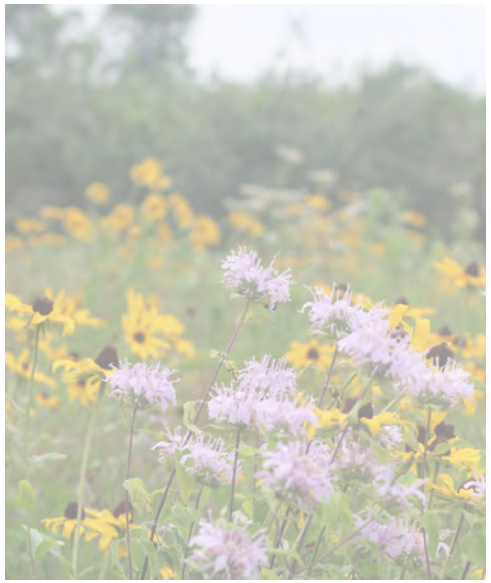
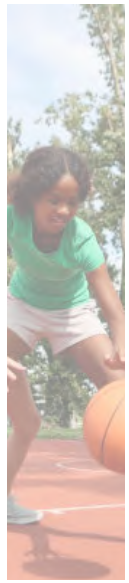
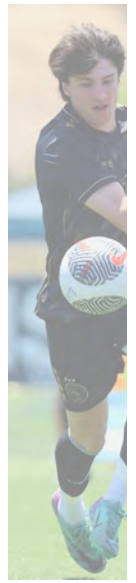
SOUTH SHORE PARK
MASTER PLAN

PROJECT NO.:P58810, CONTRACT NO. :P588101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INTRODUCTION

The South Shore Park Master Plan is a comprehensive development initiative led by the Anne Arundel County Department of Public Works (DPW) and the Department of Recreation and Parks (DRP). Located at 1202 Generals Highway in Crownsville, Maryland, the project encompasses approximately 22.31 acres of County-owned land. The primary objective is to transform this undeveloped site into a vibrant community recreational amenity, integrating a variety of recreational facilities and amenities.

This plan supports the broader goals outlined in Anne Arundel County's Plan2040 and the Greenways Master Plan. These plans emphasize connectivity, environmental sustainability, and recreational opportunities, aiming to preserve open spaces, protect natural resources, and expand recreational facilities to serve the growing population. The South Shore Park Master Plan complements the Anne Arundel County Greenways Master Plan by enhancing the connectivity of regional trails, providing additional recreational amenities, and preserving natural resources.

The proposed South Shore Trail will connect Annapolis to Odenton and link to the existing WB&A trail system, promoting pedestrian and bicycle access. This trail integration is designed to foster active lifestyles, reduce vehicle dependency, and provide scenic, safe pathways for residents and visitors alike. South Shore Trail is a planned, paved 10' wide asphalt trail generally utilizing the abandoned right of way of the Washington, Baltimore & Annapolis (WB&A) Railroad between Annapolis and Odenton, wherever feasible. When complete, the trail will ultimately connect with the Colonial Annapolis Maritime Route on the east and the WB&A Trail on the west. This trail will provide significant local and regional recreational and transportation benefits with multiple spurs and connections to key points of interest along its route and the surrounding area.

Image: Open Street Map

Additionally, the South Shore Park master plan includes provisions for preserving and enhancing natural landscapes, contributing to the County's goal of protecting environmentally sensitive areas and supporting sustainable development practices. The South Shore Park will serve as a key node in the Greenways network, providing essential recreational facilities while promoting green space conservation, enhancing water quality, and supporting public health and tourism. The park's design integrates seamlessly with the South Shore Trail, further enhancing pedestrian and cyclist connectivity across the county, linking Annapolis to Odenton and connecting to the existing WB&A Trail system. This connectivity is pivotal in creating a cohesive network of greenways that facilitate recreational activities and environmental education.

The master plan includes two full-size multipurpose fields (one indoor and one outdoor), portable restrooms, a basketball court, a field house, and both indoor and outdoor turf fields. The design also addresses irrigation, signage, site roadways, utilities, frontage improvements, parking, access to the South Shore Trail, stormwater management, and landscaping. This comprehensive approach ensures that the park meets the diverse needs of the community while maintaining a strong emphasis on environmental sustainability. Each element of the design is carefully planned to minimize ecological impact and enhance the natural beauty of the area.

By incorporating the principles of connectivity and sustainability, the South Shore Park Master Plan not only addresses current recreational needs but also ensures long-term benefits for the community and the environment. The project represents a significant investment in the well-being of Anne Arundel County's residents, providing a space for leisure, sports, and community events, all while preserving the natural heritage of the region. This balanced approach between development and conservation exemplifies the county's commitment to creating resilient, livable communities.

MASTER PLAN PROCESS

The development of the South Shore Park Master Plan involved extensive collaboration with various stakeholders to ensure the project meets the needs and expectations of the community while adhering to regulatory requirements. The process included:

- **Site Investigation** : A thorough assessment and verification of existing conditions were conducted through GIS mapping, site reconnaissance, and field verification. This phase involved evaluating historical features, archaeological research, soil conditions, vegetation, wetlands, topography, and environmental issues to establish a comprehensive understanding of the site.

- **Kickoff Meeting** : The project was initiated with a kickoff meeting to establish points of contact and review the goals and intent of the project with representatives from the Department of Public Works (DPW) and the Department of Recreation and Parks (DRP). This meeting set the foundation for a coordinated and collaborative planning process.

- **Zoning Review**: The County Zoning Code and mapping were evaluated to determine the suitability of the intended use within the jurisdiction's zoning regulations. This review ensured that the proposed park facilities align with local zoning requirements and land-use policies.

- **Staff Review Meeting** : Draft reports and graphics were presented to DRP staff for review and feedback. This iterative process allowed for the incorporation of staff insights and ensured that the evolving plan remained aligned with departmental objectives and standards.

- **Utility and Traffic Analysis:** The availability of water and sewer services was analyzed, and a minimal traffic analysis was conducted to assess the impact of the proposed park amenities. This phase included a meeting with the Maryland State Highway Administration (SHA) on January 25, 2024, to discuss the potential impacts on traffic and site access. Key topics included the traffic study, trip generation, and proposed site impacts associated with the South Shore Park project.

- **Environmental Considerations:** Stormwater management, forest conservation requirements, and environmental features that might complicate permitting were addressed. This step ensured that the park development would comply with environmental regulations and promote sustainability.

- **Cost Estimation**: A detailed cost estimate for the amenities and total site development was developed, including any required remedial activities. This financial analysis provided a clear understanding of the project's budgetary requirements and informed decision-making throughout the planning process.

By following this structured process, the South Shore Park Master Plan ensures that the development is grounded in thorough research, comprehensive stakeholder engagement, and adherence to best practices in park design and environmental stewardship. This approach underscores the importance of process in creating a functional, sustainable, and community-oriented park.

SITE ANALYSIS

The site is located at 1202 Generals Highway in Crownsville, MD 21032, at the intersection of Generals Highway, Old Generals Highway, and the ramp to I-97 north. Centrally situated in Anne Arundel County, the site is 7 miles north of Annapolis and 10 miles south of BWI Airport. It is bordered by Route 178 to the north and east, I-97 to the west, and residential communities to the south.

Spanning several parcels of land totaling 22.31 acres, the park includes a 13.1-acre parcel of agricultural land along the west side of Generals Highway, which has been cleared of woods, and a 9.21-acre fully wooded undeveloped parcel to the northwest. This wooded area includes streams and their respective buffers, with three tributaries around the site: Bacon Ridge Branch and Plum Creek to the east and west, and Maynadier Creek to the south.

A review of the Maryland Inventory of Historic Places and the National Register of Historic Places indicates no known or mapped historic sites in proximity to the park. Environmental considerations were addressed through a letter dated August 8, 2023, to the Maryland Department of Natural Resources (DNR) Wildlife and Heritage Service (WHS). The DNR's response on September 26, 2023, confirmed no official State or Federal records for listed plant or animal species within the delineated study area. However, remote analysis suggests that the forested area on this property contains Forest Interior Dwelling Bird habitat, and interested landowners can contact DNR for further voluntary guidelines to help conserve this important habitat.

Additionally, a meeting with the Maryland State Highway Administration (SHA) on January 25, 2024, provided key insights into traffic and access considerations. The discussion highlighted the need for a traffic study to assess trip generation and impacts, the evaluation of site distances and horizontal layouts for access points, and potential frontage improvements based on trip generation data. This meeting was crucial for planning appropriate access and ensuring safe, efficient traffic flow.

This site analysis offers a foundational understanding of the physical and environmental context of South Shore Park, guiding the development of a master plan that is responsive to the natural landscape and aligned with community needs.

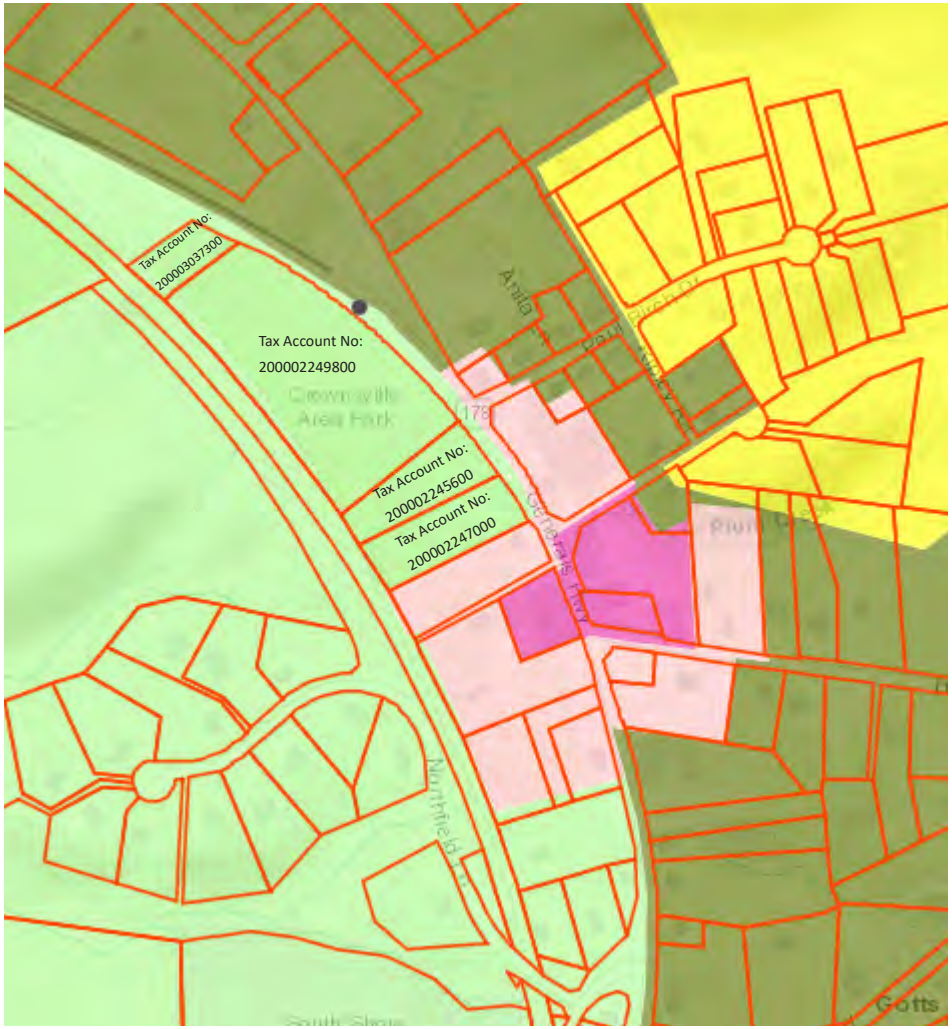
Zoning

The park property is located within the RA - Rural Agricultural zoning district. This district is intended to preserve agricultural lands and accommodate very low-density rural single-family detached residential development, with a subdivision density of approximately one dwelling unit per 20 acres. The minimum lot size is 40,000 square feet, with a maximum lot coverage by structures of 25% and a maximum height of 45 feet.

Per County Code **§ 18-2-301**, the setback requirements for the property in the RA district are as follows:

- Front lot line: **40 feet**
- Rear lot line: **35 feet**
- Side lot line: **15 feet**
- Combined side lot lines: **40 feet**
- Corner side lot line: **40 feet**
- Principal arterial or higher classification road: **50 feet**

The planned park structures will be located within the interior of the park property and will adhere to these zoning setback requirements. Parks are a permitted use within this zoning district, ensuring that the proposed development is compliant with local zoning regulations. This compliance guarantees that the park will be developed in harmony with the rural character and agricultural preservation goals of the RA district.



RA Rural Agricultrual
C1 Commercial - Local
C4 Commercial - Highway
RLD Residential Low Density
R2 Residential

Pedestrian Access

The existing infrastructure along Generals Highway currently lacks dedicated sidewalks, although wide shoulders are present on both sides of the road. Given the rural character of the area, a comprehensive sidewalk network has not been established. Most pedestrian traffic is anticipated to originate from the proposed South Shore Trail, which will run along the rear of the property. Once completed, this trail will extend from Annapolis through Millersville to Odenton, connecting with the existing WB&A Trail system.

To enhance pedestrian safety and connectivity, the Maryland State Highway Administration (SHA) has recommended implementing a crosswalk connection at the signalized intersection of Generals Highway and the park entrance.

Vehicular Access

Direct access to South Shore Park will be provided via a main entrance from Generals Highway (Rt 178) at the signalized intersection with Old Generals Highway. This strategic location ensures safe and efficient access for visitors. The entry and parking facilities will be situated along Rt 178, offering approximately 200 parking spaces for recreational use. Additionally, this site will serve as vehicular access and parking for the proposed South Shore Trail, enhancing connectivity for trail users.

To further improve traffic flow and safety, potential lane and turning adjustments from Generals Highway onto I-97 have been discussed. SHA recommendations include the addition of a right-turn-only lane onto I-97, in addition to a left/through lane. These improvements aim to facilitate smooth ingress and egress, accommodating the expected increase in traffic due to the park's development.

Environmental Features

The project site sits outside of the Critical Area of the Chesapeake Bay. There are no mapped wetlands based upon a search of the National Wetland Inventory and no floodplain based upon FEMA floodplain mapping located within the site.

Conservation & Environmental Protection

Redevelopment of the park should minimize or avoid impacts to existing environmental resources, including steep slopes, forest, streams, buffers, and floodplains. The planned improvements will avoid impacts to floodplains and involve minimal site grading. Impacts to forests and the steep slopes that exist on the property within forest areas are anticipated to be minimized or avoided. Impacts to these environmental resources would require approval of a modification from County planning and zoning.

Vegetation

A forest stand delineation (FSD) was conducted in August 2023. A FSD plan was prepared and is included as an attachment. Current open space located along Rt 178 is over 13 acres in agricultural use. The site is approximately 50% wooded. The 9.21-acre stand is a mid to late successional stand bounded by the north and south bound ramps to I-97 on Rt 178 and Bacon Ridge Branch tributaries to the north, west, and south. There are steep slopes of 15% and over throughout the wooded portion of the site. Common tree species include Sweet gum, Tulip poplar, Red maple, and American beech, with a canopy coverage of 93%. This forested area is prioritized for retention due to its ecological significance.

Topography

The 13-acre portion of the site along Generals Highway is generally level with a gentle 2% slope from east to west. The topography becomes more varied and sloped in the northwestern portion of the site, with natural drainage swales leading to Bacon Ridge Branch. There is a significant grade change of approximately 52 feet across the 9-acre wooded portion of the site.

Drainage

A percolation (perc) test is essential for evaluating soil absorption rates to determine the suitability of a site for a septic system. This test measures how quickly water drains through the soil, providing crucial data for designing an effective sewage disposal system.

The percolation test for South Shore Park, conducted on April 10, 2024, indicated favorable conditions for septic system installation. Multiple test pits revealed a soil profile transitioning from clay loam in the upper layers to sand in the deeper layers, with consistent percolation rates suggesting suitability for the proposed septic system. Final approval from the Anne Arundel County Department of Health will be based on the review and acceptance of detailed engineered plans.

By considering these findings, the South Shore Park development can ensure effective and environmentally responsible wastewater management, supporting the overall sustainability goals of the project.

Soils

The park property consists of several mapped soil units, including Adelphia-Holmdel complex, Annapolis Fine sandy Loam, Collington-Wist complex, Collington Annapolis, Downer-Phalanx complex, Mattapex silt Loam, Russet Urban complex, Shrewbury Loam, and Tinton Loamy. These soils are classified into hydrologic soil groups A, B, C, C/D, and D, with the largest percentage being well to excessively well-drained soils. This mix influences the site's drainage characteristics and suitability for various types of development.

- **Drainage Class:** Most of the site features well-drained and moderately well-drained soils, which are beneficial for recreational facilities. Poorly drained areas, such as Shrewsbury loam (SsA) and Widewater and Issue soils (WBA), will need attention to manage potential drainage issues.

- **Hydrologic Soil Group**: The majority of the site falls into Groups B and C, indicating moderate to slow infiltration rates. Areas classified as Group D will require careful management to mitigate runoff and erosion.

- **K Factor (Erodibility)**: Soils like Adelphia-Holmdel complex and Mattapex-Butlertown complex have higher erodibility, necessitating erosion control measures in areas with significant slopes.

- **Hydric Rating**: Hydric soils, such as Shrewsbury loam and Widewater and Issue soils, are poorly drained and frequently flooded, requiring proper drainage solutions to avoid potential wetland issues.

Utilities

A summary of available utilities serving and available near the project site is discussed below.

STORM DRAINAGE

The park property and immediate surrounding area do not contain a public underground storm drainage collection system or infrastructure. Generals Highway (Rt 178) along the park front and vicinity is an open-section roadway with drainage swale to convey runoff from the roadway. This project has been designed to accommodate all stormwater generated by the additional impervious areas by using non-rooftop disconnect credits, grass swales, micro-bioretention areas, and micro-infiltration areas.

SANITARY SEWER

The site falls within the Rural sewer service area, and there is no public sewer service on site or in the surrounding rural areas. On-site facilities will be required. The project site is within an area requiring wet season perc testing. a perc test plan and application were submitted as part of the master plan process. Perc tests were conducted on-site in the 2024 wet season. Results are included in the appendix

WATER

Public potable water service is not available at the park property. There are no known existing wells present on the park property. Potable water service is envisioned within the scope of the planned park improvements. A new well will be needed to serve the planned multi-purpose field irrigation system and on-site public service.

ELECTRIC

The park property does not currently have electrical service. The master planned park improvements anticipate new electrical service for lighting of buildings, pavilions, site, and/or fields. The planned multi-purpose field irrigation system and new well will require new electrical service to the park.

GAS

BGE gas service is available to the 21032-zip code. Gas service to the site is to be determined.

Views

The views into and out of South Shore Park are somewhat limited due to the site's natural topography and existing vegetation. From Generals Highway, passing motorists will have a partial view of the field. Approaching the site, the park will be buffered by a perimeter of trees, providing a natural screen that enhances the site's aesthetic and preserves the rural character of the area. Within the park, the surrounding woodland creates a contained and immersive environment, enhancing the natural experience for visitors.

Site Distances and Access Points: The extensive frontage along Generals Highway (MD-178) offers flexibility in planning multiple access points. Site distance and horizontal layout evaluations are crucial to confirm the feasibility of two access points. These evaluations will ensure safe and efficient traffic flow, addressing any potential visibility issues that could affect secondary access points.

Right-of-Way (ROW) and Frontage Improvements: Evaluations of ROW lines through the highway and potential impacts are essential for planning frontage improvements. The analysis of trip generation data will determine the need for acceleration and deceleration lanes, ensuring smooth ingress and egress for park visitors. These improvements will be designed to enhance safety and accessibility, accommodating the anticipated increase in traffic due to the park's development.

STORMWATER MANAGEMENT

The requirements for water quality and quantity will be in accordance with the regulations defined in the 2000 Maryland Stormwater Design Manual, Volume I and II, prepared by the Maryland Department of the Environment Water Management Administration, and subsequent Chapter 5 revisions, as well as the Anne Arundel County Stormwater Management Practice and Procedures Manual.

The park property area is comprised of soils with hydrologic soil groups of A, B, C, C/D, and D. Stormwater management requirements are recommended to be met through a combination of Environmental Site Design (ESD) techniques, including non-structural practices and micro-scale practices. Non-rooftop disconnections for linear paths and walks, and rooftop disconnections are anticipated. The parking lot, pavilion, and other associated impervious surfaces are expected to direct stormwater to micro-bioretention or submerged gravel wetlands ESD facilities integrated into the park's landscape. The design and engineering for Phase 1 and future phases should include on-site soil boring and infiltration testing to confirm the selection of ESD facility types and specific design requirements based on infiltration test and groundwater levels.

FOREST CONSERVATION

Preliminary forest conservation calculations were prepared. The break-even point for forest retention on the site is approximately 7 acres. Given that the park development requires the preservation of forestland, efforts will be made to retain as much of the existing forest as possible while balancing the need for recreational facilities. The forest on the site comprises a mid to late successional stand, which provides important ecological functions, including habitat for wildlife, air and water quality improvement, and aesthetic value. The final forest conservation plan will ensure compliance with local and state regulations, promoting sustainable development practices. (SEE APENDIX)

SUMMARY OF RECOMMENDED MATERIALS

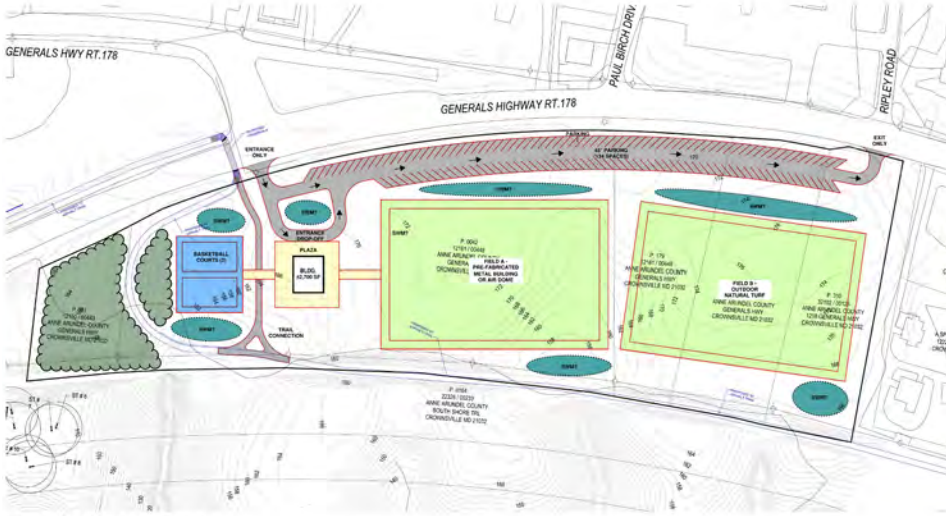
The master plan process for South Shore Park was comprehensive and inclusive, involving extensive public involvement, agency review, and alignment with existing master plans such as the South Shore Trail Master Plan, the Green Infrastructure Master Plan, and Anne Arundel County's Plan2040. Through community input, stakeholder consultations, and detailed site assessments, a variety of key elements were identified to enhance the park's functionality, aesthetics, and sustainability. These elements ensure that the park meets the recreational needs of the community while adhering to environmental stewardship principles and regional connectivity goals.

The County provided park program included the following desired park elements: two (2) full-size multipurpose fields, portable restrooms, a basketball court, a field house, and indoor and outdoor turf fields. The design development will also address irrigation, signage, site roadways, utilities, frontage improvements, parking, access to South Shore Trail, SWM, and landscaping.

CONCEPTUAL DESIGN

Two initial conceptual design alternatives were developed for the South Shore Park project site, each thoughtfully planned to maximize the site's potential while addressing its unique challenges. The primary park programming is concentrated within the northern linear portion of the project site, which is predominantly an open grass area. This area provides ample space for various recreational amenities and allows for efficient layout and design.

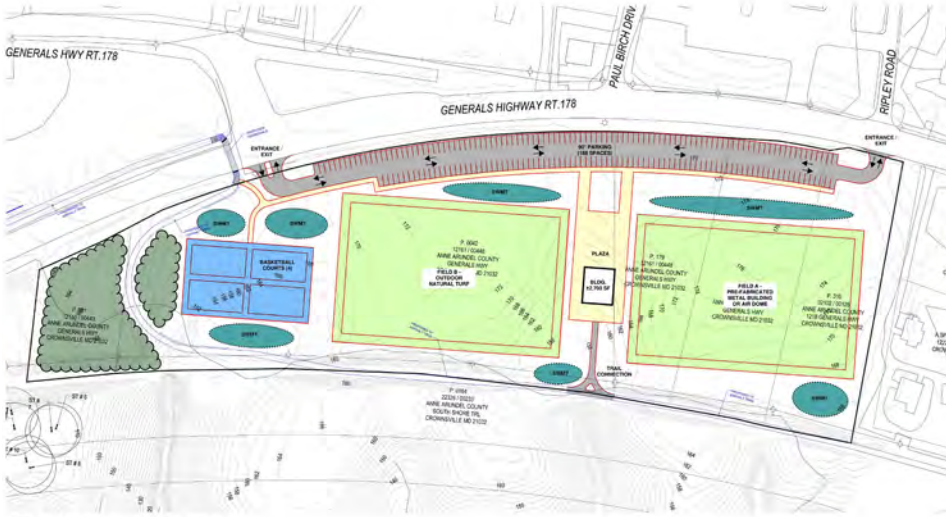
The southwestern portion of the site, however, presents significant development challenges due to its steep slopes, dense forestation, stream buffers, and limited access from the main portion of the park adjacent to Generals Highway. These constraints necessitated the development of two distinct concept options for this standalone area, which can be incorporated into both of the primary concept



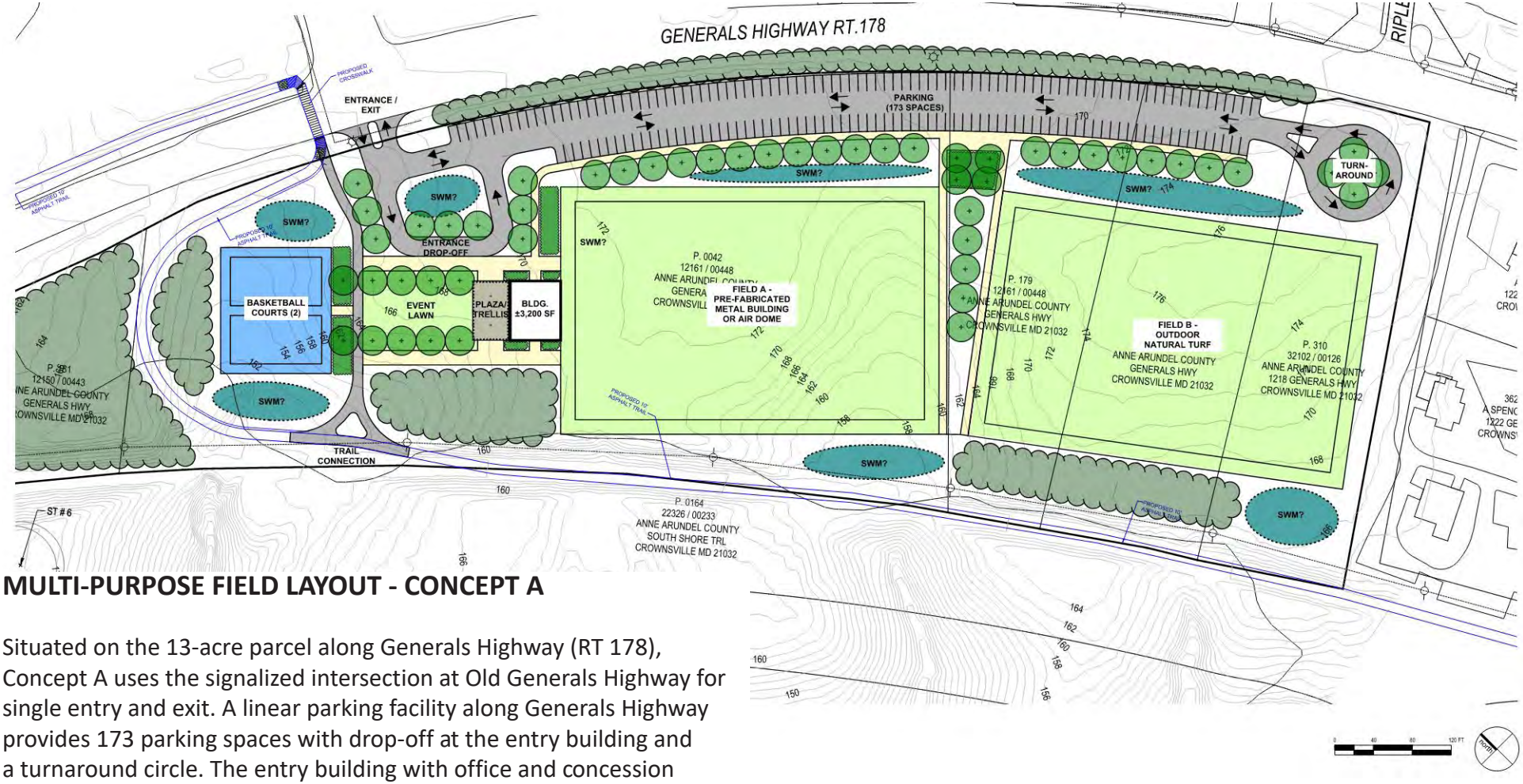
South Shore Park
Preliminary Concept #1

ADJACENT WOODED PARCEL

The adjacent 9-acre wooded parcel presents two distinct development concepts, each offering unique benefits and addressing different recreational needs. The passive recreation area offers a sustainable, low-impact option that preserves the natural environment. In contrast, the active recreation area provides a more developed, versatile space for sports and large gatherings but at a higher environmental and financial cost. Each concept caters to different aspects of community recreation, providing valuable options for diverse needs.

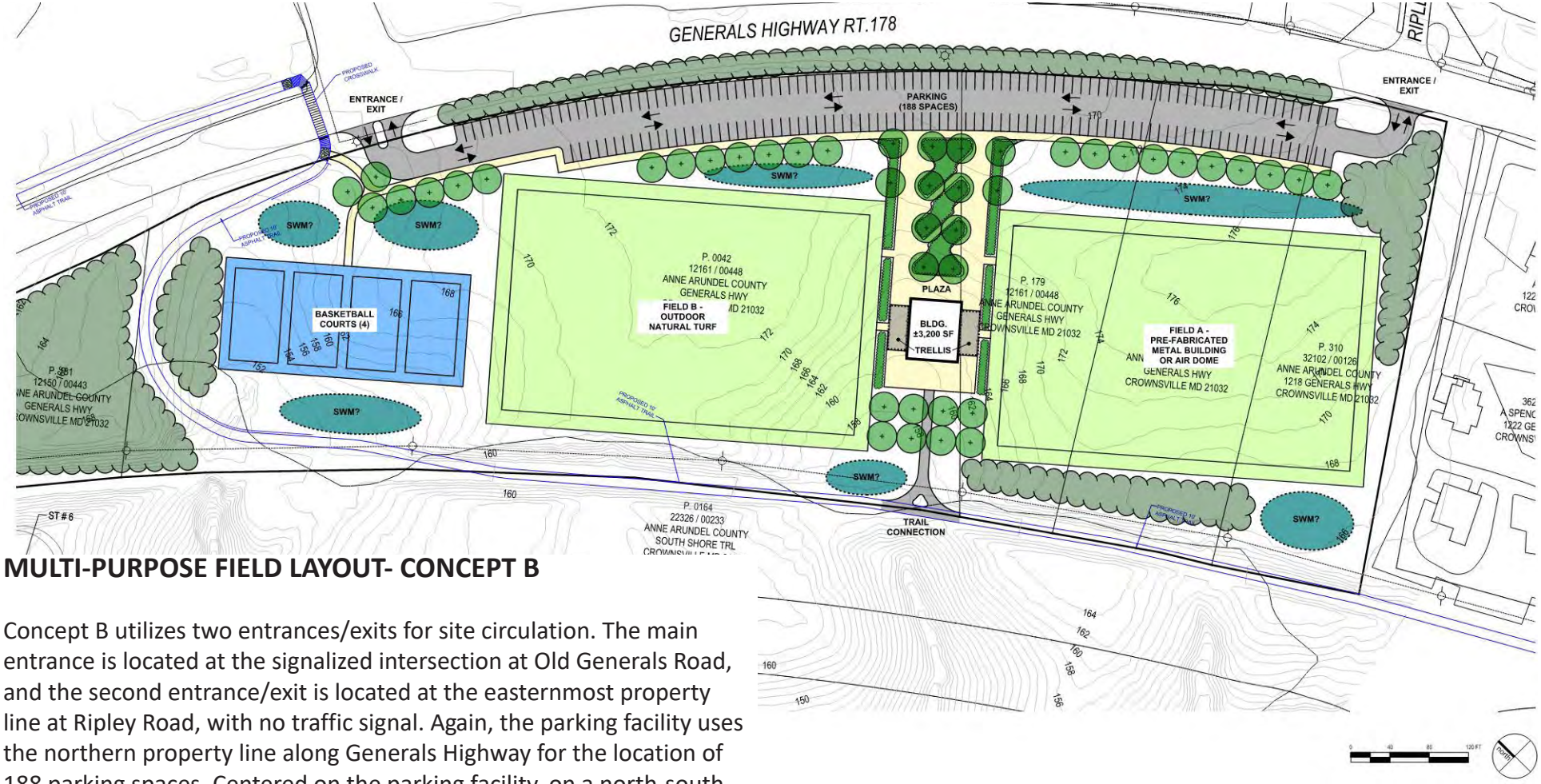


South Shore Park
Preliminary Concept #2



MULTI-PURPOSE FIELD LAYOUT - CONCEPT A

Situated on the 13-acre parcel along Generals Highway (RT 178), Concept A uses the signalized intersection at Old Generals Highway for single entry and exit. A linear parking facility along Generals Highway provides 173 parking spaces with drop-off at the entry building and a turnaround circle. The entry building with office and concession amenities is located at the western end, adjacent to the main entrance. Surrounding the entry building is a plaza/shade area and an open lawn for events. Two basketball courts are on the western side, connected to the South Shore Trail. Two multipurpose fields occupy the eastern side. Pedestrian paths link the parking, fields, plaza, and basketball courts. Preliminary stormwater management areas are indicated for future adjustment, ensuring a good separation of active and passive recreation spaces.



MULTI-PURPOSE FIELD LAYOUT- CONCEPT B

Concept B utilizes two entrances/exits for site circulation. The main entrance is located at the signalized intersection at Old Generals Road, and the second entrance/exit is located at the easternmost property line at Ripley Road, with no traffic signal. Again, the parking facility uses the northern property line along Generals Highway for the location of 188 parking spaces. Centered on the parking facility, on a north-south axis, the site is divided by the lawn plaza and entry building locations. This centrally located axis also provides pedestrian connections to the multipurpose fields and the South Shore Trail at the southern property line. The multipurpose fields are located on either side (east/west) of the entrance building. Four basketball courts are located at the far western portion of the site. This concept provides an entry building centrally located on the site with both multipurpose fields equidistant to the restrooms, concessions, and storage facilities.

CONCEPT 1: PASSIVE RECREATION AREA

The first concept envisions a passive recreation area accessed via a trail that branches off the proposed South Shore Trail. This design emphasizes minimal environmental impact, preserving much of the existing woodland. Key features include:

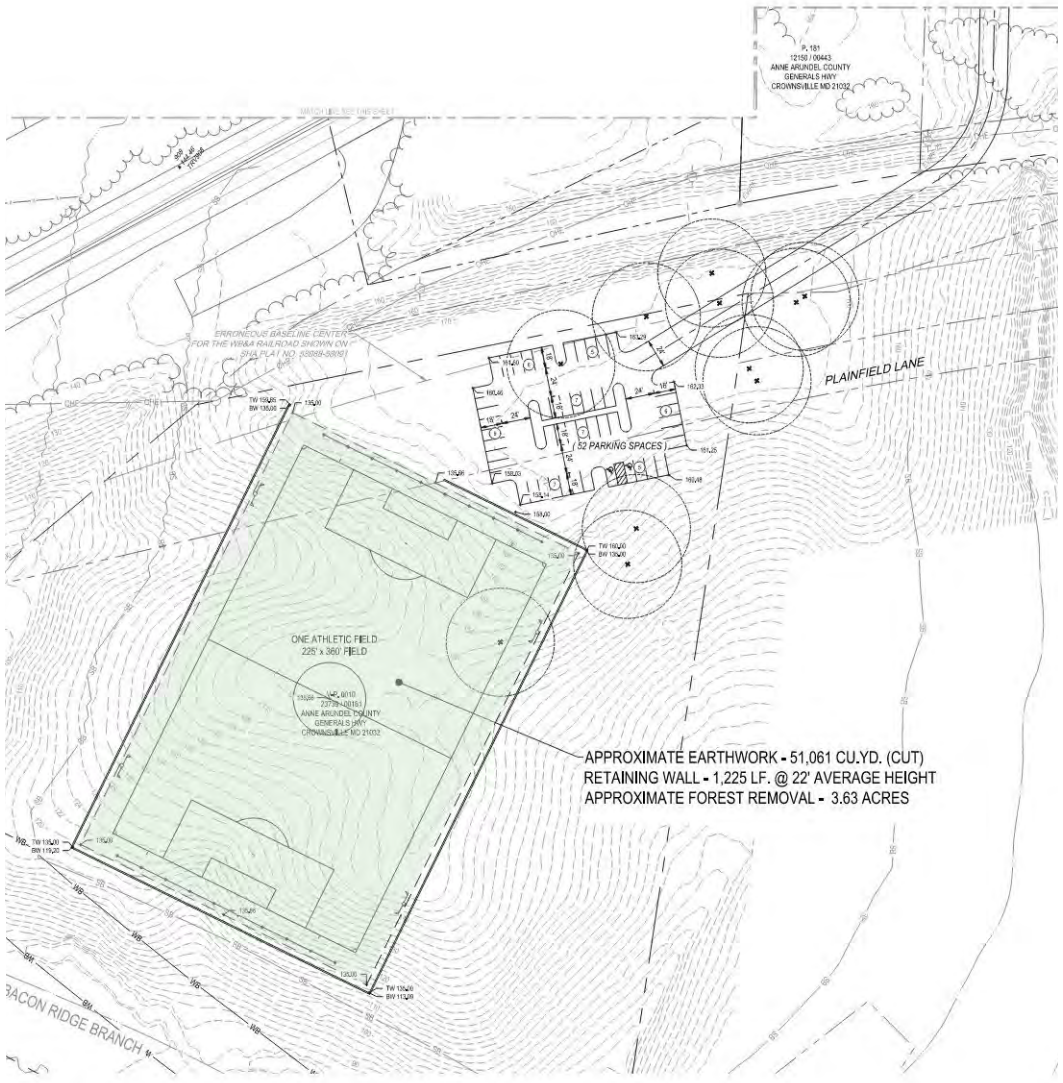
- Trail Loop: A scenic trail that weaves through the woods, providing a tranquil experience for hikers and nature enthusiasts.
- Nature Pavilion: A small structure designed for educational programs, nature observation, and relaxation.
- Lookout Terrace: An elevated platform offering views of the surrounding landscape.
- Tree Canopy Walk: An exciting feature that allows visitors to experience the forest from an elevated perspective.
- Event/Play Lawn Areas: Open spaces for small gatherings, events, and unstructured play.

This concept leverages the natural beauty and existing conditions of the wooded area, requiring minimal clearing and development. It provides a low-impact recreational option that enhances the park's overall diversity.

CONCEPT 2: ACTIVE RECREATION AREA

The second concept proposes a more intensive development, transforming the wooded parcel into an active recreation area with a multipurpose field and associated parking. This design involves significant alterations to the landscape, including:

- Forest Removal: Over 3.5 acres of forest would need to be cleared to accommodate the field and infrastructure.
- Grading and Excavation: The project would require over 51,000 cubic yards of grading cut to level the terrain.
- Retaining Walls: Construction of more than 27,000 square feet of retaining walls, up to 22 feet in height, to manage the site's topography.
- Parking Facility: A 52-space parking lot, providing convenient access for users of the multipurpose field.
- Access Driveway: An 840-foot driveway connecting the Generals Highway entrance to the new facilities.



This concept entails extensive development, resulting in higher costs and significant environmental impact. The removal of existing forest would likely trigger replanting requirements under forest conservation regulations, adding to the project's complexity and expense.

Fieldhouse Structure Analysis

The fieldhouse structure analysis for South Shore Park evaluated two potential building systems for enclosing an artificial turf playfield, approximately 280’ x 420’. This size comfortably fits spectators on the sidelines and supports various recreational activities. The detailed study, conducted by Hord Coplan Macht, provides an in-depth comparison of the two building options, summarizing their components, lead times, and estimated costs.

Air Dome Structure

Components

- Construction and Site Preparation: Involves the Grade Beam (footing/anchor for the dome) and the interior surface/ turf. The air dome manufacturer provides drawings and engineering for the grade beam, while a general contractor manages site preparation and construction activities.
- The Dome: Includes the membrane, access doors (personal and vehicle air locks, exit doors), and cable anchors.
- Inflation System: Handles dome inflation, heating, air conditioning, emergency backup, and automated controls.
- Accessories: Comprises lighting, insulation, netting curtains, and dividers.

Budget Numbers:
Permanent Dome: $2.8 million to $3.3 million.
Seasonal Dome: $2.6 million to $3.2 million.

Other Costs:
Site preparation, utilities, turf/field preparation, potential fire suppression systems, support buildings, and seasonal setup/takedown costs.

Timeline:
Lead times for components are 22-24 weeks from an approved design.

Pre-Engineered Metal Structure

Components:

- Concrete Foundations and Slabs
- Utility Connections (up to 50’ from source)
- PEMB with Code Compliant Insulation and Erection
- Drywall Build-outs for Bathrooms and Office Spaces
- Plumbing for Restrooms
- Exterior Hose Bibs
- Full HVAC System
- Full Sprinkler System
- Electrical System

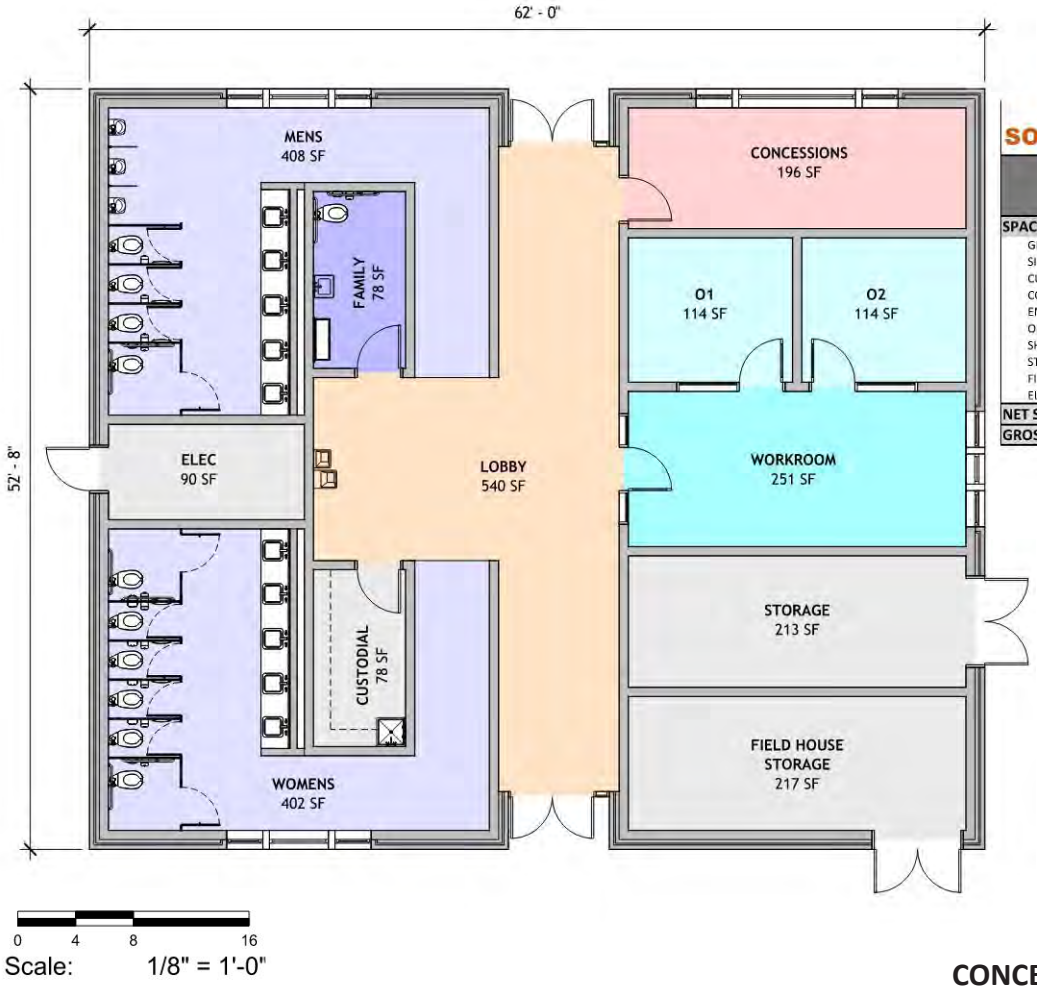
Budget Numbers:
Permanent Dome: $2.8 million to $3.3 million.
Seasonal Dome: $2.6 million to $3.2 million.
Total estimated cost: $7.8 million.

Other Costs:
Site work, sports court/floor, netting, A/V system, low voltage package, scoreboards, and landscaping package.

Timeline:
Approximately 7 months from contract signing to completion.

Summary and Recommendation

After thorough consideration, both building types are viable for South Shore Park. The Air Dome offers a lower initial cost but higher annual operating expenses due to constant inflation requirements. In contrast, the Pre-Engineered Metal Building, though more expensive initially, has lower operational costs and can accommodate additional amenities like restrooms within the structure.



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Scale: 1/8" = 1'-0"

SOUTH SHORE PARK - ENTRANCE BUILDING PROGRAM Date: 9/15/2023

	QUANTITY	AREA	SUB-TOTAL	COMMENTS
SPACE TYPE				
GROUP RESTROOM	2	400	800	7 toilets / 4 sinks each
SINGLE OCC. RESTROOM	1	80	80	1 toilet / 1 sink / 1 adult changing table
CUSTODIAL	1	75	75	1 mop sink
CONCESSIONS / VENDING	1	200	200	
ENTRY LOBBY	1	500	500	
OFFICES	2	120	240	desk, desk chair, 2 guest chairs, bookcase
SHARED WORKROOM	1	250	250	
STORAGE	1	200	200	general storage accesible from exterior
FIELD HOUSE STORAGE	1	200	200	suppport for future field house
ELECTRIC ROOM	1	75	75	main switch gear & meter
NET SF			**2,620**	
GROSS SF			**3,013**	1.3 grossing factor

CONCEPTUAL ENTRANCE BUILDING

The entry building concept plan is 62'x 52', providing restroom facilities, an entry lobby, concessions, office, work, and storage space. Approximately 3000 square feet of space is required for these facilities.

FINAL CONCEPT OF SOUTH SHORE PARK

Overall Site Layout

The final concept for South Shore Park is a thoughtfully integrated blend of the initial two concepts, creating a cohesive and functional community space. The design effectively separates active recreation areas from passive ones, creating a balanced environment that meets diverse community needs. By incorporating stakeholder input, thorough site analysis, and sustainable design principles, the final concept for South Shore Park ensures a vibrant, functional, and environmentally responsible community space.

Access and Parking

Situated on the 13-acre parcel along Generals Highway (RT 178), the design uses the signalized intersection at Old Generals Highway for safe and efficient access. A linear parking facility along Generals Highway provides 157 spaces, a drop-off area, and a turnaround circle. Based on SHA recommendations, this layout emphasizes effective traffic flow and pedestrian safety, minimizing congestion and enhancing connectivity for vehicles and pedestrians.

Central Hub and Community Facilities

At the western end of the site, near the main entrance, is the central hub with an entry building housing office and concession amenities. Surrounding this building is a plaza/shade area and an open lawn for events and community gatherings. The central placement makes the building easily accessible and serves as a hub for visitor activities.

Active and Passive Recreational Spaces

The western side of the site features two basketball courts with pedestrian connections to the South Shore Trail system, promoting active recreation. The design balances active and passive spaces, with the courts' location near the entrance and trail system encouraging use and integration into the overall park experience.

Field House and Entrance Building

On the eastern side of the site, two full-size multipurpose fields, one indoor artificial turf field and one outdoor
with natural turf, shape the landscape. The recommendation to use a pre-engineered
metal building (PEMB) in-lieu of an air-supported structure is based upon several factors. Although a PEMB has a higher initial cost it does provide a longer lifespan, lower on-going specialized maintenance requirements, and represents a more typical building type that would not require special maintenance and would therefore be similar maintenance to other parks building making it easier serviced by existing staff. A This choice ensures that the indoor facility will be durable and cost-effective, providing a reliable space for
year-round sports and activities. The indoor field will feature synthetic turf, offering a consistent playing surface and reducing maintenance costs.`

The central placement of the entry building, which houses office and concession amenities, creates a focal point for the park and provides direct access to the indoor field enclosure. This direct connection enhances accessibility and ensures that visitors can easily navigate between the central hub and the indoor field, promoting a seamless user experience.

Connectivity and Accessibility

Pedestrian pathways connect all major areas within the park, ensuring seamless movement for visitors. The pathways were designed based on input from the master plan process, which highlighted the importance of accessibility and connectivity. These pathways link the parking area, entry building, basketball courts, and multipurpose fields, creating an integrated network that enhances the user experience.

Stormwater Management

Preliminary stormwater management areas are strategically placed throughout the site, with locations and designs to be refined during the design development phases. These facilities will manage runoff and enhance the park's sustainability. The strategy, based on the site's topography, soil conditions, and environmental considerations, includes pollinator plantings and habitats for wildlife, using native species to support local biodiversity and attract pollinators such as bees, butterflies, and birds.

Utilities

Utilities have been planned to effectively support the park's infrastructure needs, including water and sewage systems, electricity, and other essential services, ensuring reliable and sustainable service for all facilities.

SHA Frontage Improvements

SHA frontage improvements will optimize traffic flow and pedestrian safety at the main access points along Generals Highway. Enhancements will include a right-turn-only lane onto I-97, a left/through lane, and pedestrian crosswalks at the signalized intersection of Generals Highway and the park entrance, based on SHA recommendations.

The lot consolidation will follow Anne Arundel County guidelines, merging multiple parcels into a single lot to ensure the entire park development area is legally recognized as one cohesive property, facilitating smoother planning, construction, and maintenance. Detailed permitting requirements will be addressed with county and state agencies to ensure compliance with all relevant regulations and standards.

Permitting

The required permitting for the project is anticipated to include both, project wide as well individual County specific permits. A preliminary list of anticipated permits and regulatory approvals required is listed below.

- Notice of Intent for coverage under the state's General Permit for Stormwater Associated with Construction Activity
- SHA Access Permit
- Permit Agency Review submission though Land Use Navigator
- Grading Permit
- Building Permit, for each structure
- Soil Conservation District approval
- Lot Consolidation by Deed through Planning & Zoning
- Septic Permit – Health Department
- Well Permit (through licensed well driller) – Health Department

CONCEPT PLAN KEY - OVERALL SITE PLAN

1. SITE ENTRANCE & EXIT
2. ENTRANCE SIGN
3. ENTRANCE DRIVE
4. PARKING
5. ACCESSIBLE PARKING
6. TURN-AROUND
7. BASKETBALL COURT
8. BLEACHERS
9. FIELDHOUSE WITH MULTI-PURPOSE FIELD
10. OUTDOOR MULTI-PURPOSE FIELD
11. PLAZA (SHADE TRELLIS, BIKE RACKS, WATER FOUNTAIN, BIKE REPAIR STATIONS, TRASH BINS, ETC.)
12. PEDESTRIAN PROMENADE WITH BENCHES & TRASH BINS
13. ENTRANCE BUILDING (RESTROOMS, CONCESSIONS, LOBBY, OFFICES, STORAGE, ETC.)
14. SIDEWALK (TYP.)
15. SOUTH SHORE TRAIL
16. PARK CONNECTOR TO SOUTH SHORE TRAIL
17. MICRO-BIORETENTION FACILITY (TYP.)
18. LAWN (TYP.)
19. SHADE TREE (TYP.)
20. ORNAMENTAL TREE (TYP.)
21. EVERGREEN TREE (TYP.)

COST ESTIMATION

The development of South Shore Park involves a substantial investment in various infrastructure and recreational facilities. The comprehensive cost estimate for the project totals $15,758,331, which includes costs for site preparation, earthwork, erosion control, drainage facilities, paving, roadside and site improvements, electrical facilities, landscaping, and park specialties. The cost estimate includes architecture and engineering design fees and a design and construction contingency but does not include escalation factors. See cost breakdown below.

Item No.	Description	Cost
1	General Requirements	$ 175,087
2	Surface Preparation & Earthwork	$ 1,630,400
3	Erosion Controls	$ 113,490
4	Drainage Facilities	$ 749,652
5	Paving & Site Improvements	$ 1,065,717
6	Electrical Facilities including field lighting	$ 632,250
7	Water & Sewer Facilites	$ 300,000
8	Landscape & Athletic Field	$ 85,503
9	Park Specialities	$ 226,560
10	Entrance Building	$ 360,000
11	Field House Building	$ 8,130,000
	Subtotal	**$ 13,468,659**
	Architecture & Engineering Design (8%)	$ 942,806
	Design & Construction Contingency (10%)	$ 1,346,866
	Total Estimated Costs	**$ 15,758,331**

APPENDIX

1. Master Plan
2. Forest Stand Delineation (FSD)
3. DNR RTE Letter
4. Preliminary SWM Concept Plan
5. Soil Percolation Plan and Test Results
6. Conceptual Fieldhouse Structure Study
7. Soil Information

MASTER PLAN

CONCEPT PLAN KEY - OVERALL SITE PLAN

1. SITE ENTRANCE & EXIT
2. ENTRANCE SIGN
3. ENTRANCE DRIVE
4. PARKING
5. ACCESSIBLE PARKING
6. TURN-AROUND
7. BASKETBALL COURT
8. BLEACHERS
9. FIELDHOUSE WITH MULTI-PURPOSE FIELD
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18. LAWN (TYP.)
19. SHADE TREE (TYP.)
20. ORNAMENTAL TREE (TYP.)
21. EVERGREEN TREE (TYP.)

SOUTH SHORE PARK - CONCEPT MASTER PLAN

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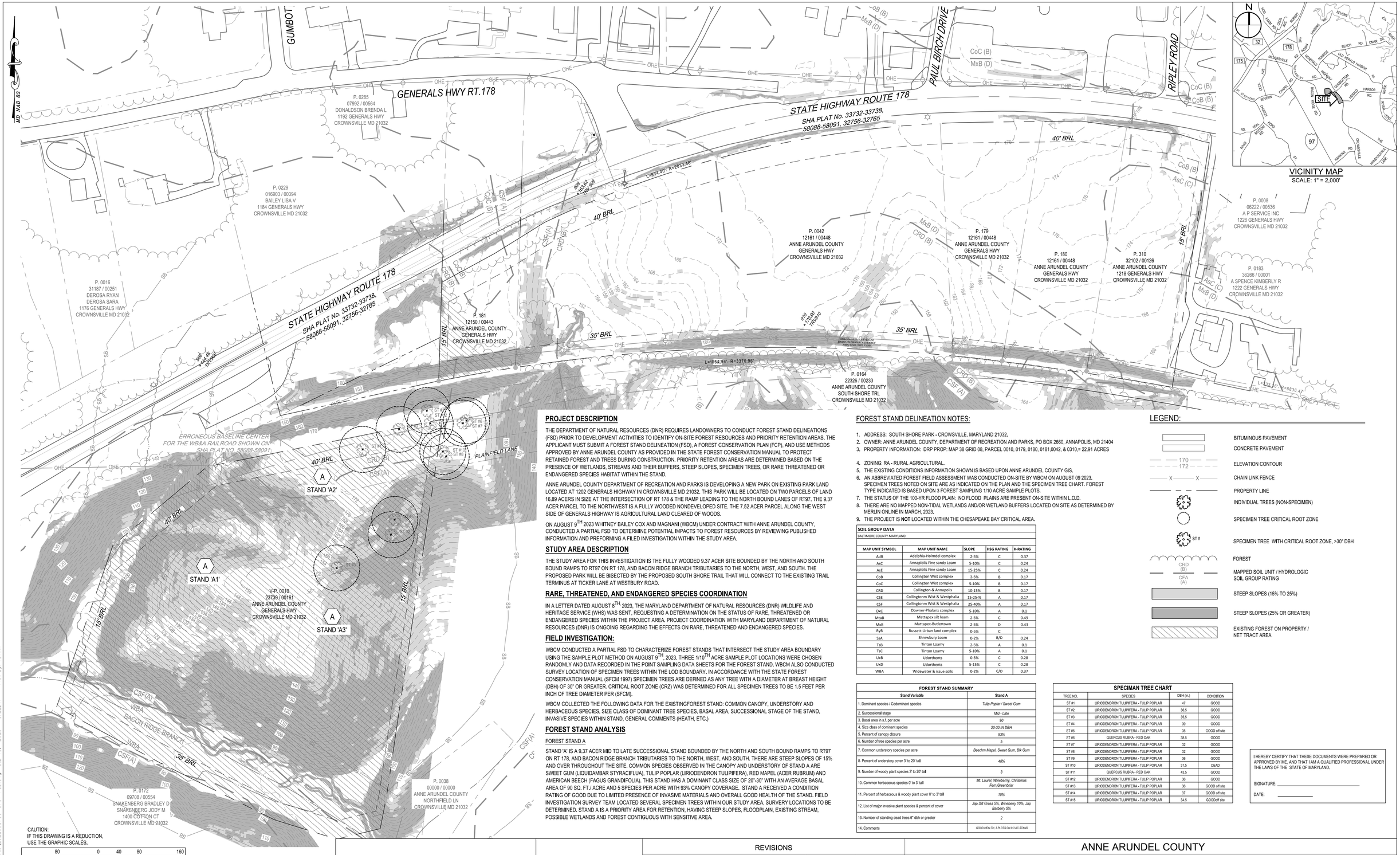
FOREST STAND DELINEATION (FSD)



PROJECT DESCRIPTION

THE DEPARTMENT OF NATURAL RESOURCES (DNR) REQUIRES LANDOWNERS TO CONDUCT FOREST STAND DELINEATIONS (FSD) PRIOR TO DEVELOPMENT ACTIVITIES TO IDENTIFY ON-SITE FOREST RESOURCES AND PRIORITY RETENTION AREAS. THE APPLICANT MUST SUBMIT A FOREST STAND DELINEATION (FSD), A FOREST CONSERVATION PLAN (FCP), AND USE METHODS APPROVED BY ANNE ARUNDEL COUNTY AS PROVIDED IN THE STATE FOREST CONSERVATION MANUAL TO PROTECT RETAINED FOREST AND TREES DURING CONSTRUCTION. PRIORITY RETENTION AREAS ARE DETERMINED BASED ON THE PRESENCE OF WETLANDS, STREAMS AND THEIR BUFFERS, STEEP SLOPES, SPECIMEN TREES, OR RARE THREATENED OR ENDANGERED SPECIES HABITAT WITHIN THE STAND.

ANNE ARUNDEL COUNTY DEPARTMENT OF RECREATION AND PARKS IS DEVELOPING A NEW PARK ON EXISTING PARK LAND LOCATED AT 1202 GENERALS HIGHWAY IN CROWNSVILLE MD 21032. THIS PARK WILL BE LOCATED ON TWO PARCELS OF LAND 16.89 ACERS IN SIZE AT THE INTERSECTION OF RT 178 & THE RAMP LEADING TO THE NORTH BOUND LANES OF RT97. THE 9.37 ACER PARCEL TO THE NORTHWEST IS A FULLY WOODED NONDEVELOPED SITE. THE 7.52 ACER PARCEL ALONG THE WEST SIDE OF GENERALS HIGHWAY IS AGRICULTURAL LAND CLEARED OF WOODS.

ON AUGUST 9TH 2023 WHITNEY BAILEY COX AND MAGNANI (WBCM) UNDER CONTRACT WITH ANNE ARUNDEL COUNTY, CONDUCTED A PARTIAL FSD TO DETERMINE POTENTIAL IMPACTS TO FOREST RESOURCES BY REVIEWING PUBLISHED INFORMATION AND PREFORMING A FILED INVESTIGATION WITHIN THE STUDY AREA.

STUDY AREA DESCRIPTION

THE STUDY AREA FOR THIS INVESTIGATION IS THE FULLY WOODED 9.37 ACER SITE BOUNDED BY THE NORTH AND SOUTH BOUND RAMPS TO RT97 ON RT 178, AND BACON RIDGE BRANCH TRIBUTARIES TO THE NORTH, WEST, AND SOUTH. THE PROPOSED PARK WILL BE BISECTED BY THE PROPOSED SOUTH SHORE TRAIL THAT WILL CONNECT TO THE EXISTING TRAIL TERMINUS AT TICKER LANE AT WESTBURY ROAD.

RARE, THREATENED, AND ENDANGERED SPECIES COORDINATION

IN A LETTER DATED AUGUST 8TH, 2023, THE MARYLAND DEPARTMENT OF NATURAL RESOURCES (DNR) WILDLIFE AND HERITAGE SERVICE (WHS) WAS SENT, REQUESTING A DETERMINATION ON THE STATUS OF RARE, THREATENED OR ENDANGERED SPECIES WITHIN THE PROJECT AREA. PROJECT COORDINATION WITH MARYLAND DEPARTMENT OF NATURAL RESOURCES (DNR) IS ONGOING REGARDING THE EFFECTS ON RARE, THREATENED AND ENDANGERED SPECIES.

FIELD INVESTIGATION:

WBCM CONDUCTED A PARTIAL FSD TO CHARACTERIZE FOREST STANDS THAT INTERSECT THE STUDY AREA BOUNDARY USING THE SAMPLE PLOT METHOD ON AUGUST 9TH, 2023. THREE 1/10TH ACRE SAMPLE PLOT LOCATIONS WERE CHOSEN RANDOMLY AND DATA RECORDED IN THE POINT SAMPLING DATA SHEETS FOR THE FOREST STAND. WBCM ALSO CONDUCTED SURVEY LOCATION OF SPECIMEN TREES WITHIN THE LOD BOUNDARY. IN ACCORDANCE WITH THE STATE FOREST CONSERVATION MANUAL (SFCM 1997) SPECIMEN TREES ARE DEFINED AS ANY TREE WITH A DIAMETER AT BREAST HEIGHT (DBH) OF 30" OR GREATER. CRITICAL ROOT ZONE (CRZ) WAS DETERMINED FOR ALL SPECIMEN TREES TO BE 1.5 FEET PER INCH OF TREE DIAMETER PER (SFCM).

WBCM COLLECTED THE FOLLOWING DATA FOR THE EXISTINGFOREST STAND: COMMON CANOPY, UNDERSTORY AND HERBACEOUS SPECIES, SIZE CLASS OF DOMINANT TREE SPECIES, BASAL AREA, SUCCESSIONAL STAGE OF THE STAND, INVASIVE SPECIES WITHIN STAND, GENERAL COMMENTS (HEATH, ETC.)

FOREST STAND ANALYSIS

FOREST STAND A

STAND 'A' IS A 9.37 ACER MID TO LATE SUCCESSIONAL STAND BOUNDED BY THE NORTH AND SOUTH BOUND RAMPS TO RT97 ON RT 178, AND BACON RIDGE BRANCH TRIBUTARIES TO THE NORTH, WEST, AND SOUTH. THERE ARE STEEP SLOPES OF 15% AND OVER THROUGHOUT THE SITE. COMMON SPECIES OBSERVED IN THE CANOPY AND UNDERSTORY OF STAND A ARE SWEET GUM (LIQUIDAMBAR STYRACIFLUA), TULIP POPLAR (LIRIODENDRON TULIPIFERA), RED MAPEL (ACER RUBRUM) AND AMERICAN BEECH (FAGUS GRANDIFOLIA). THIS STAND HAS A DOMINANT CLASS SIZE OF 20"-30" WITH AN AVERAGE BASAL AREA OF 90 SQ. FT./ ACRE AND 5 SPECIES PER ACRE WITH 93% CANOPY COVERAGE. STAND A RECEIVED A CONDITION RATING OF GOOD DUE TO LIMITED PRESENCE OF INVASIVE MATERIALS AND OVERALL GOOD HEALTH OF THE STAND. FIELD INVESTIGATION SURVEY TEAM LOCATED SEVERAL SPECIMEN TREES WITHIN OUR STUDY AREA, SURVERY LOCATIONS TO BE DETERMINED. STAND A IS A PRIORITY AREA FOR RETENTION, HAVING STEEP SLOPES, FLOODPLAIN, EXISTING STREAM, POSSIBLE WETLANDS AND FOREST CONTIGUOUS WITH SENSITIVE AREA.

FOREST STAND DELINEATION NOTES:

1. ADDRESS: SOUTH SHORE PARK - CROWSVILLE, MARYLAND 21032.
2. OWNER: ANNE ARUNDEL COUNTY, DEPARTMENT OF RECREATION AND PARKS, PO BOX 2660, ANNAPOLIS, MD 21404
3. PROPERTY INFORMATION: DRP PROP: MAP 38 GRID 08, PARCEL 0010, 0179, 0180, 0181,0042, & 0310,= 22.91 ACRES
4. ZONING: RA - RURAL AGRICULTURAL.
5. THE EXISTING CONDITIONS INFORMATION SHOWN IS BASED UPON ANNE ARUNDEL COUNTY GIS.
6. AN ABBREVIATED FOREST FIELD ASSESSMENT WAS CONDUCTED ON-SITE BY WBCM ON AUGUST 09 2023. SPECIMEN TREES NOTED ON SITE ARE AS INDICATED ON THE PLAN AND THE SPECIMEN TREE CHART. FOREST TYPE INDICATED IS BASED UPON 3 FOREST SAMPLING 1/10 ACRE SAMPLE PLOTS.
7. THE STATUS OF THE 100-YR FLOOD PLAIN: NO FLOOD PLAINS ARE PRESENT ON-SITE WITHIN L.O.D.
8. THERE ARE NO MAPPED NON-TIDAL WETLANDS AND/OR WETLAND BUFFERS LOCATED ON SITE AS DETERMINED BY MERLIN ONLINE IN MARCH, 2023.
9. THE PROJECT IS **NOT** LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.

SOIL GROUP DATA
BALTIMORE COUNTY MARYLAND

MAP UNIT SYMBOL	MAP UNIT NAME	SLOPE	HSG RATING	K-RATING
AdB	Adelphia-Holmdel complex	2-5%	C	0.37
AsC	Annapolis Fine sandy Loam	5-10%	C	0.24
AsE	Annapolis Fine sandy Loam	15-25%	C	0.24
CoB	Collington Wist complex	2-5%	B	0.17
CoC	Collington Wist complex	5-10%	B	0.17
CRD	Collington & Annapolis	10-15%	B	0.17
CSE	Collingtonm Wist & Westphalia	15-25%	A	0.17
CSF	Collingtonm Wist & Westphalia	25-40%	A	0.17
DxC	Downer-Phalanx complex	5-10%	A	0.1
MtaB	Mattapex silt loam	2-5%	C	0.49
MxB	Mattapex-Butlertown	2-5%	D	0.43
RyB	Russett-Urban land complex	0-5%	C	
SsA	Shrewbury Loam	0-2%	B/D	0.24
TnB	Tinton Loamy	2-5%	A	0.1
TnC	Tinton Loamy	5-10%	A	0.1
UxB	Udorthents	0-5%	C	0.28
UxD	Udorthents	5-15%	C	0.28
WBA	Widewater & issue soils	0-2%	C/D	0.37

LEGEND:

- BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- 170 / 172 — ELEVATION CONTOUR
- X — X — CHAIN LINK FENCE
- PROPERTY LINE
- INDIVIDUAL TREES (NON-SPECIMEN)
- SPECIMEN TREE CRITICAL ROOT ZONE
- ST # — SPECIMEN TREE WITH CRITICAL ROOT ZONE, >30" DBH
- FOREST
- CRD (B) / CFA (A) — MAPPED SOIL UNIT / HYDROLOGIC SOIL GROUP RATING
- STEEP SLOPES (15% TO 25%)
- STEEP SLOPES (25% OR GREATER)
- EXISTING FOREST ON PROPERTY / NET TRACT AREA

FOREST STAND SUMMARY

Stand Variable	Stand A
1. Dominant species / Codominant species	*Tulip Poplar / Sweet Gum*
2. Successional stage	*Mid - Late*
3. Basal area in s.f. per acre	*90*
4. Size class of dominant species	*20-30 IN DBH*
5. Percent of canopy closure	*93%*
6. Number of tree species per acre	*5*
7. Common understory species per acre	*Beechtn Mapel, Sweet Gum, Blk Gum*
8. Percent of understory cover 3' to 20' tall	*48%*
9. Number of woody plant species 3' to 20' tall	*3*
10. Common herbaceous species 0' to 3' tall	*Mt. Laurel, Wineberry, Christmas Fern,Greenbrier*
11. Percent of herbaceous & woody plant cover 0' to 3' tall	*10%*
12. List of major invasive plant species & percent of cover	*Jap Silt Grass 5%, Wineberry 10%, Jap Barberry 5%*
13. Number of standing dead trees 6" dbh or greater	*2*
14. Comments	*GOOD HEALTH, 3 PLOTS ON 9.3 AC STAND*

SPECIMAN TREE CHART

TREE NO.	SPECIES	DBH (in.)	CONDITION
ST #1	LIRIODENDRON TULIPIFERA - TULIP POPLAR	47	GOOD
ST #2	LIRIODENDRON TULIPIFERA - TULIP POPLAR	36.5	GOOD
ST #3	LIRIODENDRON TULIPIFERA - TULIP POPLAR	35.5	GOOD
ST #4	LIRIODENDRON TULIPIFERA - TULIP POPLAR	39	GOOD
ST #5	LIRIODENDRON TULIPIFERA - TULIP POPLAR	35	GOOD off site
ST #6	QUERCUS RUBRA - RED OAK	38.5	GOOD
ST #7	LIRIODENDRON TULIPIFERA - TULIP POPLAR	32	GOOD
ST #8	LIRIODENDRON TULIPIFERA - TULIP POPLAR	32	GOOD
ST #9	LIRIODENDRON TULIPIFERA - TULIP POPLAR	36	GOOD
ST #10	LIRIODENDRON TULIPIFERA - TULIP POPLAR	31.5	DEAD
ST #11	QUERCUS RUBRA - RED OAK	43.5	GOOD
ST #12	LIRIODENDRON TULIPIFERA - TULIP POPLAR	36	GOOD
ST #13	LIRIODENDRON TULIPIFERA - TULIP POPLAR	36	GOOD off site
ST #14	LIRIODENDRON TULIPIFERA - TULIP POPLAR	37	GOOD off site
ST #15	LIRIODENDRON TULIPIFERA - TULIP POPLAR	34.5	GOODoff site

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A QUALIFIED PROFESSIONAL UNDER THE LAWS OF THE STATE OF MARYLAND.

SIGNATURE: _____

DATE: _____

WHITNEY BAILEY COX & MAGNANI, LLC
300 East Joppa Road Suite 200
Baltimore, MD 21286
410,512,4500 www.wbcm.com
WBCM
A DIVISION OF TRANSYSTEMS

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License #27734 Expiration Date: 07/12/2024

REVISIONS			
NO.	DESCRIPTION	BY	DATE

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE _____ CHIEF ENGINEER	APPROVED DATE _____ PROJECT MANAGER	SCALE: 1" = 80'	SOUTH SHORE PARK
		DRAWN BY: R.S.S.	
		CHECKED BY: R.W.H.	
APPROVED DATE _____ ASSISTANT CHIEF ENGINEER	APPROVED DATE _____ CHIEF, RIGHT-OF-WAY	SHEET NO. # OF #	FOREST STAND DELINEATION PLAN
		PROJECT NO.: P#	
		CONTRACT NO.: P#	

P:\2022\220987000\Drawings\07-Site\20220987000-C701-FSD.dwg Sep 15, 2023 - 3:22pm Plot By: rsmith

DNR RTE LETTER

September 26, 2023

Mr. Randall Hughes
Whitney, Bailey, Cox & Magnani, LLC
300 East Joppa Road
Suite 200
Baltimore, MD 21286

RE: Environmental Review for South Shore Park, 1202 Generals Highway, Crownsville, WBCM Project No.: 20220987.00, Anne Arundel County, Maryland.

Dear Mr. Hughes:

The Wildlife and Heritage Service has determined that there are no official State or Federal records for listed plant or animal species within the delineated area shown on the map provided. We would like to point out, however, that our remote analysis suggests that the forested area on this property (northern parcel) contains Forest Interior Dwelling Bird habitat. Populations of many bird species which depend on this type of forested habitat are declining in Maryland and throughout the eastern United States. Interested landowners can contact us for further voluntary guidelines to help conserve this important habitat.

Please be sure to let us know if the limits of proposed disturbance or overall site boundaries change and we will provide you with an updated evaluation. Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at lori.byrne@maryland.gov or at (410) 260-8573.

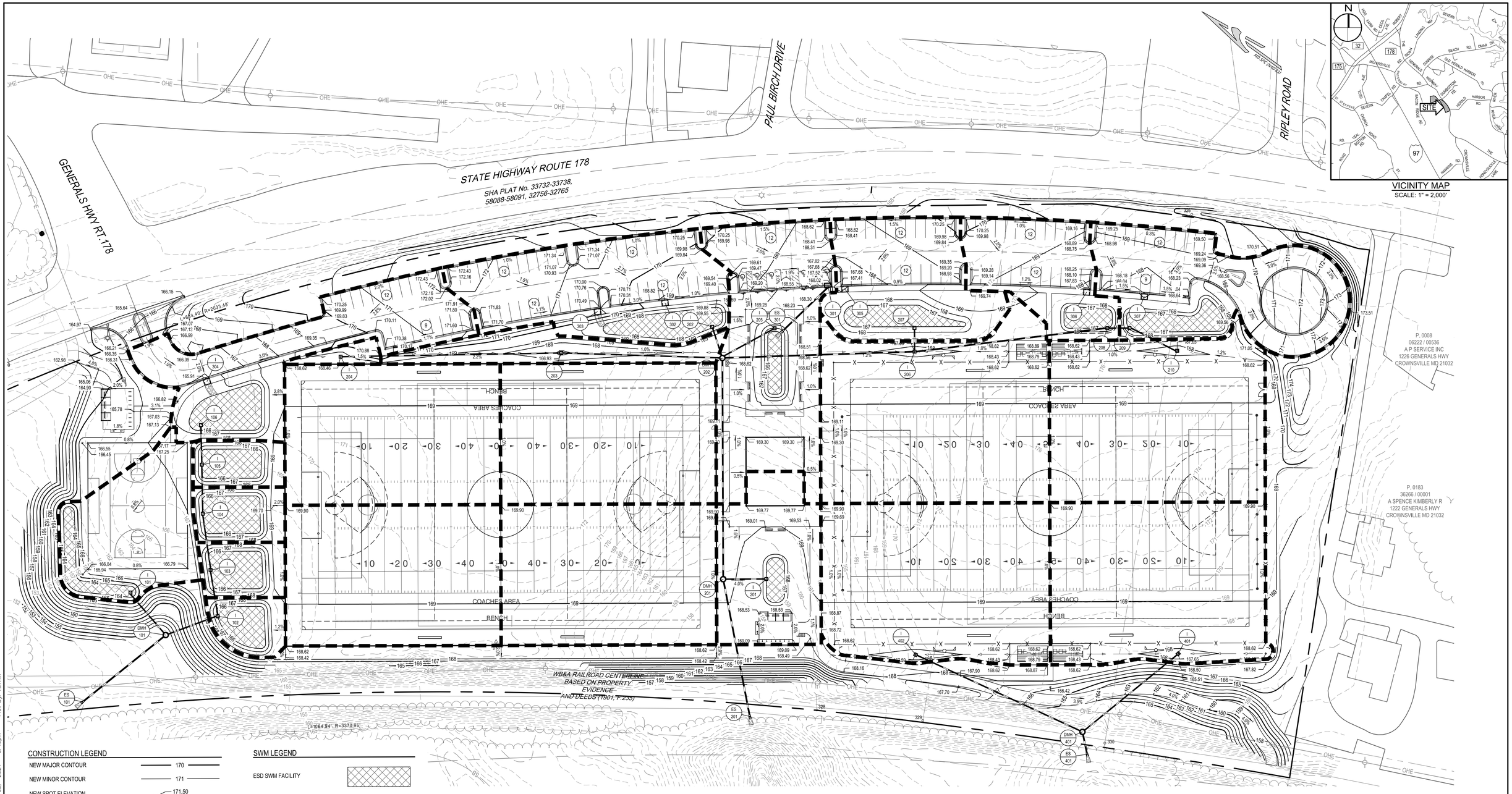
Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2023.1257.aa

PRELIMINARY SWM CONCEPT PLAN



VICINITY MAP
SCALE: 1" = 2,000'

CONSTRUCTION LEGEND

- NEW MAJOR CONTOUR — 170
- NEW MINOR CONTOUR — 171
- NEW SPOT ELEVATION — 171.50
- NEW INLET
- NEW MANHOLE
- FLOW ARROW
- NEW STORM DRAIN
- NEW INLET — I #
- NEW END SECTION — ES #
- NEW DRAINAGE MANHOLE — DMH #

SWM LEGEND

- ESD SWM FACILITY
- STORMWATER MANAGEMENT DRAINAGE AREA

CAUTION:
IF THIS DRAWING IS A REDUCTION,
USE THE GRAPHIC SCALES.

1"=40'-0" (40 0 20 40 80)

TRANSYSTEMS
300 East Joppa Road Suite 200
Baltimore, MD 21286
410.512.4500 www.transystems.com

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License #27734 Expiration Date: 07/12/2024

REVISIONS			
NO.	DESCRIPTION	BY	DATE

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

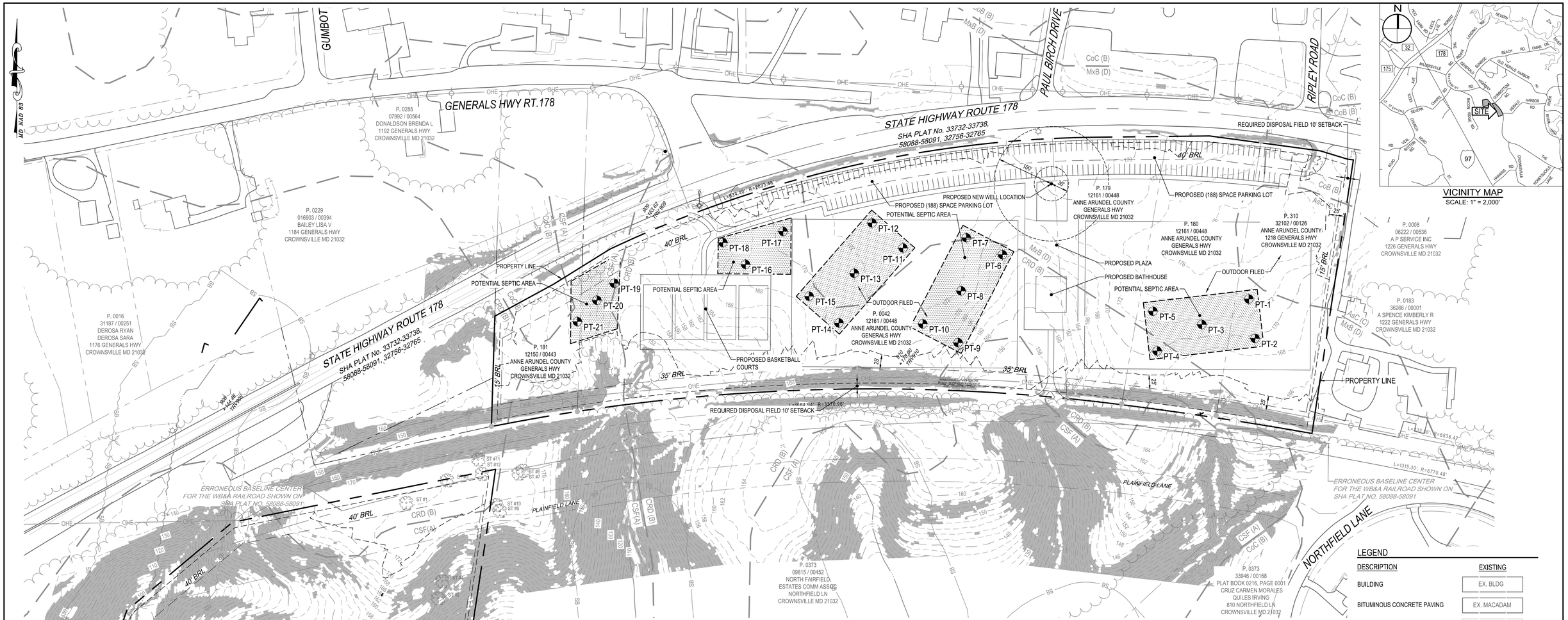
APPROVED DATE — CHIEF ENGINEER	APPROVED DATE — PROJECT MANAGER	SCALE:	1" = 40'
		DRAWN BY:	R,S,S,
		CHECKED BY:	R,W,H,
APPROVED DATE — ASSISTANT CHIEF ENGINEER	APPROVED DATE — CHIEF, RIGHT-OF-WAY	SHEET NO.	# OF #
		PROJECT NO.:	P#
		CONTRACT NO.:	P#

SOUTH SHORE PARK

CONCEPT STORM WATER MANAGEMENT PLAN

P:\2022\120987000\Drawings\07-Site\120987000-C301-Grading Plan.dwg Jul 02, 2024 - 3:46pm Plot By: rsmith

SOIL PERCOLATION PLAN AND TEST RESULTS



SOIL GROUP DATA

BALTIMORE COUNTY MARYLAND

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CSE	Collingtonn Wist & Westphalia	15-25-%	A	0.17
CSF	Collingtonn Wist & Westphalia	25-40%	A	0.17
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UxD	Udorthents	5-15%	C	0.28
WBA	Widewater & issue soils	0-2%	C/D	0.37

DESIGN DATA-SEWAGE DISPOSAL SYSTEM

WASTE WATER FLOW BY FIXTURES

FIXTURE	GPD/FIXTURE	NO. OF FIXTURES	GPD
FLUSH TOILET	35	13	455
FAUCET	15	11	165
		TOTAL	620

BORING LOCATION TABLE

PT #	NORTHING	EASTING	EX. ELEV.
PT-1	499960.16	1424489.45	173.22
PT-2	499911.30	1424439.83	169.62
PT-3	500000.88	1424405.60	171.25
PT-4	500037.27	1424322.57	169.92
PT-5	500083.64	1424374.73	172.96
PT-6	500354.76	1424302.14	166.94
PT-7	500423.24	1424289.45	172.22
PT-8	500376.58	1424208.75	171.67
PT-9	500328.17	1424132.10	165.38
PT-10	500397.35	1424122.90	171.33
PT-11	500502.45	1424210.56	173.00

BORING LOCATION TABLE

PT #	NORTHING	EASTING	EX. ELEV.
PT-12	500571.97	1424214.58	172.92
PT-13	500545.92	1424125.08	171.62
PT-14	500517.20	1424039.08	170.27
PT-15	500586.58	1424046.66	169.00
PT-16	500709.21	1424027.28	168.03
PT-17	500689.56	1424112.28	170.35
PT-18	500763.55	1424035.19	164.59
PT-19	500876.21	1423867.00	156.75
PT-20	500883.69	1423825.39	160.21
PT-21	500889.61	1423775.23	164.77

PERC TEST LEGEND:

PROPOSED SEPTIC AREA

PROPOSED PERCOLATION TEST LOCATION (TO BE FIELD ADJUSTED AS NECESSARY)

WELL NOTE

1. NEW WELL TO BE DRILLED BY CONTRACTOR AND LICENSED WELL DRILLER. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL APPLICABLE WELL PERMITS FROM ANNE ARUNDEL COUNTY HEALTH DEPARTMENT AND/OR MDE.

GENERAL NOTES

1. WITHOUT THE EXPRESS WRITTEN CONSENT OF THE COUNTY (THROUGH THE OFFICE OF PLANNING AND ZONING'S CULTURAL RESOURCES DIVISION,) THE OWNER OR MANAGER OF THE PROPERTY SHALL NOT CAUSE, PERMIT, OR SUFFER GRADING, EXCAVATION, PLOWING, SUBSOILING, DRAINAGE IMPROVEMENTS, OR OTHER UNDERTAKING OR ACTION THAT WOULD MATERIAL DISTURB THE SURFACE OR SUBSURFACE OF THE GROUND AREA WITHIN THE ARCHAEOLOGICAL SENSITIVE AREA, WHICH IS A SIGNIFICANT ARCHAEOLOGICAL RESOURCE, AS RECORDED WITH THE STATE OF MARYLAND, AND KNOWN AS 18AN346.

PROPERTY INFORMATION

OWNER: ANNE ARUNDEL COUNTY DEPARTMENT OF PUBLIC WORKS
2662 RIVA ROAD
ANNAPOLIS, MARYLAND 21401

PREMISE ADDRESS: 1218 GENERALS HWY
CROWNSVILLE, MARYLAND 21032

LEGEND

DESCRIPTION	EXISTING
BUILDING	EX. BLDG
BITUMINOUS CONCRETE PAVING	EX. MACADAM
PORTLAND CEMENT CONCRETE	EX. CONC.
PERVIOUS PAVERS	
EX.WOODS	
CLEAN OUT	
DRAIN INLET	
UTILITY POLE	
SIGN	
TRAVERSE STATION	△ 900
SPOT ELEVATION	× 170.5
MAJOR CONTOUR	170
MINOR CONTOUR	171
CONC. CURB	
O/H ELECTRIC	OHE
U/G ELECTRIC	E
U/G STORM	D
UG WATER	W
U/G TELEPHONE	T
SOIL BORING	B#
SOIL TYPES	MxB (D), CRD (B)
PROPERTY LINE	
STREAM BUFFER	SB
FENCE	X
WELL	
STEEP SLOPES (25% OR GREATER)	
STEEP SLOPES (15-25% SLOPES)	

CAUTION:
IF THIS DRAWING IS A REDUCTION, USE THE GRAPHIC SCALES.

1"=80'-0" (80 0 40 80 160)

WHITNEY BAILEY COX & MAGNANI, LLC
300 East Joppa Road Suite 200
Baltimore, MD 21286
410.512.4500 www.wbcm.com
WBCM
A DIVISION OF TRANSYSTEMS

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License #27734 Expiration Date: 07/12/2024

REVISIONS			
NO.	DESCRIPTION	BY	DATE

ANNE ARUNDEL COUNTY
DEPARTMENT OF PUBLIC WORKS

APPROVED DATE — CHIEF ENGINEER	APPROVED DATE — PROJECT MANAGER	SCALE: 1" = 80'	SOUTH SHORE PARK
		DRAWN BY: R.S.S.	
		CHECKED BY: R.W.H.	PLOT PLAN PERCOLATION TESTS
APPROVED DATE — ASSISTANT CHIEF ENGINEER	APPROVED DATE — CHIEF, RIGHT-OF-WAY	SHEET NO. # OF #	
		PROJECT NO.: P#	
		CONTRACT NO.: P#	

P:\2022\ V20098700\Drawings\07-Site\20220098700-PR-Prec Test Plot Plan.dwg Dec 15, 2023 - 9:10am Plot By: ramith

ANNE ARUNDEL COUNTY
MARYLAND
DEPARTMENT OF HEALTH

J. Howard Beard Health Services Building
3 Harry S. Truman Parkway
Annapolis, Maryland 21401
Phone: 410-222-7193 Fax: 410-222-7678
Maryland Relay (TTY): 711
www.aahealth.org

Tonii Gedin, RN, DNP
Health Officer

PERC TEST & SITE PLAN REQUIREMENTS FOR COMMERCIAL SYSTEMS

April 15, 2024

Anne Arundel County
2660 Riva Rd.
Annapolis, MD 21401

Re: Perc *#PAT02051132*
1218 Generals Hwy. Crownsville, MD 21032

The Department of Health witnessed percolation tests on **04/10/2024**. Please see the attached results.

Please be advised that a passing percolation test does not constitute an approval for the proposed project. Health approval may be granted after engineered (final development) plans are submitted, reviewed and deemed adequate by this office. Each submittal will be reviewed based on current requirements not on the requirements at the time of testing. If approved, the approval will expire two (2) years from the date of approval unless a building permit has been obtained from the Anne Arundel County Office of Inspections and Permits prior to the expiration date. Additional perc testing is required if the sewage disposal system design extends beyond twenty five (25') feet of the area that has been tested. This office may request a co-review of the project if flows exceed 3000 gpd and will involve the state if flows are greater than 5000 gpd. Projects which generate or are perceived to generate an industrial strength sewage effluent will be required to acquire a Groundwater Discharge Permit from Maryland Department of the Environment (MDE) prior to our final approval of the project. Contact our office if in doubt as to whether a groundwater discharge permit is required. Furthermore commercial, industrial and institutional projects served by an individual water well will need a Groundwater Appropriation Permit from MDE. Proposed flow figures are often difficult to ascertain and we may need extensive documentation. Prospective buyers of the property should be made aware of the contents of this letter.

In order to pursue the development of this property with a septic system, drawings must be prepared and stamped by a professional engineer registered in the State of Maryland. The septic system must be designed consistent with the Anne Arundel County Private Sewage Disposal System Code, Section 1600, 1700. If the design flow exceeds 5,000 gallons per day, the sewage disposal system must be designed based on Maryland Department of Environment Guidelines for Large Onsite Sewage Disposal Systems pertaining to Onsite

Community and Multiple Use Sewage Systems with Accumulative Flow Exceeding 5,000 Gallons Per Day.
(Revised March 25, 1996)

The following items must be included on the plans:

I. Site Plan
- Vicinity Map
- Existing and proposed final contours of site (2')
- Property lines, building restriction lines, access roads and parking facilities
- Building location
- Location of existing and proposed septic tank(s), pump pit(s), distribution box(es) and disposal system(s)
- Disposal system replacement area
- All percolation test locations and results
- Proposed and existing storm drain lines and storm water management facilities
- Location of water supply (public main, well and other) and connections thereto
- Location of all water wells and well tag numbers and septic systems within 100' feet of property

II. Detail Sheet
- Percolation test number and result(s)
- Daily flow calculation
- System design calculations
- Cross section and detail of proposed septic tank(s)
- Cross section and detail of proposed distribution box
- Cross section and detail of proposed drywell(s) or drainfield(s)
- Cross section and detail of proposed pump pit to include the following:
    1. Pump curve information
    2. Total head calculations
    3. On, off and alarm elevations
    4. Emergency storage capacity calculation
- Profile of the proposed septic system showing both existing and proposed grades

A minimum of two copies of the site plan must be forwarded to the Department of Health for review. Only after the plans have been approved, will a septic system installation permit be available for the contractor's installation.

If you have any questions, please feel free to contact me at (410) 222-7194.

Sincerely,

Christopher Owens
Commercial Plan Review
Sanitary Engineering Program

cc:
Enclosure

ANNE ARUNDEL COUNTY DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL HEALTH
COMMERCIAL PERC TEST RESULTS

Perc Application #: Pat02051132

Property: 1218 Generals Highway 21032
Sanitarian: Chris Owens Perc Date: 4/10/2024

TEST RESULTS

PERC NO.	TIME (MIN)	DEPTH	SOIL LOG	WATER TABLE
1	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 19 Sand	No
2	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 19 Sand	
3	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 19 Sand	
4	25 Min; 3 Min	3'; 9'	0 - 9 Clay Loam; 9- 19 Sand	
5	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 19 Sand	
6	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 19 Sand	
7	25 Min; 3 Min	3'; 10'	0 - 10 Clay Loam; 10- 19 Sand	
8	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 19 Sand	
9	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 19 Sand	
10	25 Min; 3 Min	7'; 9'	0 - 9 Clay Loam; 9- 19 Sand	
11	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 19 Sand	

12	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 20 Sand	
13	25 Min; 3 Min	3'; 9'	0 - 9 Clay Loam; 9- 20 Sand	
14	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 19.5 Sand	
15	25 Min; 3 Min	3'; 9'	0 - 9 Clay Loam; 9- 20 Sand	
16	25 Min; 3 Min	3'; 7'	0 - 7 Clay Loam; 7- 19 Sand	
17	25 Min; 3 Min	3'; 8'	0 - 8 Clay Loam; 8- 20 Sand	
18	25 Min; 3 Min	3'; 6'	0 - 6 Clay Loam; 6- 19 Sand	
19	25 Min; 3 Min	3'; 9'	0 - 9 Clay Loam; 9- 19 Sand	
20	25 Min; 3 Min	3'; 6'	0 - 6 Clay Loam; 6- 19 Sand	
21	25 Min; 3 Min	3'; 6'	0 - 6 Clay Loam; 6- 20 Sand	

COMMENTS: Show all surrounding wells.

CONCEPTUAL FIELDHOUSE STRUCTURE STUDY

hord | coplan | macht

ARCHITECTURE
LANDSCAPE ARCHITECTURE
INTERIOR DESIGN
PLANNING

February 14, 2024

Anne Arundel County – South Shore Park
Conceptual Fieldhouse Structure Study

Hord Coplan Macht analyzed the two potential building systems for possible enclosure of an artificial turf playfield (approximately 280' x 420') at the proposed South Shore Park. This size would allow the County to comfortably fit people on the sidelines of the field. A detailed summary of the building system components, lead time, and rough order of magnitude costs are indicated below. Both building types are viable for this application. Here are some of the key differences and similarities:

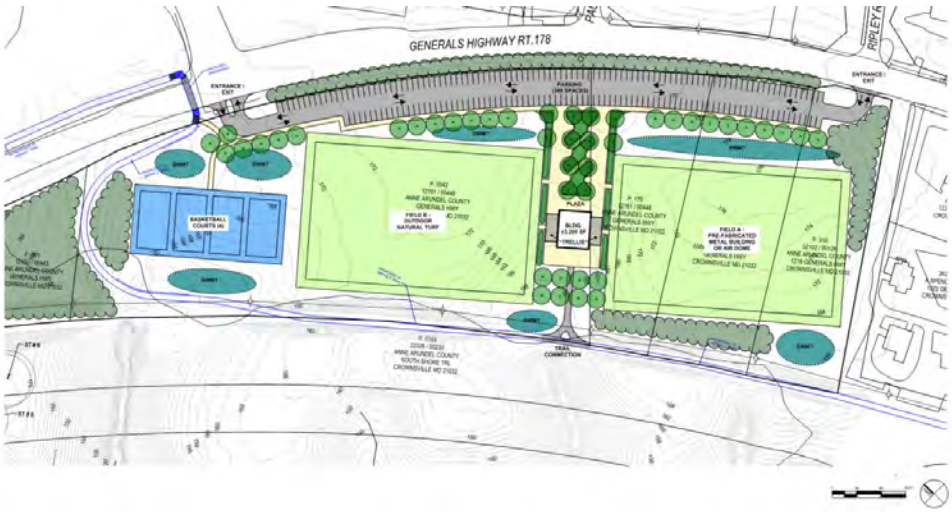
1. Both structures will have similar requirements and durations (10-12 months) when it comes to permitting, as both create impervious surface areas that will need to be addressed with storm-water management facilities.

2. Air Domes can either be seasonal or permanent – it should be noted that seasonal domes ultimately have a shorter life expectancy (20 years as opposed to 30+ for permanent) due to the damage that occurs when setting up and taking down. Pre-engineered metal buildings typically last 30-40 years without significant maintenance to the exterior cladding. The mechanical air-handling equipment serving either building type typically lasts 20-30 years with proper maintenance.

3. Air Domes can be purchased and installed for a lower first cost, relative to pre-engineered metal building structures, however they will have a higher annual operating cost. This is due to the necessity of constant operation of the air handler motors to keep the dome structure inflated. A metal building may allow the air handlers to cycle off or lowered when the building is not occupied.

4. Metal buildings have a lower ceiling height than air domes due to the structural configuration of the rigid frame.

5. Metal buildings can accommodate public restrooms / locker rooms within the structure. Air domes require an ancillary building to accommodate these spaces.



700 East Pratt Street
Suite 1200
Baltimore, Maryland 21202
P 410.837.7311
F 410.837.6530

www.hcm2.com

Air Dome Structure

Components

Based on conversation with Yeadon Domes, there are 4 main components of a site covered by an Air Supported Structure:

1. Construction and site preparation – Includes the Grade Beam (footing/anchor for the dome) and the interior surface/turf. An air dome manufacturer will provide the drawings and engineering for the grade beam, but a GC/Construction Company will need to prepare the site and manage general construction activities.

2. The Dome – Includes the Membrane, Access doors (Personal and Vehicle Air Locks, Exit Doors) and Cable Anchors – Supplied by air dome manufacturer.

3. Inflation system – Inflates the dome and provides the heating, air conditioning, emergency backup, and automated controls. Most operate around 55-65 degrees, but the size and output of the HVAC system can be adjusted to meet certain needs and/or budgets. – Supplied by air dome manufacturer.

4. Accessories – Lighting, Insulation, Netting Curtains, and Dividers. – Supplied by air dome manufacturer.

Budget Numbers

- Option #1 (Permanent Dome): 117,600 sq. ft – 280'W x 420'L x 84'H
  - The Grade Beam budget will carry an average of $450-$550(USD) per linear ft, a 280' x 420' dome will have 1,400 linear feet
  - Grade Beam Budget numbers: $630k - $770k
  - Year-Round Dome: $19 – $21 per sq. ft.: 117,600 sq. ft.

- Year-Round Dome Budget numbers: $2.2m - $2.5m This includes drawings, aluminum channel, cables, prewired membrane, insulation, lighting fixtures, doors, mechanical units including inflation, heating and air conditioning, standalone backup generator, and full installation.

Option 1: Preliminary Budget for Dome and Grade Beam: $2.8m–$3.3m

- Option #2 (Seasonal Dome117,600 sq. ft – 280'W x 420'L x 84'H
  - The Grade Beam budget will carry an average of $450-$550(USD) per linear ft, a 280' x 420' dome will have 1,400 linear feet
  - Grade Beam Budget numbers: $630k - $770k
  - Seasonal Dome: $17 – $20 per sq. ft., 117,600 sq. ft. This includes drawings, aluminum channel, cables, prewired membrane, lighting fixtures, doors, mechanical units including inflation and heating, standalone backup generator, and full installation.
  - Seasonal Dome Budget numbers: $2m - $2.4m

Option 2: Preliminary Budget for Dome and Grade Beam: $2.6m–$3.2m

Other Costs

The attached Responsibility Matrix identifies the typical scopes of work. Please note, some items may not be needed and – depending on the site – there may also be a few items that are not accounted for.

1. Site prep, utilities (gas and electric are needed), apron around the exterior for clearance and snow removal and the play surface and any water management. Your local construction company will need to give you budget estimates for this work. (Costs are site dependent and can vary, additional information will be required before we are able to determine these costs).

2. Turf / Field prep. – I am not certain what the exact cost would be, on average a football field is approx. $10 per sq./ft for the site leveling, Turf and Install, if you have your contractor do the site work the turf would carry approx. $6 per sq./ft. (On average, $700,000 - $1,000,000 for a full pitch).

3. A permanent dome may be required to have a Fire Suppression System/ Sprinkler System. Occupancy levels and other code considerations will need to be evaluated by HCM prior to submitting for a building permit. Programming needs will also impact and drive the need to include this or not. More discussion will be required, and typically these systems can be avoided.

4. Support Building – A dome does not need a support building to operate but typically house offices, bathrooms, check in counters, etc. Budget for these structures greatly vary based on size, materials and finishes.

5. Seasonal Put-Up and Takedown - Seasonal Domes will typically require put up in late fall/early winter and takedown in the spring. Costs incurred are attributed to

supervision, equipment, and labor. Air dome providers are typically happy to coordinate and provide all three of these. Alternatively, some dome operators prefer to utilize or procure their own equipment, find volunteer labor, coordinate labor themselves, or are comfortable supervising their own put-ups/takedowns after a few years of experience.

6. There are many material selections and custom options, so final pricing will depend on site, final finishes, and amenities. Overall, the estimates included here are conservative and likely high – as we narrow the scope and finalize selections, we'll be able to tighten up numbers.

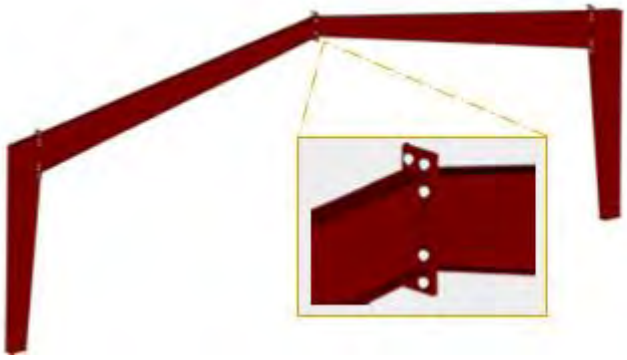
Timeline

Lead times vary depending on when you order, but on average, all components would be ready to ship within 22-24 weeks from an approved design. The timeline starts with a signed contract and a down payment. During the manufacturing window, your GC can be on-site preparing the area for the dome install.

Pre-Engineered Metal Structure

Components

A permanent metal building utilizes a clear span rigid frame type. Suitable for almost any application, this frame type can be designed as a symmetrical or asymmetrical configuration. This building type does allow for restrooms to be incorporated within the enclosure and is not reliant on an accessory support structure.



1. Concrete foundations and slabs where needed.
2. Utilities brought into the building assuming no more than 50' from source.
3. PEMB with code compliant insulation and open shop erection.
4. Small drywall build outs for bathrooms and office.
5. Plumbing for (2) gang bathrooms.

6. (2) exterior hose bibs.
7. Full HVAC.
8. Full sprinkler.
9. 1000 Amps of electric and all gear, switching, lighting and fixtures.

Budget Numbers

Based on communications with Nucor Building Systems (manufacturer) and Omega General Contracting (installer) a rough budget for this building is $7,771,454.

Other Costs

Please note, some items may not be needed and – depending on the site – there may also be a few items that are not accounted for.

1. Site Work
2. Sports Court or Sports Floor
3. Hanging netting
4. A/V system
5. Low Voltage Package
6. Scoreboards
7. Landscaping package
8. Bonds

Timeline

From signed contract to completion Omega Contracting anticipates (7) months to erect the building, which assumes only basic sitework is needed and completed prior.

Responsibility Matrix

● = Responsible party*

***Supplied or Installed by Yeadon or Furnished or Installed by Others**

O = Optional Scope**

****All line items are subject to final contract and project specific requirements and selections, Optional Scope items are available for discussion and add/deducts may apply.**

	Supplied by Yeadon	Installed by Yeadon	Furnished by Others	Installed by Others	Notes:
GENERAL					
Site Survey			●		
Soil Borings & Report			●		
Building Code and Zoning Consultation	●		●		
Full Site Architectural Drawings - As needed			●		
Air Structure Design Drawings	●				
Signed and Stamped Drawings - Air Structure	O		●		
Signed and Stamped Drawings - Grade Beam, Doors and Mechanical Pads	O		●		
Signed and Stamped Drawings (Mechanical and Electrical)			●		
Building Permits, Fees			●		
Payment and Performance Bonds	O				
Final As Built Verification and Certification (Grade Beam, Door, Mechanical Locations)			●		
Freight Scheduling (Not including Duties, Import/Export Taxes, Fees)	●				
Freight Costs for Initial Shipping, Pallets, Crates, Skids, etc.	●				
Unloading Goods at Job Site - Channel, Anchors, Hardware for Grade Beam			●		
Unloading Goods at Job Site - Membrane, Doors, Lights, Netting	●				
Site Security and Inventory of Delivered Goods			●		
GRADE BEAM					
Excavation			●	●	
Forming and Steel Reinforcing			●	●	

Responsibility Matrix

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O = Optional Scope**

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	Supplied by Yeadon	Installed by Yeadon	Furnished by Others	Installed by Others	Notes:
GRADE BEAM Continued:					
Concrete			●	●	
ANCHORAGE					
Aluminum Channel	●			●	
Prepared Channel for Installation	O		●		
Construction Lumber			●	●	
Dome Installation Lumber	O	●	●		
Cable Anchor Location Drawings	●			●	
Cable Anchor Bolts	●			●	
Threaded Rods, Studs, Hex Nuts and Washers			●	●	
Cable Anchors and Brackets	●			●	
Site Preparation/ Interior Surface					
Site Leveling, Drainage (As needed) and Base for Selected Surface			●	●	
Interior Surface - Turf, Court Surface, Concrete, Asphalt, etc.	O		●	●	
Building Attachments					
Building Connection Design			●		
Building Connection Hardware (Angle Iron, Clamp Strip, Nuts, Bolts and Washers)			●		
Building Connection Hardware Installation				●	
Building Connection (Caulking, Flashing, Weather and Air Seals)			●	●	
Door Installation into a Building Connection	O	O		●	

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O = Optional Scope**

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	Supplied by Yeadon	Installed by Yeadon	Furnished by Others	Installed by Others	Notes:
Building Attachments Continued:					
Vehicle Airlock Overhead Doors/ Service Doors	O	O	●	●	
DOORS					
Concrete Door Pads			●	●	
Revolving Doors (3 leaf, 4 leaf)	●	●		O	
Emergency Exit Doors	●	●			
Personal Air Lock/ADA Compliant	●	●		O	
Vehicle Air Lock/ Over Head Doors - Frame and Fabric	●	●			
Vehicle Air Lock/ Over Head Doors - Hard Structure			●	●	
Threaded Rods, Studs, Hex Nuts and Washers	O	●		●	
Door Hardware	●	●			
Raised Grade Beam Door Install (Caulking and/or Flashing as Needed)			●	●	
Door Anchors	●	●			
Door Stress Relief Cables	●	●			
Lighted Exit Sign/s	O		●	●	
Wiring with Door Frame			●	●	
All Wire Terminations for Door Lights			●	●	
Power Supply Stub-up and Receptacles ' Junction Boxes at Door Locations			●	●	
Standard Keys and Locks	●	●			
Specialty Keys and Locks Keyed to a Specification or Brand	O	O			

Responsibility Matrix

● = Responsible party*

**Supplied or Installed by Yeadon or Furnished or Installed by Others*

O = Optional Scope**

****All line items are subject to final contract and project specific requirements and selections, Optional Scope items are available for discussion and add/deducts may apply.***

Inflation / HEAT EXCHANGER / A/C	Supplied by Yeadon	Installed by Yeadon	Furnished by Others	Installed by Others	Notes:
Inflation Unit - Setting of unit/s on mechanical pad per drawings	●	●			
Concrete Equipment Pad/ Vault			●	●	
Electrical Wiring Between Sections Splits			●	●	
Electrical Conduit Stub-ups			●	●	
Electrical Conduit to Inflation Unit			●	●	
Electrical service from Junction Box at Equipment Pad			●	●	
Electrical Contractor to Energize Unit and Test	●				
Final Termination or Electrical Service at Inflation Unit			●	●	
Gas Service to Meter			●	●	
Gas Meter			●	●	
Gas Line from Meter to 1st Cut Regulator at Equipment Pad			●	●	
Gas Line from Equipment Pad to Inflation Unit			●	●	
Gas Regulator (Required at Connection to Inflation Unit)			●	●	
Thermostat	●			●	
Wind Sensor	●	●			
Remote Local Area Network Connection			●	●	
Remote Wind Sensor and Signal Booster Install			●	●	
Snow Sensor	●	●			
A/C Cooled Condensing Unit - Setting of unit/s per drawings	●	●			

Responsibility Matrix

● = Responsible party*

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O = Optional Scope**

****All line items are subject to final contract and project specific requirements and selections, Optional Scope items are available for discussion and add/deducts may apply.**

	Supplied by Yeadon	Installed by Yeadon	Furnished by Others	Installed by Others	Notes:
Inflation / HEAT EXCHANGER / A/C Continued:					
Electric Service to A/C			●	●	
Electric and Controls between Inflation Unit and A/C	O		●		
Specialty Services i.e. Refrigerant, Piping Between Inflation Unit and A/C, etc.	O		●	●	
DOME					
Architectural Fabric Membrane	●	●			
Fields Joint Plates and Hardware	●	●			
Cables - PVC Coated	●	●			
Cable Connections Plates and Hardware	●	●			
Cable Shackles and Turnbuckles	●	●			
Insulation - Bubble Wrap or Fiberglass	O	O			
LIGHTING					
"D Ring Support Discs	●	●			
Light Fixtures	●	●			
Protective Light Fixture Cages	●	●			
Twist-Lock Connection Body on Wire (Fixture End)	●	●			
Wiring from Fixtures to Base of Dome	●	●			
Termination of Wire at Junction Box at Grade Beam			●	●	
Electrical Service			●	●	
Switching / Lighting Controls			●	●	

Responsibility Matrix

● = Responsible party*

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O = Optional Scope**

****All line items are subject to final contract and project specific requirements and selections, Optional Scope items are available for discussion and add/deducts may apply.***

	Supplied by Yeadon	Installed by Yeadon	Furnished by Others	Installed by Others	Notes:
lighting Continued:					
Emergency Egress Lighting	●			●	
Battery Inverter / Uninterruptible Power Supply (UPS) - as needed	O			●	
NETTING AND CURTAINS					
Netting - Divider, Perimeter, Batting Cages, etc.	O	O			
Netting Cable Supports	O	O			
Netting Tension Plates and Hardware	O	O			
INSTALLATION					
Forklift or Crane to hoist Inflation Unit to Mechanical Pad	O	●	O		
Forklift to Unload Install Fabric, Doors, etc.	O	●	O		
Hand and Power Tools for Installation of Dome	●	●			
INSTALLATION continued:					
Installation Labor (when requested)	O		O		
Installation Supervisor	●	●			
Installation of Interior components (Lighting, Netting, Signage (Interior/Exterior)	●	●			
Aerial Lift for Installation of Interior Components	O	●	O		
Installation of Insulation	●	●			
Electrical Work			●	●	
Mechanical Work/ Gas Plumbing			●	●	

Responsibility Matrix

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O = Optional Scope**

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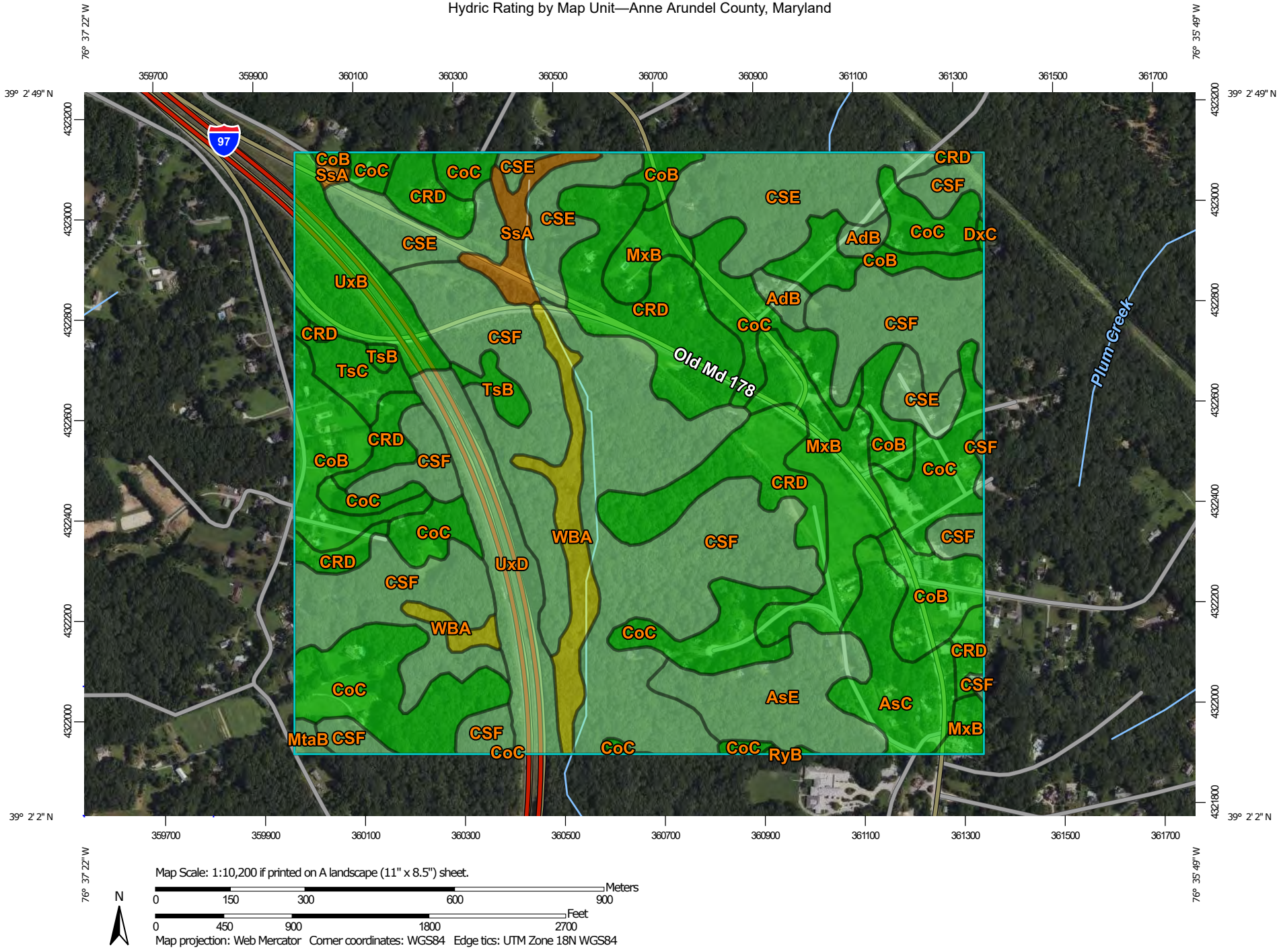
	Supplied by Yeadon	Installed by Yeadon	Furnished by Others	Installed by Others	Notes:
COMMISSONING					
Customer Training	●				
Owner' Manual	●				
Warranties	●				
MISCELLANEOUS					
Fabric Repair Kit	●				
Notes					

SOIL INFORMATION



Map Scale: 1:10,200 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 450 900 1800 2700

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

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

Soil Survey Area: Anne Arundel County, Maryland
Survey Area Data: Version 21, Sep 14, 2022

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

Date(s) aerial images were photographed: Jun 20, 2022—Aug 13, 2022

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

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AdB	Adelphia-Holmdel complex, 2 to 5 percent slopes	5	3.4	0.8%
AsC	Annapolis fine sandy loam, 5 to 10 percent slopes	0	13.4	3.3%
AsE	Annapolis fine sandy loam, 15 to 25 percent slopes	5	16.7	4.1%
CoB	Collington-Wist complex, 2 to 5 percent slopes	0	31.7	7.7%
CoC	Collington-Wist complex, 5 to 10 percent slopes	0	59.3	14.4%
CRD	Collington and Annapolis soils, 10 to 15 percent slopes	0	44.5	10.8%
CSE	Collington, Wist, and Westphalia soils, 15 to 25 percent slopes	5	39.2	9.5%
CSF	Collington, Wist, and Westphalia soils, 25 to 40 percent slopes	10	120.2	29.3%
DxC	Downer-Phalanx complex, 5 to 10 percent slopes	0	0.2	0.0%
MtaB	Mattapex silt loam, 2 to 5 percent slopes, northern coastal plain	5	0.9	0.2%
MxB	Mattapex-Butlertown complex, 2 to 5 percent slopes	0	23.2	5.6%
RyB	Russett-Urban land complex, 0 to 5 percent slopes	0	0.3	0.1%
SsA	Shrewsbury loam, 0 to 2 percent slopes	85	5.6	1.4%
TsB	Tinton loamy sand, 2 to 5 percent slopes	0	2.9	0.7%
TsC	Tinton loamy sand, 5 to 10 percent slopes	0	5.1	1.2%
UxB	Udorthents, loamy, sulfidic substratum, 0 to 5 percent slopes	0	14.2	3.5%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
UxD	Udorthents, loamy, sulfidic substratum, 5 to 15 percent slopes	5	17.5	4.3%
WBA	Widewater and Issue soils, 0 to 2 percent slopes, frequently flooded	61	12.1	3.0%
Totals for Area of Interest			**410.5**	**100.0%**

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

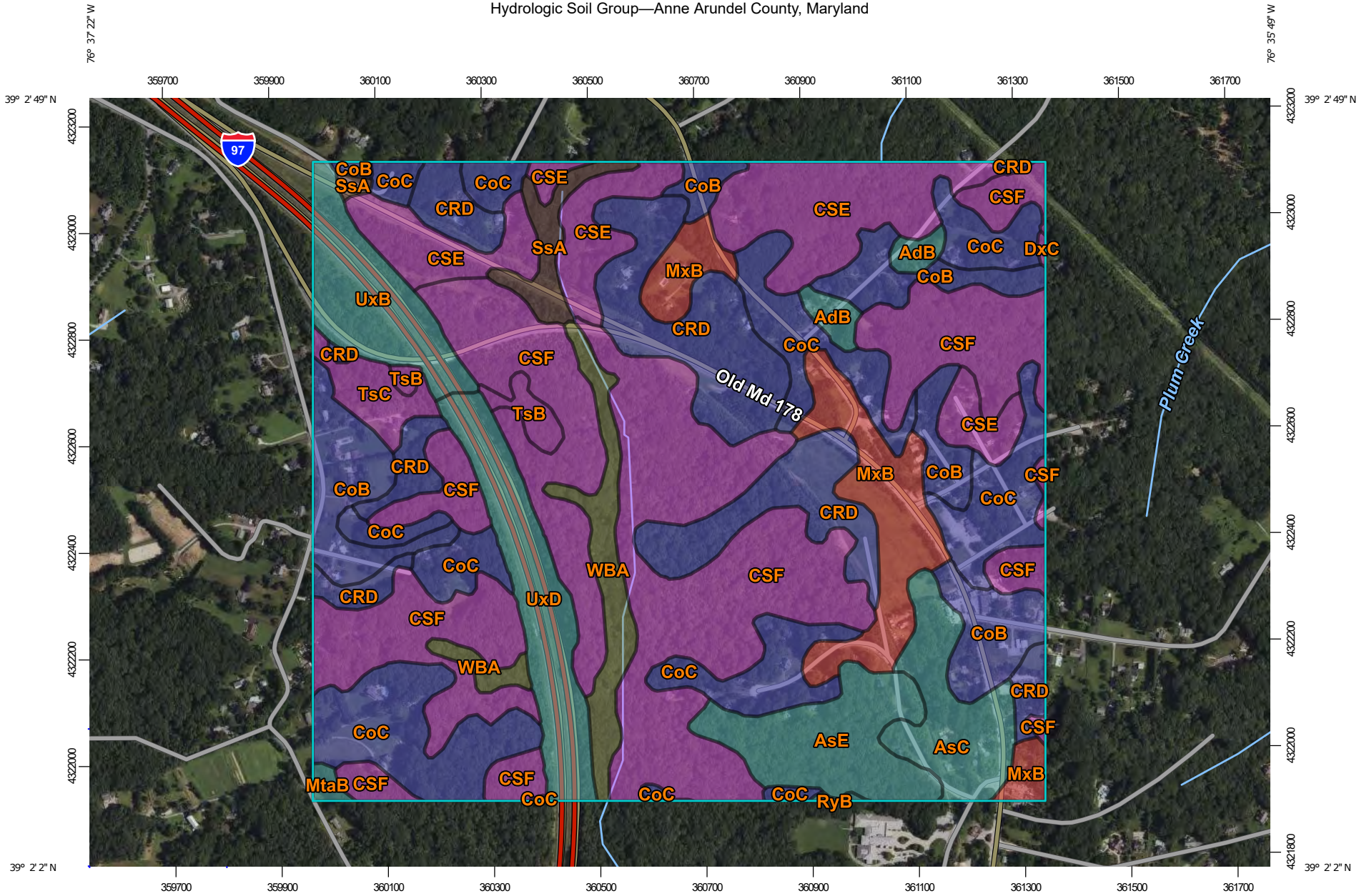
Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower


76° 37' 22" W
76° 35' 49" W
39° 2' 49" N
39° 2' 2" N
359700
359900
360100
360300
360500
360700
360900
361100
361300
361500
361700
4323200
4323000
4322800
4322600
4322400
4322200
4322000
4321800
97
Old Md 178
Plum Creek
CoB
SsA
CoC
CSE
CRD
SsA
MxB
AdB
DxC
UxB
TsB
TsC
WBA
UxD
AsE
AsC
RyB
MtaB
CSF
Map Scale: 1:10,200 if printed on A landscape (11" x 8.5") sheet.
N
Meters
0
150
300
600
900
Feet
0
450
900
1800
2700
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AdB	Adelphia-Holmdel complex, 2 to 5 percent slopes	C	3.4	0.8%
AsC	Annapolis fine sandy loam, 5 to 10 percent slopes	C	13.4	3.3%
AsE	Annapolis fine sandy loam, 15 to 25 percent slopes	C	16.7	4.1%
CoB	Collington-Wist complex, 2 to 5 percent slopes	B	31.7	7.7%
CoC	Collington-Wist complex, 5 to 10 percent slopes	B	59.3	14.4%
CRD	Collington and Annapolis soils, 10 to 15 percent slopes	B	44.5	10.8%
CSE	Collington, Wist, and Westphalia soils, 15 to 25 percent slopes	A	39.2	9.5%
CSF	Collington, Wist, and Westphalia soils, 25 to 40 percent slopes	A	120.2	29.3%
DxC	Downer-Phalanx complex, 5 to 10 percent slopes	A	0.2	0.0%
MtaB	Mattapex silt loam, 2 to 5 percent slopes, northern coastal plain	C	0.9	0.2%
MxB	Mattapex-Butlertown complex, 2 to 5 percent slopes	D	23.2	5.6%
RyB	Russett-Urban land complex, 0 to 5 percent slopes	C	0.3	0.1%
SsA	Shrewsbury loam, 0 to 2 percent slopes	B/D	5.6	1.4%
TsB	Tinton loamy sand, 2 to 5 percent slopes	A	2.9	0.7%
TsC	Tinton loamy sand, 5 to 10 percent slopes	A	5.1	1.2%
UxB	Udorthents, loamy, sulfidic substratum, 0 to 5 percent slopes	C	14.2	3.5%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
UxD	Udorthents, loamy, sulfidic substratum, 5 to 15 percent slopes	C	17.5	4.3%
WBA	Widewater and Issue soils, 0 to 2 percent slopes, frequently flooded	C/D	12.1	3.0%
Totals for Area of Interest			**410.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher