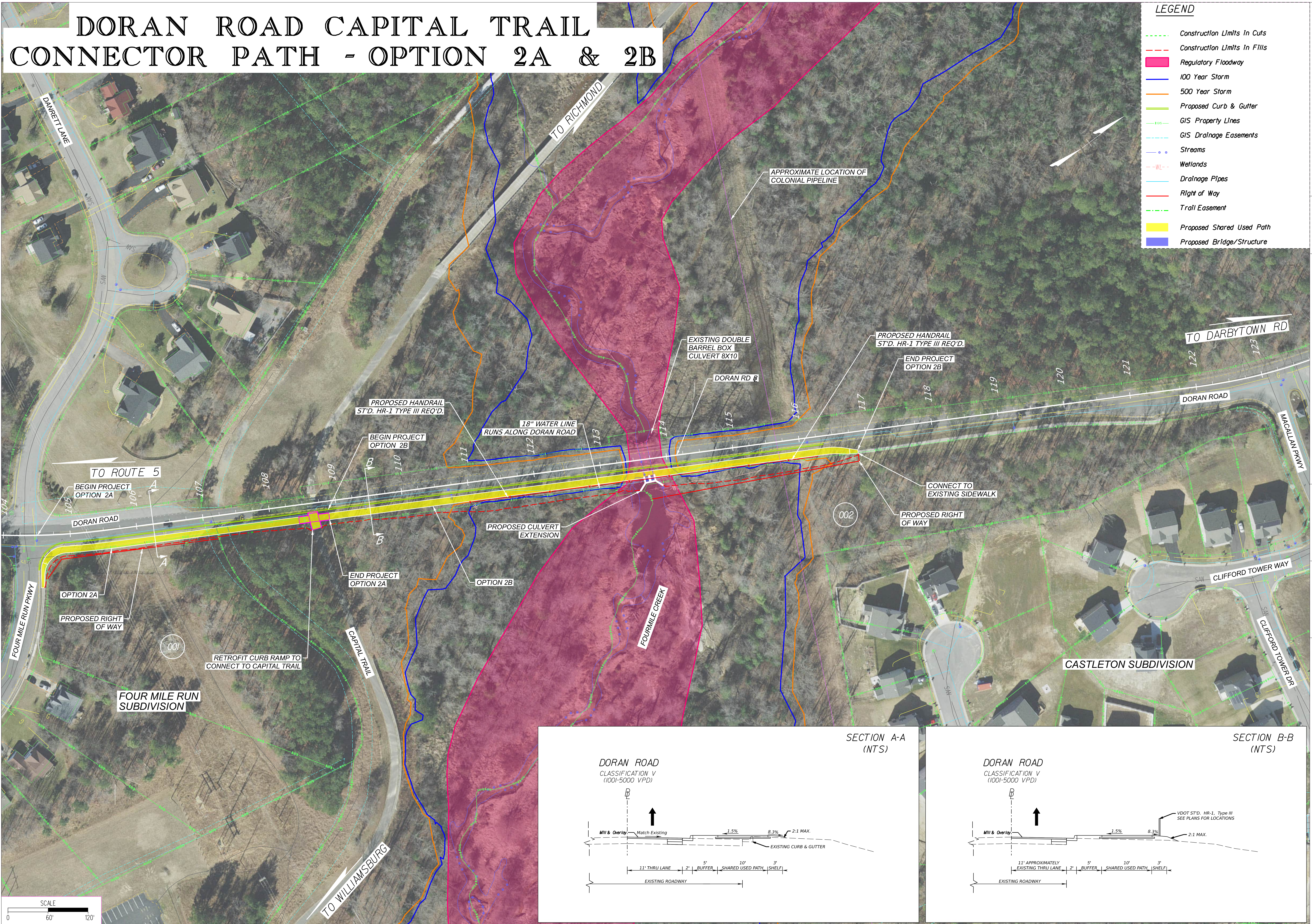
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- Construction Limits In Fills
- Regulatory Floodway
- 100 Year Storm
- 500 Year Storm
- Proposed Curb & Gutter
- GIS Property Lines
- GIS Drainage Easements
- Streams
- Wetlands
- Drainage Pipes
- Right of Way
- Trail Easement
- Proposed Shared Used Path
- Proposed Bridge/Structure



PLAN REVISIONS	SHEET	SCALE	DORAN ROAD CAPITAL TRAIL CONNECTOR PATH HENRICO COUNTY, VIRGINIA	OPTION 1A & 1B CONCEPT PLAN
		1" = 60'		
DATE: 11/17/2023	ENGINEER: JLO	CHECKED: MSV	CONCEPT	
		JOB#: XXXXX	Whitman, Reardt & Associates, LLP Engineers - Architects - Environmental Planners Est. 1915	

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH - OPTION 2A & 2B

- LEGEND**
- Construction Limits In Cuts
 - Construction Limits In Fills
 - █ Regulatory Floodway
 - █ 100 Year Storm
 - █ 500 Year Storm
 - █ Proposed Curb & Gutter
 - GIS Property Lines
 - GIS Drainage Easements
 - Streams
 - Wetlands
 - Drainage Pipes
 - Right of Way
 - Trail Easement
 - █ Proposed Shared Used Path
 - █ Proposed Bridge/Structure



PLAN REVISIONS	SHEET	SCALE
		1" = 60'

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH
HENRICO COUNTY, VIRGINIA

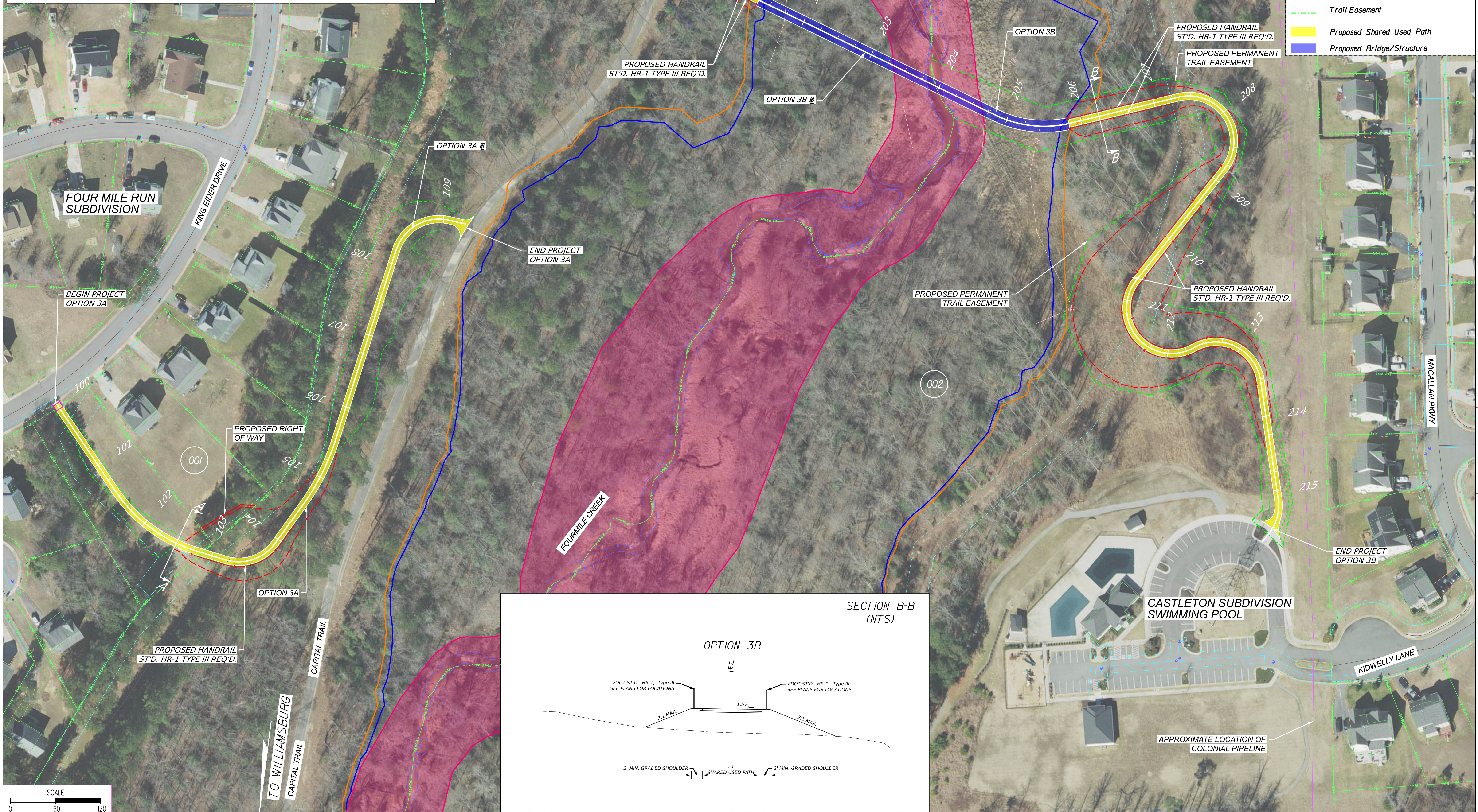
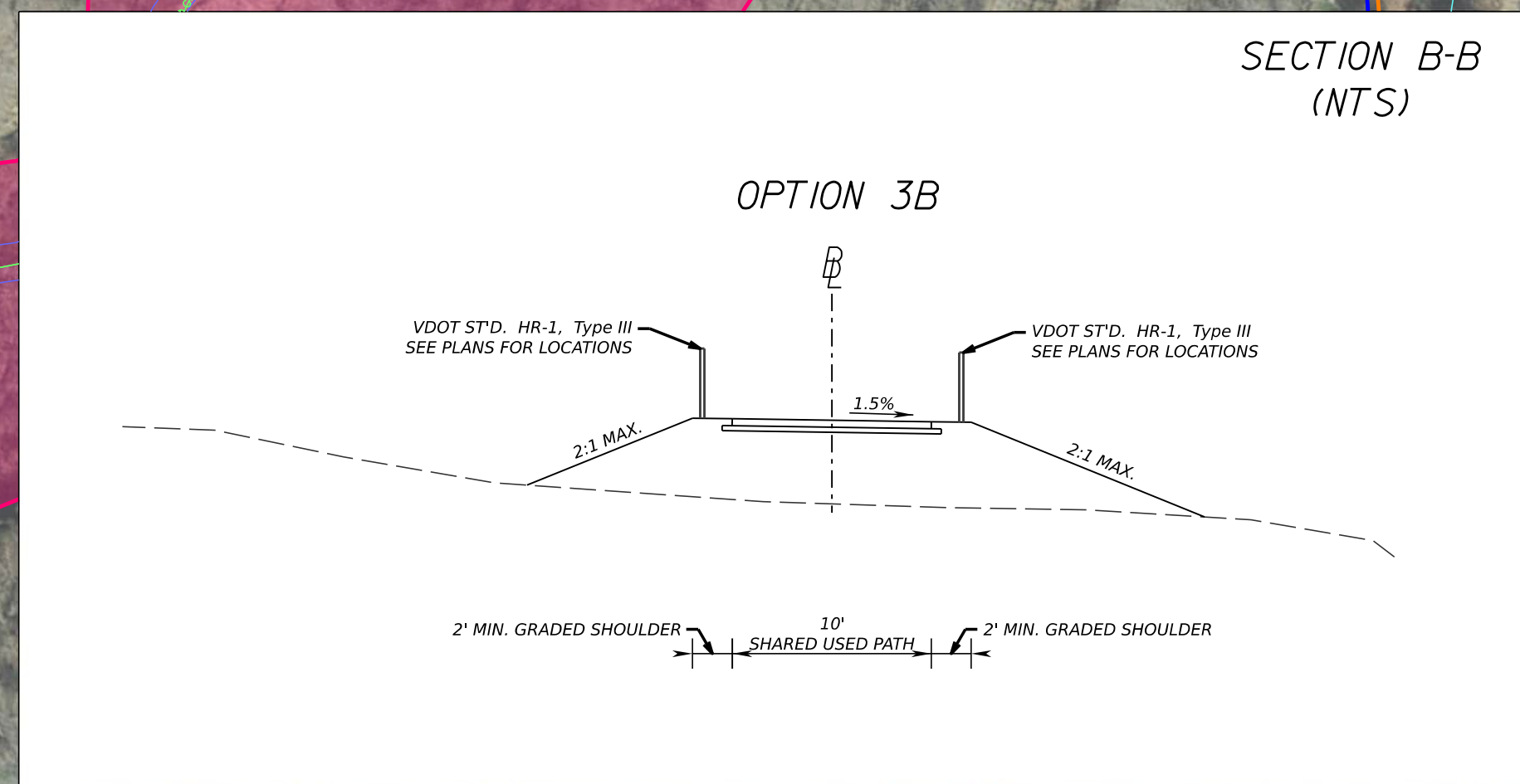
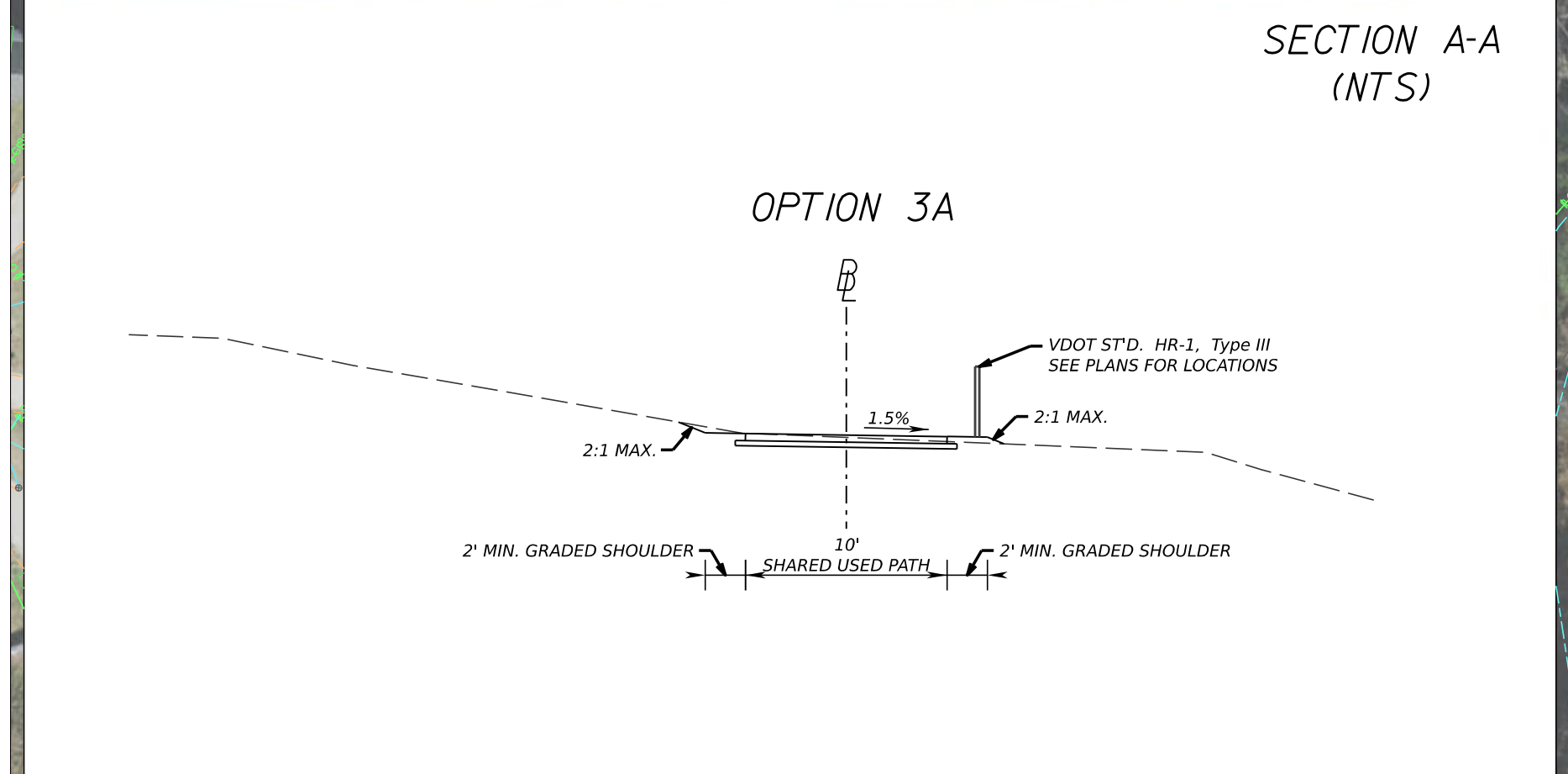
OPTION 2A & 2B CONCEPT PLAN

DATE: 11/17/2023
ENGINEER: JLO
CHECKED: MSV
JOB#: XXXXX

CONCEPT

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH OPTION 3A & 3B

- LEGEND**
- Construction Limits In Cuts
 - Construction Limits In Fills
 - Regulatory Floodway
 - 100 Year Storm
 - 500 Year Storm
 - Proposed Curb & Gutter
 - GIS Property Lines
 - GIS Drainage Easements
 - Streams
 - Wetlands
 - Drainage Pipes
 - Right of Way
 - Trail Easement
 - Proposed Shared Used Path
 - Proposed Bridge/Structure



SCALE
0 60' 120'

PLAN REVISIONS -

SHEET	SCALE
	1" = 60'

**DORAN ROAD CAPITAL TRAIL
CONNECTOR PATH**
HENRICO COUNTY, VIRGINIA

OPTION 3A & 3B CONCEPT PLAN

DATE: 11/17/2023
ENGINEER: JLO
CHECKED: MSV
JOB#: XXXXX

CONCEPT

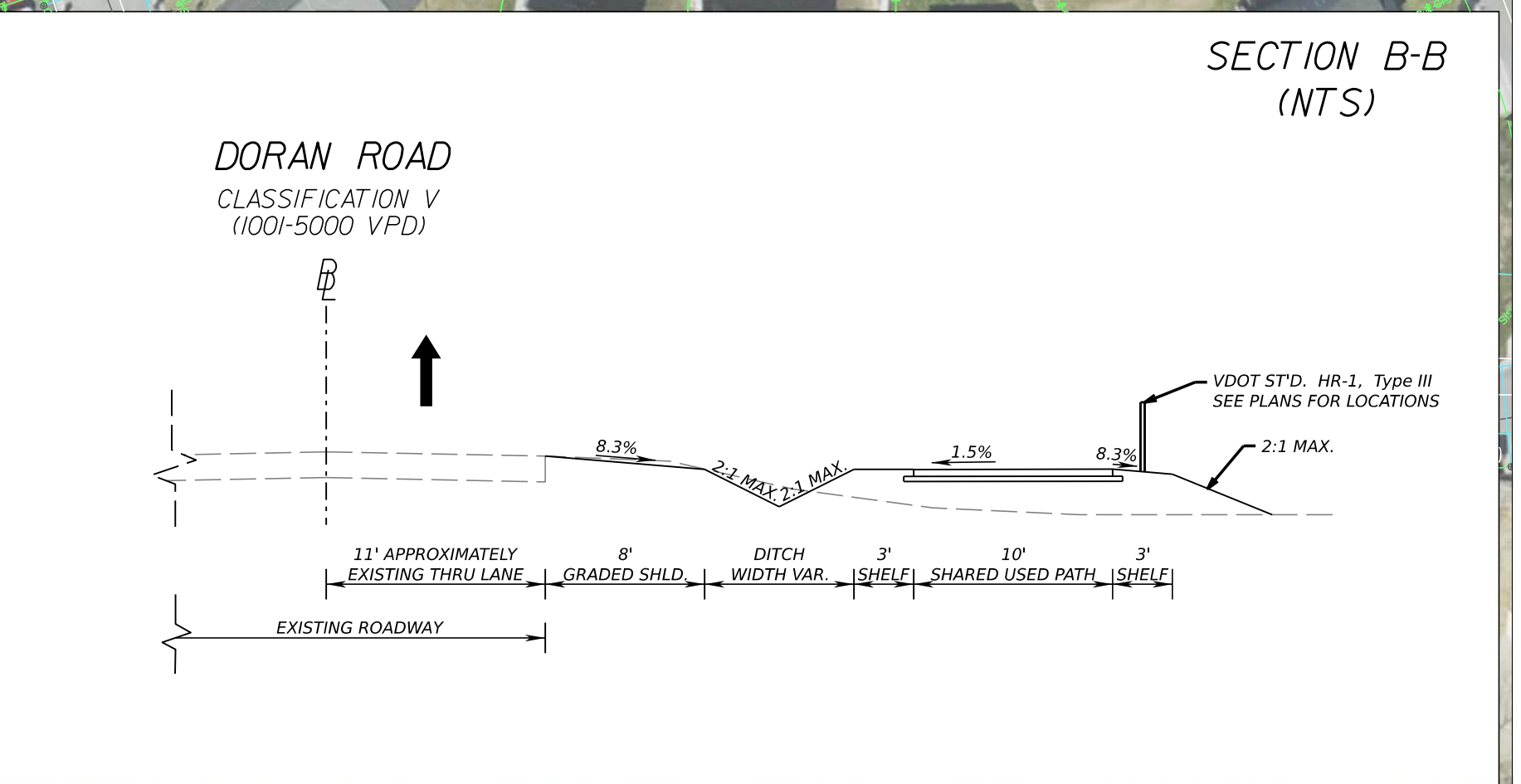
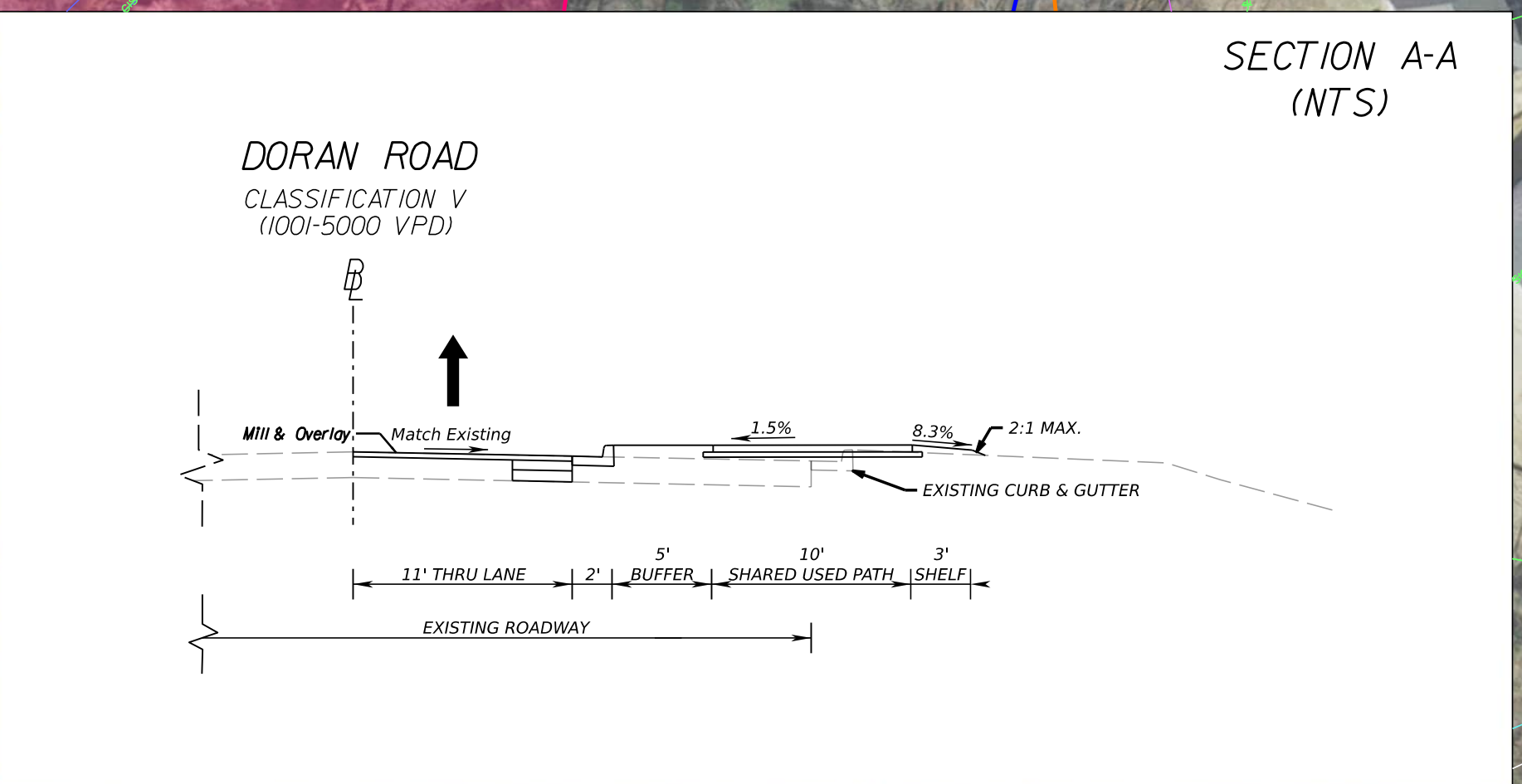
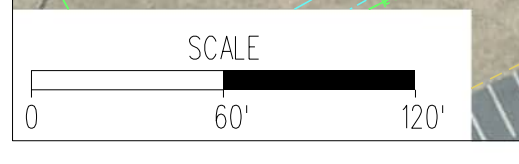
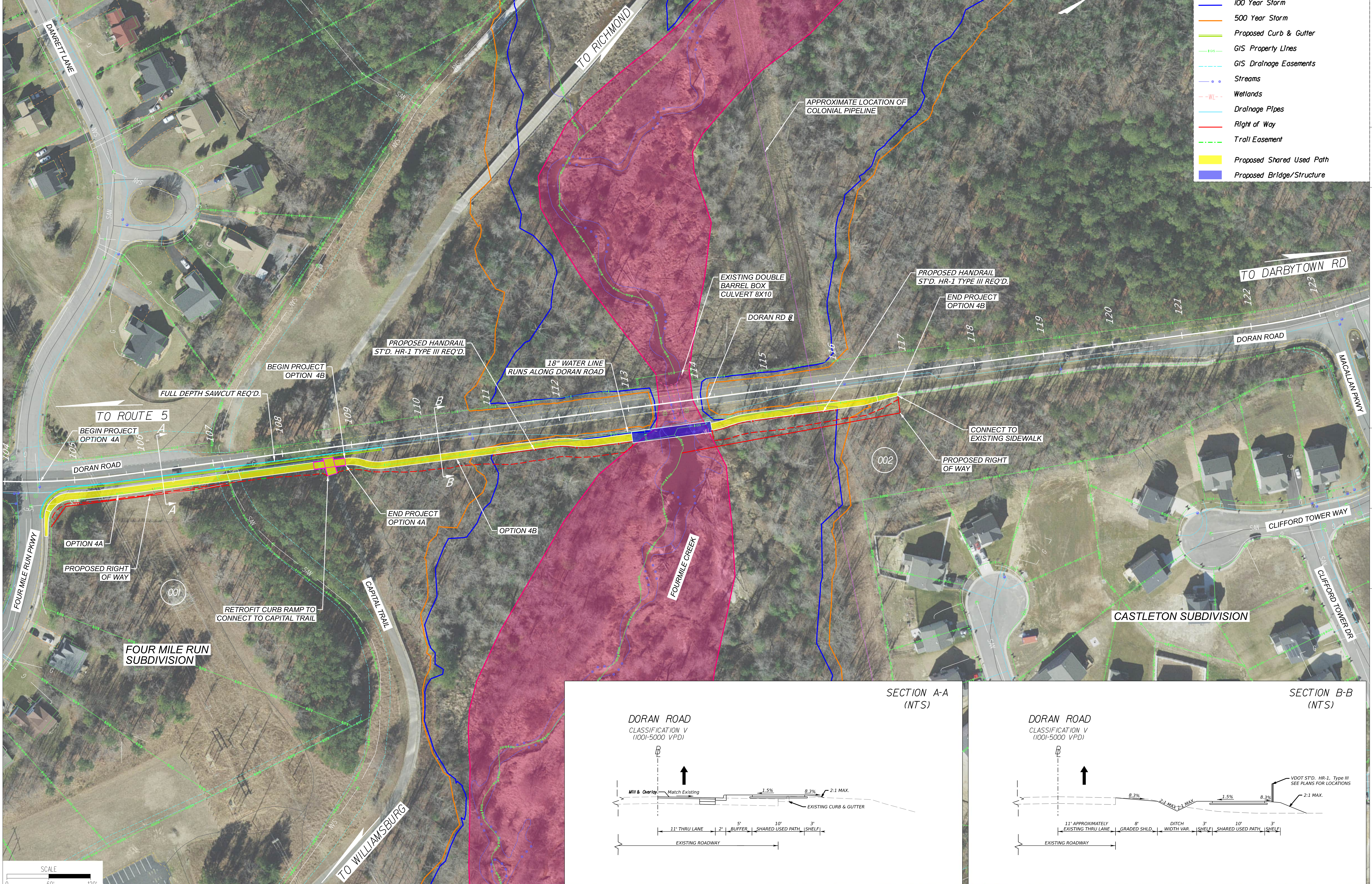
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WRA

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH - OPTION 4A & 4B

LEGEND

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- Construction Limits In Fills
- Regulatory Floodway
- 100 Year Storm
- 500 Year Storm
- Proposed Curb & Gutter
- GIS Property Lines
- GIS Drainage Easements
- Streams
- Wetlands
- Drainage Pipes
- Right of Way
- Trail Easement
- Proposed Shared Used Path
- Proposed Bridge/Structure



PLAN REVISIONS -

SHEET _____

SCALE 1" = 60'

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH
HENRICO COUNTY, VIRGINIA

OPTION 4A & 4B CONCEPT PLAN

DATE: 01/30/2024
ENGINEER: JLO
CHECKED: MSV
JOB#: XXXXX

CONCEPT

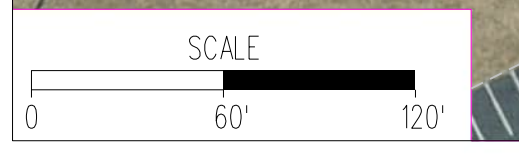
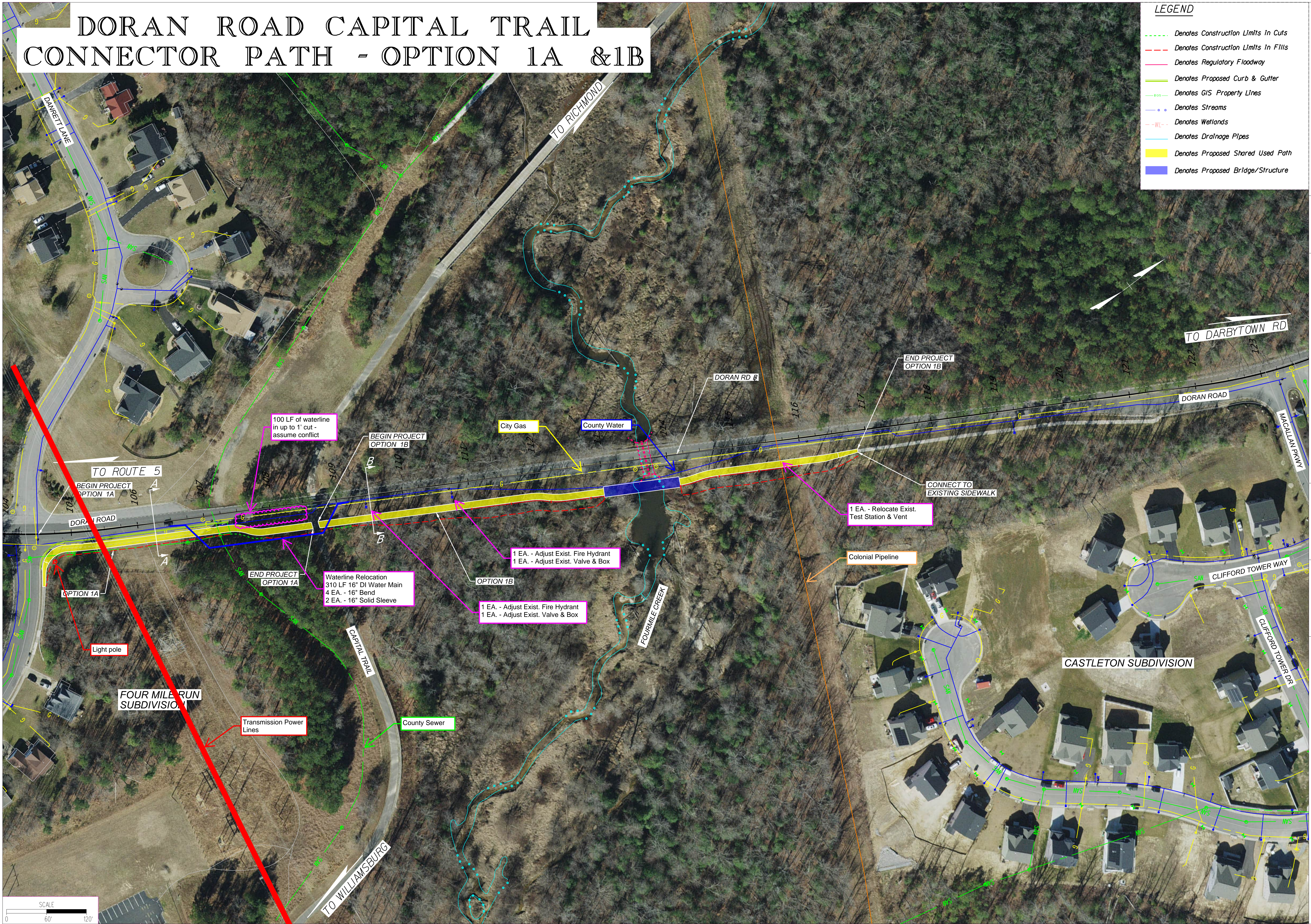


Attachment C - Existing Utilities and Potential Conflicts

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH - OPTION 1A & 1B

LEGEND

- Denotes Construction Limits In Cuts
- Denotes Construction Limits In Fills
- Denotes Regulatory Floodway
- Denotes Proposed Curb & Gutter
- Denotes GIS Property Lines
- Denotes Streams
- Denotes Wetlands
- Denotes Drainage Pipes
- Denotes Proposed Shared Used Path
- Denotes Proposed Bridge/Structure



PLAN REVISIONS -

SHEET	SCALE
	1" = 60'

**DORAN ROAD CAPITAL TRAIL
CONNECTOR PATH**
HENRICO COUNTY, VIRGINIA

OPTION 1A & 1B CONCEPT PLAN

DATE: 11/17/2023
ENGINEER: JLO
CHECKED: MSV
JOB#: XXXXX

CONCEPT

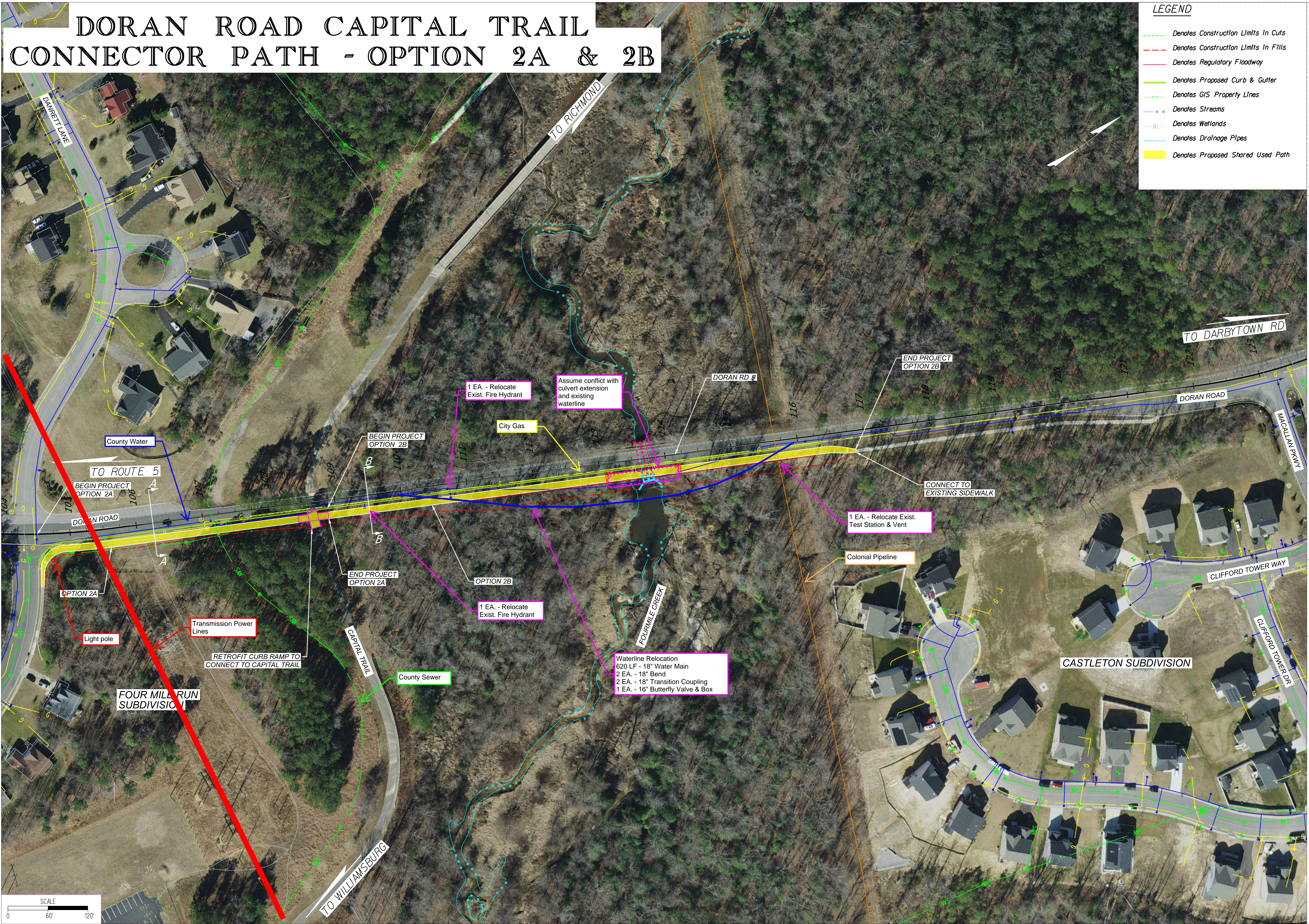
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Engineers - Architects - Environmental Planners Est. 1915

WRA

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH - OPTION 2A & 2B

LEGEND

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- Denotes Construction Limits In Fills
- Denotes Regulatory Floodway
- Denotes Proposed Curb & Gutter
- Denotes GIS Property Lines
- Denotes Streams
- Denotes Wetlands
- Denotes Drainage Pipes
- Denotes Proposed Shared Used Path



PLAN REVISIONS -

SHEET	SCALE
	1" = 60'

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH
HENRICO COUNTY, VIRGINIA

OPTION 2A & 2B CONCEPT PLAN

DATE: 11/17/2023
ENGINEER: JLO
CHECKED: MSV
JOB#: XXXXX

CONCEPT

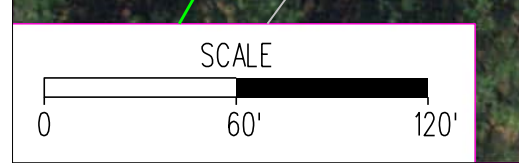
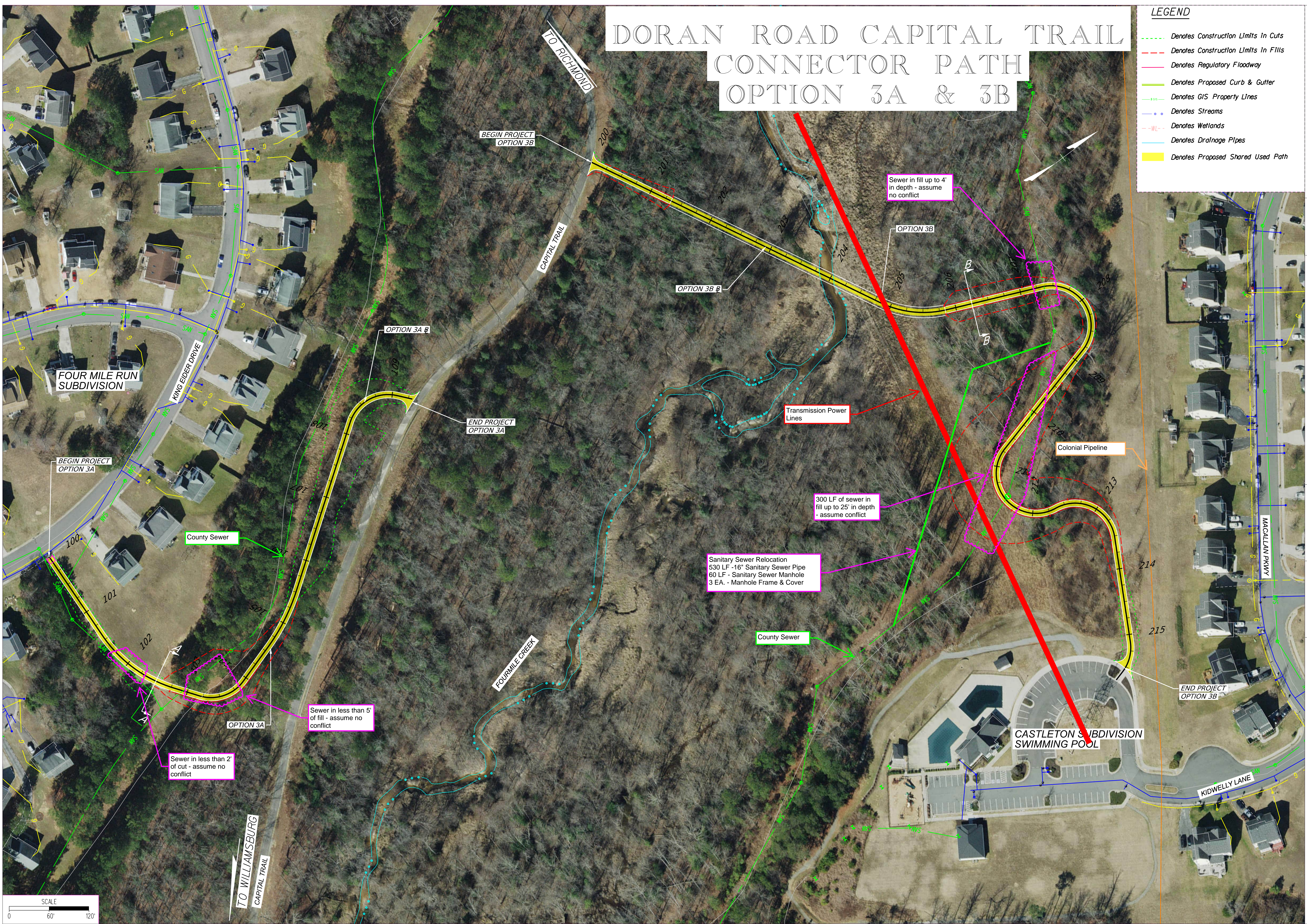
Whitman, Requardt & Associates, LLP
Engineers - Architects - Environmental Planners Est. 1915

WRA

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH OPTION 3A & 3B

LEGEND

- Denotes Construction Limits In Cuts
- Denotes Construction Limits In Fills
- Denotes Regulatory Floodway
- Denotes Proposed Curb & Gutter
- Denotes GIS Property Lines
- Denotes Streams
- Denotes Wetlands
- Denotes Drainage Pipes
- Denotes Proposed Shared Used Path

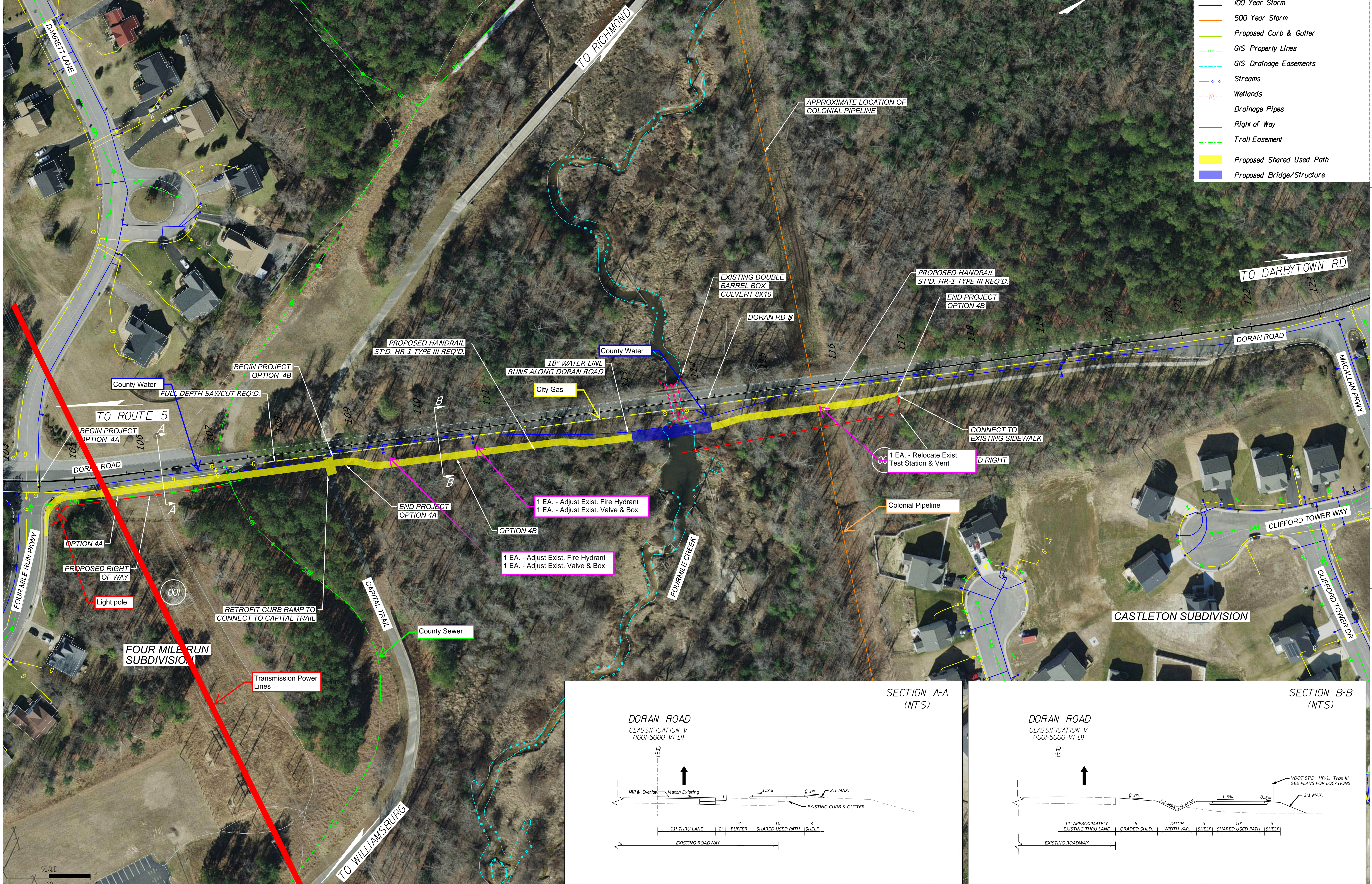


PLAN REVISIONS -	
SHEET	SCALE 1" = 60'
DORAN ROAD CAPITAL TRAIL CONNECTOR PATH HENRICO COUNTY, VIRGINIA	
DATE: 11/17/2023	CONCEPT
ENGINEER: JLO	OPTION 3A & 3B CONCEPT PLAN
CHECKED: MSV	
JOB#: XXXXX	
Whitman, Reardon & Associates, LLP Engineers - Architects - Environmental Planners Est. 1915	
WRA	

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH - OPTION 4A & 4B

LEGEND

- Construction Limits In Cuts
- Construction Limits In Fills
- Regulatory Floodway
- 100 Year Storm
- 500 Year Storm
- Proposed Curb & Gutter
- GIS Property Lines
- GIS Drainage Easements
- Streams
- Wetlands
- Drainage Pipes
- Right of Way
- Trail Easement
- Proposed Shared Used Path
- Proposed Bridge/Structure



PLAN REVISIONS -

SHEET	SCALE
	1" = 60'

DORAN ROAD CAPITAL TRAIL CONNECTOR PATH
HENRICO COUNTY, VIRGINIA

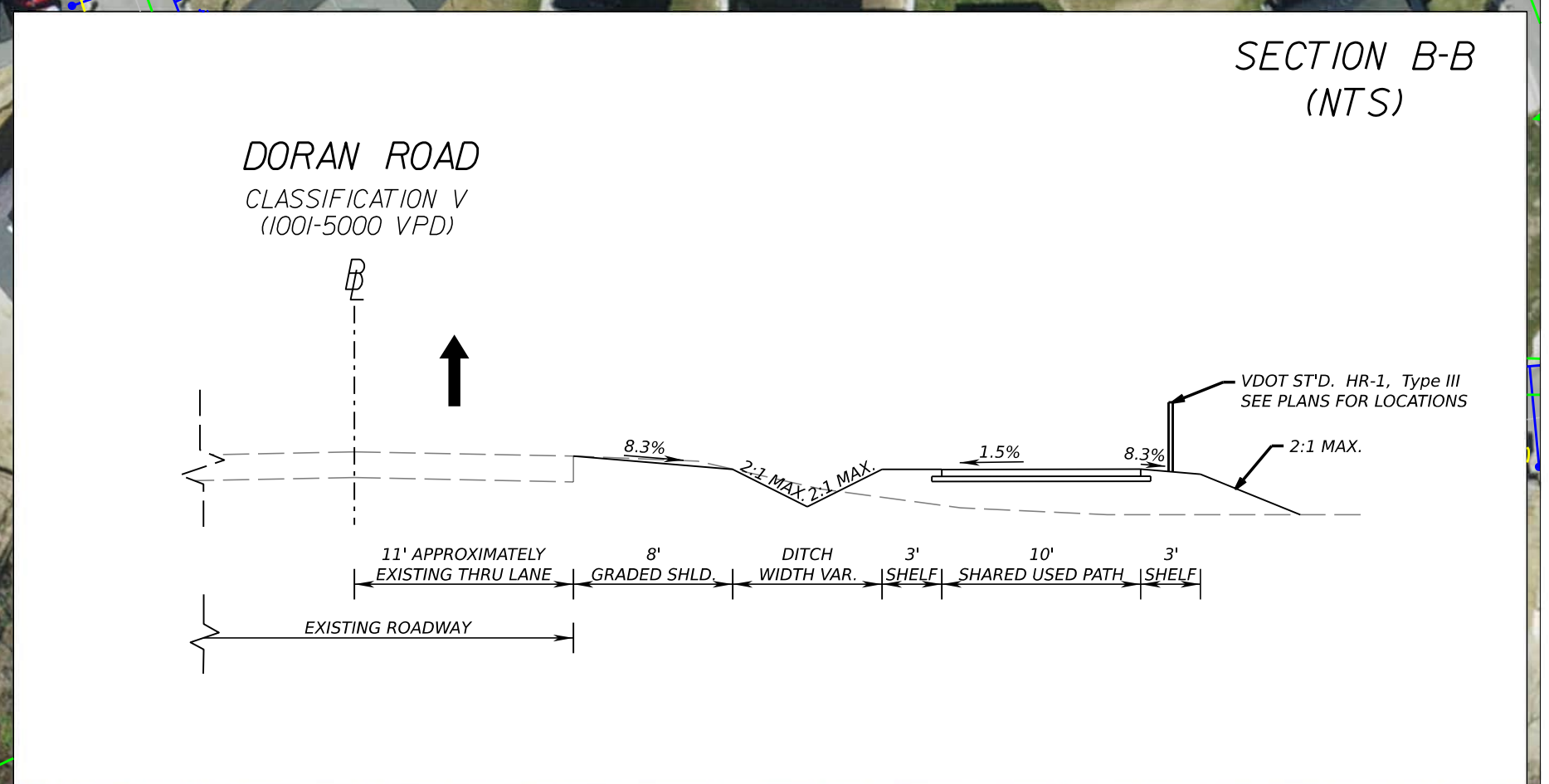
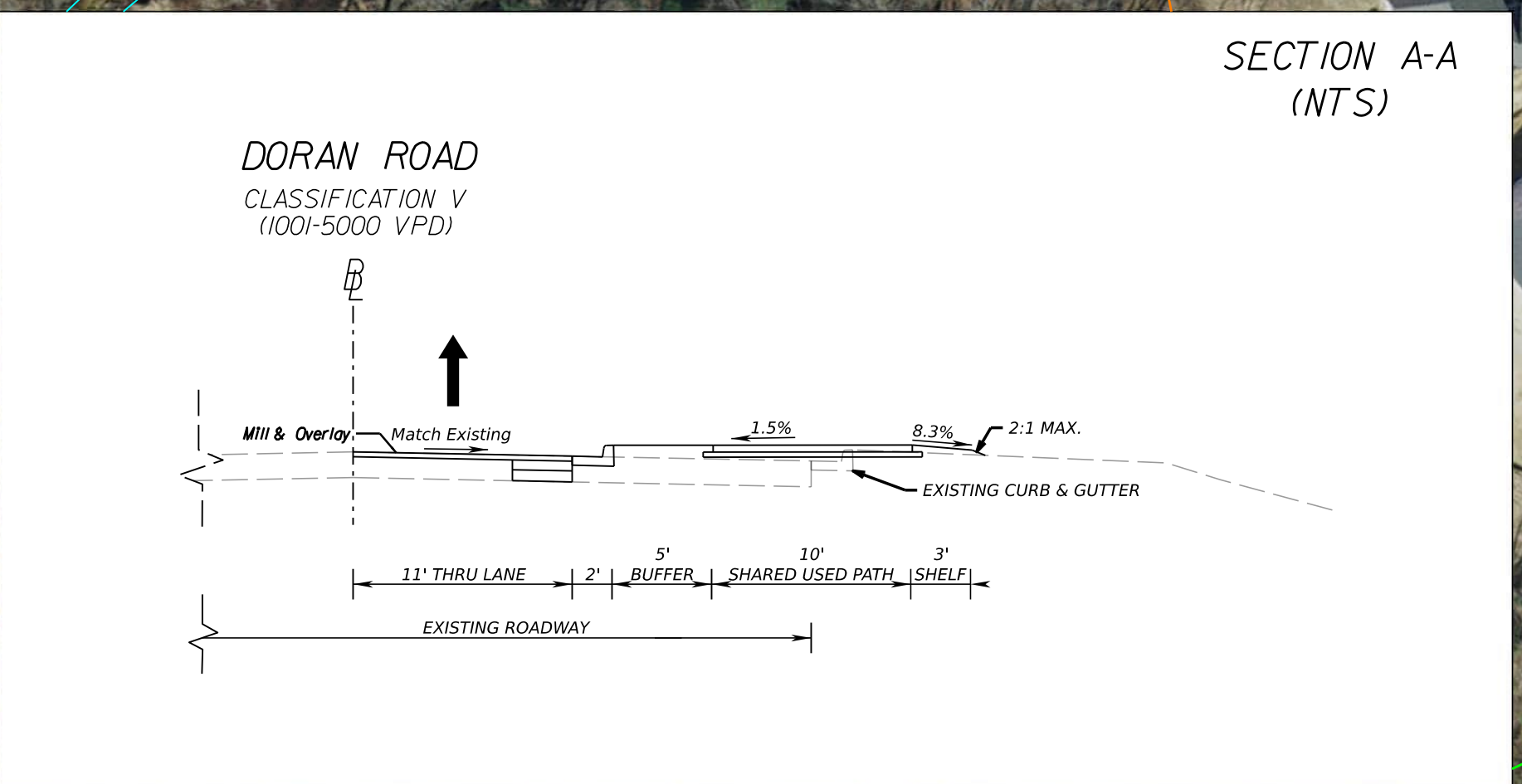
OPTION 4A & 4B CONCEPT PLAN

DATE: 01/30/2024
ENGINEER: JLO
CHECKED: MSV
JOB#: XXXXX

CONCEPT

Whitman, Requardt & Associates, LLP
Engineers - Architects - Environmental Planners Est. 1915

WRA





Attachment D - Conceptual Cost Estimate

Henrico Doran Road Capital Trail Connector
Option 1A
Conceptual Cost Estimate April 2024
Non-inflated Costs are in FY24 Dollars

Item	Description	Unit	Quantity	Unit Cost	Total	Assumptions
Construction						
I. General Contract Items					\$ 46,243	
1	Construction Surveying	LS	1		\$ 3,468	1% Items 3 thru 25
2	Mobilization	LS	1		\$ 31,010	Per Sec. 513.02 of 2020 VDOT Road & Bridge Specs (Based on Subtotal Items 3 thru 27)
3	Clearing and Grubbing	AC	0.17	\$ 15,000.00	\$ 2,550	Area within construction limits
4	Regular Excavation	CY	113	\$ 55.00	\$ 6,215	From model 113CY
5	Borrow Excavation	CY	40	\$ 75.00	\$ 3,000	Fill – Cut x (1-Shrinkage) OR half fill. Whichever is larger. Note: If not noted in a Soils Report, use shrinkage = .18. From model 81CY
II. Pavement Items					\$ 38,061	
6	Paved Shared Use Path	SY	455	\$ 40.00	\$ 18,200	Area of proposed 10' wide shared use path.
7	Full Depth Pavement	SY	104	\$ 100.00	\$ 10,400	
8	Demolition of Pavement	SY	459	\$ 15.00	\$ 6,885	
9	Saw-cut (Full Depth)	LF	322	\$ 8.00	\$ 2,576	
III. Drainage Items					\$ -	Items covered by lump sum item #21 below.
					\$ -	
					\$ -	
IV. Incidental Items					\$ 26,972	
10	Handrail	LF	0	\$ -	\$ -	
11	Sidewalk Concrete	SY	24	\$ 90.00	\$ 2,160	
12	Curb and Gutter	LF	308	\$ 55.00	\$ 16,940	
13	Topsoil and Seeding	SY	627	\$ 16.00	\$ 10,032	Area of grass strip of cross section and outer shelf.
V. Traffic					\$ -	Items covered by lump sum item #25 below.
14	Lighting	EA	0		\$ -	
Subtotal Items 3 thru 14					\$ 76,798	
VI. Structures					\$ -	
15	Retaining Walls	SF			\$ -	
16	Bridge	SF			\$ -	
VII. Utility Relocation					\$ 216,000	
17	16" DI WATER MAIN	L.F.	310	\$ 600.00	\$ 186,000	
18	16" BEND	EA.	4	\$ 5,000.00	\$ 20,000	
19	NS WATER FACILITIES - 16" SOLID SLEEVE	EA.	2	\$ 5,000.00	\$ 10,000	
VIII. Misc. Lump Sum Items (% of Items 3 thru 14)					\$ 54,000	
20	Erosion and Sediment Control (2.5%)	LS	1		\$ 2,000	
21	Misc. Drainage (15%)	LS	1		\$ 12,000	15% for curb and gutter section ; 5% for open section segments
22	Misc. Signing & Marking (2.5%)	LS	1		\$ 2,000	2.5% for relocation of signs and marking.
23	Maintenance of Traffic (15%)	LS	1		\$ 12,000	5% for rural sections; 15% urban
24	Roadside Development (2.5%)	LS	1		\$ 2,000	
25	Misc. Construction (30%)	LS	1		\$ 24,000	
Subtotal Items 1 thru 25					\$ 381,276	
IX. Misc. Lump Sum Items					\$ 103,000	
26	CEI / Contingency (27%)	LS	1		\$ 103,000	27% of items 1-25
Total Construction Phase					\$ 484,276	
Preliminary Engineering						
27	Preliminary Engineering	LS	1		\$ 115,000	Based on Total Construction Phase excluding CEI and Contingency. Constr<\$5M, PE=30%; Constr>\$5M, PE=20%
Total Preliminary Engineering Phase					\$ 115,000	
Right of Way						
28	Right of Way Costs	LS	1		\$ 16,814	See right of way computations
29	Utility Costs to Right of Way Project	LS			\$ 39,000	10% for private utilities - applied to construction cost excluding CEI/Contingency
Total Right of Way Phase					\$ 55,814	
30	Environmental Compliance - PE, RW, CN (3%)	LS	1		\$ 20,000	
Total Project Cost in FY24 Dollars					\$ 675,090	
					SAY \$ 675,000	

Henrico Doran Road Capital Trail Connector
Option 1B
Conceptual Cost Estimate April 2024
Non-inflated Costs are in FY24 Dollars

Item	Description	Unit	Quantity	Unit Cost	Total	Assumptions
Construction						
I. General Contract Items					\$ 369,193	
1	Construction Surveying	LS	1		\$ 15,546	1% Items 3 thru 25
2	Mobilization	LS	1		\$ 107,727	Per Sec. 513.02 of 2020 VDOT Road & Bridge Specs (Based on Subtotal Items 3 thru 27)
3	Clearing and Grubbing	AC	0.77	\$ 15,000.00	\$ 11,550	Area within construction limits
4	Regular Excavation	CY	109	\$ 55.00	\$ 5,995	from corridor 109CY
5	Borrow Excavation	CY	3045	\$ 75.00	\$ 228,375	Fill - Cut x (1-Shrinkage) OR half fill. Whichever is larger. Note: If not noted in the Soils Report, use shrinkage = .18. from corridor 3134CY
II. Pavement Items					\$ 29,800	
6	Paved Shared Use Path	SY	745	\$ 40.00	\$ 29,800	Area of proposed 10' wide shared use path.
7	Full Depth Pavement	SY	0	\$ 100.00	\$ -	Area between saw cut and proposed curb and gutter.
8	Demolition of Pavement	SY	0	\$ 15.00	\$ -	
9	Saw-cut (Full Depth)	LF	0	\$ 8.00	\$ -	
III. Drainage Items					\$ -	Items covered by lump sum item #21 below.
					\$ -	
					\$ -	
IV. Incidental Items					\$ 116,824	
10	Handrail	LF	500	\$ 150.00	\$ 75,000	
11	Sidewalk Concrete	SY	22	\$ 90.00	\$ 1,980	
12	Curb and Gutter	LF	0	\$ 55.00	\$ -	
13	Topsoil and Seeding	SY	2614	\$ 16.00	\$ 41,824	Area of grass strip of cross section and outer shelf.
V. Traffic					\$ -	Items covered by lump sum item #25 below.
14	Lighting	EA	0		\$ -	
Subtotal Items 3 thru 14					\$ 392,544	
VI. Structures					\$ 900,000	
15	Retaining Walls	SF	800	\$ 125.00	\$ 100,000	Assume 50 ft of wall each side of bridge abutment with avg. height of 8 ft.
16	Bridge	SF	2000	\$ 400.00	\$ 800,000	125 ft x 16 ft (to be conservative with spanning floodway)
VII. Utility Relocation					\$ 35,000	
17	ADJUST EXIST. FIRE HYDRANT	EA.	2	\$ 6,500.00	\$ 13,000	
18	ADJUST EXIST. VALVE & BOX	EA.	2	\$ 1,000.00	\$ 2,000	
19	NS RELOCATE EXIST. TEST STATION AND VENT	EA.	1	\$ 20,000.00	\$ 20,000	
VIII. Misc. Lump Sum Items (% of Items 3 thru 14)					\$ 227,000	
20	Erosion and Sediment Control (2.5%)	LS	1		\$ 10,000	
21	Misc. Drainage (5%)	LS	1		\$ 20,000	15% for curb and gutter section ; 5% for open section segments
22	Misc. Signing & Marking (2.5%)	LS	1		\$ 10,000	2.5% for relocation of signs and marking.
23	Maintenance of Traffic (15%)	LS	1		\$ 59,000	5% for rural sections; 15% urban
24	Roadside Development (2.5%)	LS	1		\$ 10,000	
25	Misc. Construction (30%)	LS	1		\$ 118,000	
Subtotal Items 1 thru 25					\$ 1,677,817	
IX. Misc. Lump Sum Items					\$ 454,000	
26	CEI / Contingency (27%)	LS	1		\$ 454,000	27% of items 1-25
Total Construction Phase					\$ 2,131,817	
Preliminary Engineering						
27	Preliminary Engineering	LS	1		\$ 504,000	Based on Total Construction Phase excluding CEI and Contingency. Constr<\$5M, PE=30%; Constr>\$5M, PE=20%
Total Preliminary Engineering Phase					\$ 504,000	
Right of Way						
28	Right of Way Costs	LS	1		\$ 31,880	See right of way computations
29	Utility Costs to Right of Way Project	LS	1		\$ 168,000	10% for private utilities - applied to construction cost excluding CEI/Contingency
Total Right of Way Phase					\$ 199,880	
30	Environmental Compliance - PE, RW, CN (3%)	LS	1		\$ 86,000	
Total Project Cost in FY24 Dollars					\$ 2,921,697	
SAY \$					2,922,000	

Henrico Doran Road Capital Trail Connector
Option 2A
Conceptual Cost Estimate April 2024
Non-inflated Costs are in FY24 Dollars

Item	Description	Unit	Quantity	Unit Cost	Total	Assumptions
Construction						
I.	General Contract Items				\$ 28,936	
1	Construction Surveying	LS	1		\$ 1,686	1% Items 3 thru 22
2	Mobilization	LS	1		\$ 16,855	Per Sec. 513.02 of 2020 VDOT Road & Bridge Specs (Based on Subtotal Items 3 thru 27)
3	Clearing and Grubbing	AC	0.16	\$ 15,000.00	\$ 2,400	Area within construction limits
4	Regular Excavation	CY	39	\$ 55.00	\$ 2,145	From model 39CY
5	Borrow Excavation	CY	78	\$ 75.00	\$ 5,850	Fill = Cut x (1-Shrinkage) OR half fill. Whichever is larger. Note: If not noted in a Soils Report, use shrinkage = .18. From model 110CY
II.	Pavement Items				\$ 43,971	
6	Paved Shared Use Path	SY	434	\$ 40.00	\$ 17,360	Area of proposed 10' wide shared use path.
7	Full Depth Pavement	SY	155	\$ 100.00	\$ 15,500	
8	Demolition of Pavement	SY	489	\$ 15.00	\$ 7,335	
9	Saw-cut (Full Depth)	LF	472	\$ 8.00	\$ 3,776	
III.	Drainage Items				\$ -	Items covered by lump sum item #18 below.
					\$ -	
					\$ -	
IV.	Incidental Items				\$ 45,183	
10	Curb	LF	95	\$ 35.00	\$ 3,325	
11	Sidewalk Concrete	SY	99	\$ 90.00	\$ 8,910	
12	Curb and Gutter	LF	460	\$ 55.00	\$ 25,300	
13	Topsoil and Seeding	SY	478	\$ 16.00	\$ 7,648	Area of grass strip of cross section and outer shelf.
V.	Traffic				\$ -	Items covered by lump sum item #22 below.
14	Lighting	EA	0		\$ -	
					\$ 99,549	
VI.	Structures				\$ -	
15	Retaining Walls	SF			\$ -	
16	Bridge	SF			\$ -	
VII.	Utility Relocation				\$ -	
					\$ -	
					\$ -	
					\$ -	
VIII.	Misc. Lump Sum Items (% of Items 3 thru 14)				\$ 69,000	
17	Erosion and Sediment Control (2.5%)	LS	1		\$ 3,000	
18	Misc. Drainage (15%)	LS	1		\$ 15,000	15% for curb and gutter section ; 5% for open section segments
19	Misc. Signing & Marking (2.5%)	LS	1		\$ 3,000	2.5% for relocation of signs and marking.
20	Maintenance of Traffic (15%)	LS	1		\$ 15,000	5% for rural sections; 15% urban
21	Roadside Development (2.5%)	LS	1		\$ 3,000	
22	Misc. Construction (30%)	LS	1		\$ 30,000	
					\$ 187,090	
IX.	Misc. Lump Sum Items				\$ 51,000	
23	CEI / Contingency (27%)	LS	1		\$ 51,000	27% of items 1-22
					\$ 238,090	
Preliminary Engineering						
24	Preliminary Engineering	LS	1		\$ 57,000	Based on Total Construction Phase excluding CEI and Contingency. Constr<\$5M, PE=30%; Constr>\$5M, PE=20%
					\$ 57,000	
Right of Way						
25	Right of Way Costs	LS	1		\$ 16,814	See right of way computations
26	Utility Costs to Right of Way Project	LS			\$ 19,000	10% for private utilities - applied to construction cost excluding CEI/Contingency
					\$ 35,814	
27	Environmental Compliance - PE, RW, CN (3%)	LS	1		\$ 10,000	
					\$ 340,904	
					SAY \$ 341,000	

Henrico Doran Road Capital Trail Connector
Option 2B
Conceptual Cost Estimate April 2024
Non-inflated Costs are in FY24 Dollars

Item	Description	Unit	Quantity	Unit Cost	Total	Assumptions
Construction						
I. General Contract Items					\$ 272,963	
1	Construction Surveying	LS	1		\$ 15,014	1% Items 3 thru 29
2	Mobilization	LS	1		\$ 105,069	Per Sec. 513.02 of 2020 VDOT Road & Bridge Specs (Based on Subtotal Items 3 thru 27)
3	Clearing and Grubbing	AC	0.59	\$ 15,000.00	\$ 8,850	Area within construction limits
4	Regular Excavation	CY	36	\$ 55.00	\$ 1,980	from corridor 36CY
5	Borrow Excavation	CY	1894	\$ 75.00	\$ 142,050	Fill – Cut x (1-Shrinkage) OR half fill. Whichever is larger. Note: If not noted in the Soils Report, use shrinkage = .18. from corridor 1923CY
II. Pavement Items					\$ 69,378	
6	Paved Shared Use Path	SY	872	\$ 40.00	\$ 34,880	Area of proposed 10' wide shared use path.
7	Full Depth Pavement	SY	250	\$ 100.00	\$ 25,000	Area between saw cut and proposed curb and gutter.
8	Demolition of Pavement	SY	230	\$ 15.00	\$ 3,450	
9	Saw-cut (Full Depth)	LF	756	\$ 8.00	\$ 6,048	
III. Drainage Items					\$ -	Items covered by lump sum item #25 below.
					\$ -	
					\$ -	
IV. Incidental Items					\$ 149,126	
10	Handrail	LF	525	\$ 150.00	\$ 78,750	
11	Sidewalk Concrete	SY	10	\$ 90.00	\$ 900	
12	Curb and Gutter	LF	748	\$ 55.00	\$ 41,140	
13	Topsoil and Seeding	SY	1771	\$ 16.00	\$ 28,336	Area of grass strip of cross section and outer shelf.
V. Traffic					\$ -	Items covered by lump sum item #29 below.
14	Lighting	EA	0		\$ -	
Subtotal Items 3 thru 14					\$ 371,384	
VI. Structures					\$ 141,000	
15	Culvert Extension - Box Culvert Concrete	CY	50	\$ 2,000.00	\$ 100,000	Assume Double 8x10 culvert, 12 ft of extension, 2 downstream wingwalls
16	Culvert Extension - Box Culvert Rebar	LB	6000	\$ 3.50	\$ 21,000	Used VDOT Standard concrete and rebar values for above assumptions
17	HR-1 Handrail at Box Culvert	LF	80	\$ 250.00	\$ 20,000	Used higher than average values to include excavation and modifying tie-in to existing
VII. Utility Relocation					\$ 726,000	
18	RELOCATE EXIST. FIRE HYDRANT	EA.	2	\$ 25,000.00	\$ 50,000	
19	NS RELOCATE EXIST. TEST STATION & VENT	EA.	1	\$ 20,000.00	\$ 20,000	
20	18" WATER MAIN	L.F.	620	\$ 1,000.00	\$ 620,000	
21	16" BUTTERFLY VALVE & BOX	EA.	1	\$ 16,000.00	\$ 16,000	
22	18" BEND	EA.	2	\$ 5,000.00	\$ 10,000	
23	NS WATER FACILITIES - 18" TRANSITION COUPLING	EA.	2	\$ 5,000.00	\$ 10,000	
VIII. Misc. Lump Sum Items (% of Items 3 thru 14)					\$ 263,000	
24	Erosion and Sediment Control (2.5%)	LS	1		\$ 10,000	
25	Misc. Drainage (15%)	LS	1		\$ 56,000	15% for curb and gutter section ; 5% for open section segments
26	Misc. Signing & Marking (2.5%)	LS	1		\$ 19,000	2.5% for relocation of signs and marking.
27	Maintenance of Traffic (15%)	LS	1		\$ 56,000	5% for rural sections; 15% urban
28	Roadside Development (2.5%)	LS	1		\$ 10,000	
29	Misc. Construction (30%)	LS	1		\$ 112,000	
Subtotal Items 1 thru 29					\$ 1,621,467	
IX. Misc. Lump Sum Items					\$ 438,000	
30	CEI / Contingency (27%)	LS	1		\$ 438,000	27% of Items 1-29
Total Construction Phase					\$ 2,059,467	
Preliminary Engineering						
31	Preliminary Engineering	LS	1		\$ 487,000	Based on Total Construction Phase excluding CEI and Contingency. Constr<\$5M, PE=30%; Constr>\$5M, PE=20%
Total Preliminary Engineering Phase					\$ 487,000	
Right of Way						
32	Right of Way Costs	LS	1		\$ 25,375	See right of way computations
33	Utility Costs to Right of Way Project	LS	1		\$ 163,000	10% for private utilities - applied to construction cost excluding CEI/Contingency
Total Right of Way Phase					\$ 188,375	
34	Environmental Compliance - PE, RW, CN (3%)	LS	1		\$ 83,000	
Total Project Cost in FY24 Dollars					\$ 2,817,842	
SAY					\$ 2,818,000	

Henrico Doran Road Capital Trail Connector
Option 3A
Conceptual Cost Estimate April 2024
Non-inflated Costs are in FY24 Dollars

Item	Description	Unit	Quantity	Unit Cost	Total	Assumptions
Construction						
I. General Contract Items					\$ 245,842	
1	Construction Surveying	LS	1	\$ 4,636	\$ 4,636	1% Items 3 thru 23
2	Mobilization	LS	1	\$ 39,766	\$ 39,766	Per Sec. 513.02 of 2020 VDOT Road & Bridge Specs (Based on Subtotal Items 3 thru 27)
3	Clearing and Grubbing	AC	0.89	\$ 15,000.00	\$ 13,350	Area within construction limits
4	Regular Excavation	CY	2588	\$ 55.00	\$ 142,340	From model 2588CY
5	Borrow Excavation	CY	610	\$ 75.00	\$ 45,750	Fill = Cut x (1-Shrinkage) OR half fill. Whichever is larger. Note: If not noted in the Soils Report, use shrinkage = .18. From model 1220CY
II. Pavement Items					\$ 42,180	
6	Paved Shared Use Path	SY	1039	\$ 40.00	\$ 41,560	Area of proposed 10' wide shared use path.
7	Full Depth Pavement	SY	4	\$ 100.00	\$ 400	
8	Demolition of Pavement	SY	4	\$ 15.00	\$ 60	
9	Saw-cut (Full Depth)	LF	20	\$ 8.00	\$ 160	
III. Drainage Items					\$ -	Items covered by lump sum item #19 below.
					\$ -	
					\$ -	
IV. Incidental Items					\$ 78,924	
10	Curb	LF	21	\$ 35.00	\$ 735	
11	Sidewalk Concrete	SY	12	\$ 90.00	\$ 1,080	
12	Handrail	LF	164	\$ 150.00	\$ 24,600	
13	Curb and Gutter	LF	11	\$ 55.00	\$ 605	
14	Topsoil and Seeding	SY	3244	\$ 16.00	\$ 51,904	Area of grass strip of cross section and outer shelf.
V. Traffic					\$ -	Items covered by lump sum item #23 below.
15	Lighting	EA	0	\$ -	\$ -	
Subtotal Items 3 thru 15					\$ 322,544	
VI. Structures					\$ -	
16	Retaining Walls	SF		\$ -	\$ -	
17	Bridge	SF		\$ -	\$ -	
VII. Utility Relocation					\$ -	
					\$ -	
					\$ -	
					\$ -	
VIII. Misc. Lump Sum Items (% of Items 3 thru 15)					\$ 141,000	
18	Erosion and Sediment Control (2.5%)	LS	1	\$ 9,000	\$ 9,000	
19	Misc. Drainage (5%)	LS	1	\$ 17,000	\$ 17,000	15% for curb and gutter section ; 5% for open section segments
20	Misc. Signing & Marking (2.5%)	LS	1	\$ 9,000	\$ 9,000	2.5% for relocation of signs and marking.
21	Maintenance of Traffic (0%)	LS	-	\$ -	\$ -	5% for rural sections; 15% urban. No MOT required for this option.
22	Roadside Development (2.5%)	LS	1	\$ 9,000	\$ 9,000	
23	Misc. Construction (30%)	LS	1	\$ 97,000	\$ 97,000	
Subtotal Items 1 thru 23					\$ 507,946	
IX. Misc. Lump Sum Items					\$ 138,000	
24	CEI / Contingency (27%)	LS	1	\$ 138,000	\$ 138,000	27% of items 1-23
Total Construction Phase					\$ 645,946	
Preliminary Engineering						
25	Preliminary Engineering	LS	1	\$ 153,000	\$ 153,000	Based on Total Construction Phase excluding CEI and Contingency. Constr<\$5M, PE=30%; Constr>\$5M, PE=20%
Total Preliminary Engineering Phase					\$ 153,000	
Right of Way						
26	Right of Way Costs	LS	1	\$ 25,278	\$ 25,278	See right of way computations
27	Utility Costs to Right of Way Project	LS		\$ 51,000	\$ 51,000	10% for private utilities - applied to construction cost excluding CEI/Contingency
Total Right of Way Phase					\$ 76,278	
28	Environmental Compliance - PE, RW, CN (3%)	LS	1	\$ 27,000	\$ 27,000	
Total Project Cost in FY24 Dollars					\$ 902,224	
SAY					\$ 902,000	

Henrico Doran Road Capital Trail Connector
Option 3B
Conceptual Cost Estimate April 2024
Non-inflated Costs are in FY24 Dollars

Item	Description	Unit	Quantity	Unit Cost	Total	Assumptions
Construction						
I. General Contract Items					\$ 1,674,147	
1	Construction Surveying	LS	1		\$ 56,749	1% Items 3 thru 25
2	Mobilization	LS	1		\$ 313,743	Per Sec. 513.02 of 2020 VDOT Road & Bridge Specs (Based on Subtotal Items 3 thru 27)
3	Clearing and Grubbing	AC	1.55	\$ 15,000.00	\$ 23,250	Area within construction limits
4	Regular Excavation	CY	266	\$ 55.00	\$ 14,630	from corridor 266CY
5	Borrow Excavation	CY	16877	\$ 75.00	\$ 1,265,775	Fill – Cut x (1-Shrinkage) OR half fill. Whichever is larger. Note: If not noted in the Soils Report, use shrinkage = .18. from corridor 17095CY
II. Pavement Items					\$ 49,960	
6	Paved Shared Use Path	SY	1249	\$ 40.00	\$ 49,960	Area of proposed 10' wide shared use path.
7	Full Depth Pavement	SY	0	\$ 100.00	\$ -	Area between saw cut and proposed curb and gutter.
8	Demolition of Pavement	SY	0	\$ 15.00	\$ -	
9	Saw-cut (Full Depth)	LF	0	\$ 8.00	\$ -	
III. Drainage Items					\$ -	Items covered by lump sum item #21 below.
IV. Incidental Items					\$ 260,236	
10	Handrail	LF	1210	\$ 150.00	\$ 181,500	
11	Sidewalk Concrete	SY		\$ 90.00	\$ -	
12	Curb and Gutter	LF		\$ 55.00	\$ -	
13	Topsoil and Seeding	SY	4921	\$ 16.00	\$ 78,736	Area of grass strip of cross section and outer shelf.
V. Traffic					\$ -	Items covered by lump sum item #25 below.
14	Lighting	EA	0		\$ -	
Subtotal Items 3 thru 14					\$ 1,613,851	
VI. Structures					\$ 2,880,000	
15	Bridge	SF	7200	\$ 400.00	\$ 2,880,000	Assume 450 ft. bridge 16 ft wide to span 100 year floodplain using 4 long spans
16	Retaining walls	SF	0	\$ -	\$ -	Assume no approach retaining walls
VII. Utility Relocation					\$ 492,000	
17	16" SANITARY SEWER PIPE	L.F.	530	\$ 750.00	\$ 397,500	
18	SANITARY SEWER MANHOLE	L.F.	60	\$ 1,500.00	\$ 90,000	
19	MANHOLE FRAME & COVER F & C-1	EA.	3	\$ 1,500.00	\$ 4,500	
VIII. Misc. Lump Sum Items (% of Items 3 thru 14)					\$ 689,000	
20	Erosion and Sediment Control (2.5%)	LS	1		\$ 41,000	
21	Misc. Drainage (5%)	LS	1		\$ 81,000	15% for curb and gutter section ; 5% for open section segments
22	Misc. Signing & Marking (2.5%)	LS	1		\$ 41,000	2.5% for relocation of signs and marking.
23	Maintenance of Traffic (0%)	LS	-		\$ -	5% for rural sections; 15% urban. No MOT Required for this option.
24	Roadside Development (2.5%)	LS	1		\$ 41,000	
25	Misc. Construction (30%)	LS	1		\$ 485,000	
Subtotal Items 1 thru 25					\$ 6,045,343	
IX. Misc. Lump Sum Items					\$ 1,633,000	
26	CEI / Contingency (27%)	LS	1		\$ 1,633,000	27% of items 1-25
Total Construction Phase					\$ 7,678,343	
Preliminary Engineering						
27	Preliminary Engineering	LS	1		\$ 1,210,000	Based on Total Construction Phase excluding CEI and Contingency. Constr<\$5M, PE=30%; Constr>\$5M, PE=20%
Total Preliminary Engineering Phase					\$ 1,210,000	
Right of Way						
28	Right of Way Costs	LS	1		\$ 129,069	See right of way computations
29	Utility Costs to Right of Way Project	LS	1		\$ 605,000	10% for private utilities - applied to construction cost excluding CEI/Contingency
Total Right of Way Phase					\$ 734,069	
30	Environmental Compliance - PE, RW, CN (3%)	LS	1		\$ 289,000	
Total Project Cost in FY24 Dollars					\$ 9,911,412	
SAY					\$ 9,911,000	

Henrico Doran Road Capital Trail Connector
Option 4A
Conceptual Cost Estimate April 2024
Non-inflated Costs are in FY24 Dollars

Item	Description	Unit	Quantity	Unit Cost	Total	Assumptions
Construction						
I.	General Contract Items				\$ 28,936	
1	Construction Surveying	LS	1		\$ 1,686	1% Items 3 thru 22
2	Mobilization	LS	1		\$ 16,855	Per Sec. 513.02 of 2020 VDOT Road & Bridge Specs (Based on Subtotal Items 3 thru 27)
3	Clearing and Grubbing	AC	0.16	\$ 15,000.00	\$ 2,400	Area within construction limits
4	Regular Excavation	CY	39	\$ 55.00	\$ 2,145	From model 39CY
5	Borrow Excavation	CY	78	\$ 75.00	\$ 5,850	Fill - Cut x (1-Shrinkage) OR half fill. Whichever is larger. Note: If not noted in a Soils Report, use shrinkage = .18. From model 110CY
II.	Pavement Items				\$ 43,971	
6	Paved Shared Use Path	SY	434	\$ 40.00	\$ 17,360	Area of proposed 10' wide shared use path.
7	Full Depth Pavement	SY	155	\$ 100.00	\$ 15,500	
8	Demolition of Pavement	SY	489	\$ 15.00	\$ 7,335	
9	Saw-cut (Full Depth)	LF	472	\$ 8.00	\$ 3,776	
III.	Drainage Items				\$ -	Items covered by lump sum item #18 below.
					\$ -	
					\$ -	
IV.	Incidental Items				\$ 45,183	
10	Curb	LF	95	\$ 35.00	\$ 3,325	
11	Sidewalk Concrete	SY	99	\$ 90.00	\$ 8,910	
12	Curb and Gutter	LF	460	\$ 55.00	\$ 25,300	
13	Topsoil and Seeding	SY	478	\$ 16.00	\$ 7,648	Area of grass strip of cross section and outer shelf.
V.	Traffic				\$ -	Items covered by lump sum item #22 below.
14	Lighting	EA	0		\$ -	
					\$ 99,549	
VI.	Structures				\$ -	
15	Retaining Walls	SF			\$ -	
16	Bridge	SF			\$ -	
VII.	Utility Relocation				\$ -	
					\$ -	
					\$ -	
					\$ -	
VIII.	Misc. Lump Sum Items (% of Items 3 thru 14)				\$ 69,000	
17	Erosion and Sediment Control (2.5%)	LS	1		\$ 3,000	
18	Misc. Drainage (15%)	LS	1		\$ 15,000	15% for curb and gutter section ; 5% for open section segments
19	Misc. Signing & Marking (2.5%)	LS	1		\$ 3,000	2.5% for relocation of signs and marking.
20	Maintenance of Traffic (15%)	LS	1		\$ 15,000	5% for rural sections; 15% urban
21	Roadside Development (2.5%)	LS	1		\$ 3,000	
22	Misc. Construction (30%)	LS	1		\$ 30,000	
					\$ 187,090	
IX.	Misc. Lump Sum Items				\$ 51,000	
23	CEI / Contingency (27%)	LS	1		\$ 51,000	27% of items 1-22
					\$ 238,090	
Preliminary Engineering						
24	Preliminary Engineering	LS	1		\$ 57,000	Based on Total Construction Phase excluding CEI and Contingency. Constr<\$5M, PE=30%; Constr>\$5M, PE=20%
					\$ 57,000	
Right of Way						
25	Right of Way Costs	LS	1		\$ 16,814	See right of way computations
26	Utility Costs to Right of Way Project	LS			\$ 19,000	10% for private utilities - applied to construction cost excluding CEI/Contingency
					\$ 35,814	
27	Environmental Compliance - PE, RW, CN (3%)	LS	1		\$ 10,000	
					\$ 340,904	
					\$ 341,000	

Henrico Doran Road Capital Trail Connector
Option 4B
Conceptual Cost Estimate April 2024
Non-inflated Costs are in FY24 Dollars

Item	Description	Unit	Quantity	Unit Cost	Total	Assumptions
Construction						
I. General Contract Items					\$ 370,507	
1	Construction Surveying	LS	1		\$ 15,721	1% Items 3 thru 25
2	Mobilization	LS	1		\$ 108,601	Per Sec. 513.02 of 2020 VDOT Road & Bridge Specs (Based on Subtotal Items 3 thru 27)
3	Clearing and Grubbing	AC	0.75	\$ 15,000.00	\$ 11,250	Area within construction limits
4	Regular Excavation	CY	92	\$ 55.00	\$ 5,060	from corridor 86CY
5	Borrow Excavation	CY	3065	\$ 75.00	\$ 229,875	Fill - Cut x (1-Shrinkage) OR half fill. Whichever is larger. Note: If not noted in the Soils Report, use shrinkage = .18. from corridor 3112CY
II. Pavement Items					\$ 30,918	
6	Paved Shared Use Path	SY	727	\$ 40.00	\$ 29,080	Area of proposed 10' wide shared use path.
7	Full Depth Pavement	SY	13	\$ 100.00	\$ 1,300	Area between saw cut and proposed curb and gutter.
8	Demolition of Pavement	SY	6	\$ 15.00	\$ 90	
9	Saw-cut (Full Depth)	LF	56	\$ 8.00	\$ 448	
III. Drainage Items					\$ -	Items covered by lump sum item #21 below.
					\$ -	
					\$ -	
IV. Incidental Items					\$ 123,922	
10	Handrail	LF	500	\$ 150.00	\$ 75,000	
11	Sidewalk Concrete	SY	22	\$ 90.00	\$ 1,980	
12	Curb and Gutter	LF	54	\$ 55.00	\$ 2,970	
13	Topsoil and Seeding	SY	2872	\$ 16.00	\$ 45,952	Area of grass strip of cross section and outer shelf.
V. Traffic					\$ -	Items covered by lump sum item #25 below.
14	Lighting	EA	0		\$ -	
Subtotal Items 3 thru 14					\$ 401,025	
VI. Structures					\$ 900,000	
15	Retaining Walls	SF	800	\$ 125.00	\$ 100,000	Assume 50 ft of wall each side of bridge abutment with avg. height of 8 ft.
16	Bridge	SF	2000	\$ 400.00	\$ 800,000	125 ft x 16 ft (to be conservative with spanning floodway)
VII. Utility Relocation					\$ 35,000	
17	ADJUST EXIST. FIRE HYDRANT	EA.	2	\$ 6,500.00	\$ 13,000	
18	ADJUST EXIST. VALVE & BOX	EA.	2	\$ 1,000.00	\$ 2,000	
19	NS RELOCATE EXIST. TEST STATION AND VENT	EA.	1	\$ 20,000.00	\$ 20,000	
VIII. Misc. Lump Sum Items (% of Items 3 thru 14)					\$ 236,000	
20	Erosion and Sediment Control (2.5%)	LS	1		\$ 11,000	
21	Misc. Drainage (5%)	LS	1		\$ 21,000	15% for curb and gutter section ; 5% for open section segments
22	Misc. Signing & Marking (2.5%)	LS	1		\$ 11,000	2.5% for relocation of signs and marking.
23	Maintenance of Traffic (15%)	LS	1		\$ 61,000	5% for rural sections; 15% urban
24	Roadside Development (2.5%)	LS	1		\$ 11,000	
25	Misc. Construction (30%)	LS	1		\$ 121,000	
Subtotal Items 1 thru 25					\$ 1,696,347	
IX. Misc. Lump Sum Items					\$ 459,000	
26	CEI / Contingency (27%)	LS	1		\$ 459,000	27% of items 1-25
Total Construction Phase					\$ 2,155,347	
Preliminary Engineering						
27	Preliminary Engineering	LS	1		\$ 509,000	Based on Total Construction Phase excluding CEI and Contingency. Constr<\$5M, PE=30%; Constr>\$5M, PE=20%
Total Preliminary Engineering Phase					\$ 509,000	
Right of Way						
28	Right of Way Costs	LS	1		\$ 31,880	See right of way computations
29	Utility Costs to Right of Way Project	LS	1		\$ 170,000	10% for private utilities - applied to construction cost excluding CEI/Contingency
Total Right of Way Phase					\$ 201,880	
30	Environmental Compliance - PE, RW, CN (3%)	LS	1		\$ 86,000	
Total Project Cost in FY24 Dollars					\$ 2,952,228	
SAY \$					2,952,000	