Elms Beach Park

Master Plan

Prepared for:

St. Mary's County Department of Recreation and Parks
23150 Leonard Hall Drive
Leonardtown, MD 20650
http://www.co.saint-marys.md.us/recreate/

Prepared by:

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August 29, 2017 / Contract No. 113-192.008

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Executive Summary

The 1,020 acre Elms property was acquired as a future power plant site by the State of Maryland in 1975. Since that time, the property has been used for environmental education, recreation, wildlife management (hunting), and forestry management. An Elms Management Plan was approved by the BOCC in March 2003. The plan places emphasis on environmental education and recreation and led to a new, 25-year lease between the Maryland Department of Natural Resources and the County. The new lease became effective on June 1, 2004 and runs until May 31, 2029. The 1,020 acre property is managed by several user groups. About 476 acres are leased to St. Mary's County for the St. Mary's County Public Schools Elms Environmental Education Center and the St. Mary's County Department of Recreation and Parks Elms Beach Park (and separate County-managed bow hunting area). The remaining 544 acres are managed by Maryland DNR for hunting and conservation purposes.

The Department of Recreation and Parks manages the Elms Beach Park, which is a scenic waterfront park located in the First Election District on the Chesapeake Bay, at 19350 Back Door Road, Lexington Park, Maryland. Amenities at the park include approximately 500' of beach front on the Chesapeake Bay which is used for sunbathing, unsupervised wading and swimming, and fishing; a picnic area and pavilion; a floating pier, used for launching canoes and kayaks and crabbing in a large tidal pond; nature trails; a children's playground; gravel parking area; and portable restrooms. The park has no running water or permanent restroom facilities.

This is a heavily used park, which is constrained by limited parking and lack of suitable restroom facilities. The park is most heavily used on the weekends, especially holiday weekends in the summer. Visitors population is diverse and ranges from individuals who come to the park to fish to multi-generational families who come to picnic and play. Approximately 110-120 cars can be accommodated on site during busy weekends with parking extending along portions of the access road. Parks staff estimate there are an average of 3.5 people per vehicle during peak usage. Additional parking, public restrooms and enhanced trails and picnic areas would greatly benefit users of this park. The park is open for day use only.

There are man-made, offshore stone breakwaters located directly adjacent to the park property. The breakwaters capture seaweed, trash, and debris from the Chesapeake Bay and they collect along the beaches to the southeast. The debris deposited on the beach in this area makes it less desirable for visitors to use. The beach located to the northwest of the breakwaters, however, is very desirable and heavily used. The utilities at the park are currently limited to on site electrical. The site does not currently have on site potable water, sanitary sewer or storm sewer. The Department of Recreation and Parks would like to expand the amenities offered at its park to include walking trails, interpretive signage, additional picnic facilities, additional parking, restrooms, and an expanded beach area.

The entire project is located within the Research Conservation Area (RCA) of the Chesapeake Bay Critical Area. Land use regulations are the most restrictive and performance standards that address lot coverage, forest and developed woodland retention/replacement, construction on steep slopes and hydric soils, stormwater management, and habitat protection have been created for development. Lot coverage (the area occupied by structures, parking areas, roads, walkways, pavers, gravel, or other man-made material) is limited to 15% of the parcel or lot. All development projects are subject to a replacement ratio that ranges from 1:1 to 3:1 for any area of forest cleared. The replacement ratios are as follows:

Permanent Disturbance	Temporary Disturbance
• Riparian water access - 2:1 • Development or redevelopment of a water-dependent facility - 2:1 • Non water-dependent structures or clearing in the buffer - 3:1 • Clearing outside the buffer - 3:1	• Buffer - 1:1

The range is dependent upon the percentage of total forest acreage cleared. If it is impossible to replace the forest cover on the project site, local jurisdictions collect fees-in-lieu that are used to reforest other areas within the Critical Area. St. Mary's County prefers to expand and enhance the existing forest on site rather than reforest another area within the Critical Area. Elms Beach Park in particular could fill in the existing forested areas to preserve the open space that already exists on site. A buffer management plan will likely need to be completed by the contractor who implements the final park design.

Existing Conditions

The park has approximately 2.66 acres of lot coverage from the existing impervious features on site (see Figure C-1 and Figure C-2 in Appendix 1). Currently, the existing features are as follows:

- A guard structure is located on the right side of Back Door Road where individuals entering the park pay for entry and can get more information from the park employee.
- At the entrance of the park, there is an opportunity to create a small parking area for hunters to use the adjacent hunting area on county leased land.
- The access road is gravel with drainage swales on both sides to convey water off the roadway. It is approximately 22 feet wide and 2500 feet long and has a relatively flat slope (2-5% maximum).
- Playground with synthetic play surface and play equipment for children aged 2-5 years and 5-12 years old. It was installed in 2006 and had to be repaired in 2009 after being vandalized. The master plan is to be implemented in 2020 and will be within a few years of the 20-year replacement cycle.
- One pavilion for large groups that is rented from April 1 to October 30 (except holidays). It has 15 picnic tables. The lights were removed due to maintenance issues, however there is access to power in this area.
- Informal picnic areas are scattered around the site to be used by smaller groups and families. They are typically located underneath the maintained forest areas. Adjacent to the picnic areas are metal grills with barrels for used coals to be disposed of. There is one cinder block grill structure, however the Department of Recreation and Parks prefers the metal grills.
- Benches are also scattered around the site near the informal picnic areas. They are wooden and were made either by the Boy Scouts or county employees.
- A badminton/volleyball net is located in the existing lawn area.
- There is a metal shipping storage container (8' x 20') located within the maintained forest that is used by the county to store canoes, extra trash cans, and other necessities for use by various camps and by the park staff.
- A small structure (8' x 32') provides small changing rooms for individuals who need to change into or out of bathing suits. The rooms are unisex and have two separate changing areas that can be used by an individual or a parent and child.
- A floating pier is located on the tidal pond on the Western part of the site. It was gifted to the County by DNR and is primarily used for fishing, however it could be used by canoe users and kayakers to launch their vessels into the pond.
- The parking is currently a gravel lot with 2 reserved accessible spaces and one wounded warrior space. Approximately 120 cars will fit on the site during busy weekends with parking extending along portions of the access road. Parks staff report that the actual carrying capacity for the park is 350 people max and currently they can accommodate between 110 and 120 cars. There is a cable and post barrier separating the parking lot from the rest of the park. A couple openings are in this barrier to accommodate pedestrian circulation.
- The forest located on site is not high-quality and is composed of mostly white pine (*Pinus strobus*) and sweetgum (*Liquidambar styraciflua*). There are very few understory plantings, but some hollies (*Ilex* sp.) are located on the fringe of the forest. The composition of the forest is not very dense - a 20' x 20' sample plot taken from an average section of the forest showed there are approximately eight trees 6" diameter or above within that space. The forest was observed to decrease in density the further from the edge the sample plot was taken. The forest appears to have been cleared at some point in the past as none of the trees are very old.
- Invasive species are present in the forested areas on the site.

Park Vision

Since a park facility is typically designed for a 40-year life cycle Elms Beach Park will be a place to recreate for the St. Mary's County community and visitors for well into the 21 Century. This vision for the park provides a framework for the design and program that will meet the needs of several generations of park visitors. The vision for the park is to provide recreational opportunities and beach access to the Chesapeake Bay that is ecologically integrated, aesthetically pleasing; and inclusive for visitors of all ages and abilities. The following themes relate back to the vision and set up the framework for the master plan of the park.

- Provide environmentally sensitive solutions to mitigate developmental impacts in the Critical Area.
- Provide a multi-generational passive recreational opportunity to the beach and water.
- Provide gathering spaces for individuals and families.
- Provide ADA accessible paths and site facilities for visitors of all physical abilities.
- Upgrade existing facilities and site furnishings that are at the end of their life cycle.
- Optimize and delineate parking to make it safe and prevent overcrowding.
- Provide a playground area for children and their caregivers.
- Improve and augment access to the Chesapeake Bay.
- Improve the park entry sequence by locating the attendant station centrally in the entry drive for several reasons: increase security, provide crowd control, and streamline payment.
- Provide architectural and site elements that are resilient, durable, and aesthetically consistent with the park setting.

Elms beach park is located within the Critical Area. This requires the park design consider methods to reduce adverse impacts on water quality from stormwater runoff and conserve fish, wildlife and plant habitat. Those factors are as follows:

- Site Development (approximate Limit of Disturbance): 219,030 square feet (5.03 acres).
- Solid Lot Coverage: 45,697 square feet (1.05 acres).
- Proposed Forest/Tree Clearing: 16,221square feet (0.37acres) - at the time of this master plan, there are no trees that are in severe decline or that are damaged.
- Road Widening: No road widening is proposed.

Proposed Lot Coverage

Many of the elements already located on site will be upgraded to meet ADA guidelines and also to accommodate the needs of the park users. Some areas that changed the most are as follows:

- By combining the restroom, changing room, and storage facility, the building footprint can maximize the land use cover. The existing three structures combine for a total of 1216 square feet of lot coverage (80 of those square feet are inside the 100' buffer). The proposed building is a total of 1200 square feet (none of which is in the 100' buffer). The addition of the plaza space adjacent to the building creates a meeting point for groups who have individuals who are coming to the park for different interests.
- The increase in asphalt paths helps define a great lawn space for park users to have small pick-up games.
- Secondary paths are all pervious.
- The parking lot has been expanded to formally accommodate 120 vehicles.
- The addition of bioretention facilities will treat runoff from the additional impervious surfaces.

Lot Coverage Comparison						
Lot Coverage Type	Existing Lot Coverage		Proposed Lot Coverage		Net Change	
	Inside 100' Buffer (SF)	Outside 100' Buffer (SF)	Inside 100' Buffer (SF)	Outside 100' Buffer (SF)	Inside 100' Buffer (SF)	Outside 100' Buffer (SF)
Playground		7,016		6,065		(951)
Picnic Spaces*	14	6	1,705	2,109	1,691	2,103
Asphalt Paths	3,522	2,909	3,814	6,723	292	3,814
Secondary Path (Pervious)			4,273	3,461	4,273	3,461
Boardwalk	440		589		149	
Floating Pier	300		300		0	
Entry Road		47,412		47,412		0
Parking		17,018		42,651		25,633
Parking (Accessible)		703		1,308		605
Pavilion	416	1,389	416	1,389	0	0
Gate House		25		100		75
Restroom†		800		2,947		1,811
Changing Room†		256				
Storage Facility**†	80	80			(80)	
Bioretention				4,135		4,135
Total	4,772	77,614	9,972	117,748	5,200	40,134

Notes:

* Picnic spaces include a table (movable), grill (installed in concrete), and 55-gallon drum for coal disposal (movable). Each non-accessible picnic space is assumed to cover approximately 2 square feet (grill footing). The accessible picnic spaces cover an approximate area of 200 square feet (10'x20' concrete pad).

** Existing storage facility is a non-permanent structure.

† Proposed restroom, changing rooms, and storage facility are in one structure (1200 square feet) with an impervious plaza/gathering space (1747 square feet).

Proposed Site Amenities

Comfort Station & Storage

- Multi-user facility ADA accessible restroom facility (1200 square feet)
- Include storage area for canoes, extra trash cans and other items used in the park
- The comfort station should accommodate the needs for different rooms (family restroom, utility area, storage room, changing area). The recommended material is either stick built with block or a precast concrete structure. The architectural form, color, and texture should reflect the southern Maryland park setting. The structure should be easy to maintain both inside and out with a 50 year life cycle.

Infrastructure

- The site has existing electrical. The sizing requirements of this electrical will need to be coordinated with the demands of the proposed structure.
- Heating and cooling should be discussed as part of the design solution. Although cooling is not required, it can add value to the park visitors. Since the site is currently closed during the winter time with the exception of foot traffic, heating may not be necessary; however, usage may change with the updated facilities and it will minimize winterization of the system.
- A well would be needed if potable water is desired. It is possible that the gray water could be used to irrigate the lawn area. This solution would need to be coordinated with the St. Mary's County health department. If water is not a solution, hand sanitation systems should be considered in the maintenance and upkeep of the facility.
- A percolation test was completed by the County Health Department in April 2017 and the results determined the site cannot accommodate a septic system. Any design for the restrooms will need to be coordinated with the St. Mary's County Health Department. The following are alternatives:
    - **Composting Toilet System** - This system requires a full basement space below the finish floor elevation to place the infrastructure for the composting units, maintenance and removal of composted material. Part of the basement could be buried, however, a ramp network would likely be required to provide ADA accessibility. Some units use small amounts of water (roughly 3 oz. per flush) that allow the below chamber to be hidden from the user. The estimated maintenance cost for this type of system is $15,000 per year.
    - **Flush Vault Latrine System** - Newer vault systems are using passive and active mechanical techniques to reduce odor and allow flushing in these facilities. The system requires pumping of sewage from every month to once a year depending on the size and frequency of use. The estimated maintenance cost for this type of system is $5000 per year.

Beach Composting Comfort Station & ADA Accessible Ramp

Composting Comfort Station

Flush Vault with Storage

Composting Unit

Flush Vault Latrine Comfort Station

Pavilion

- The pavilion is intended for rental opportunities. The architectural design for the structure should match the comfort station to reinforce the theme and experience of the park. The structure should be able to hold between 12-15 picnic benches. The existing or new wall should be considered to help shield users from the prevailing winds. The structure, including picnic tables, should include all ADA accessible standards. The structure should be easy to maintain both inside and out with a 50 year life cycle. The pavilion is currently rented and will continue to be a rental opportunity.

Alternatives

- The first alternative is to leave the existing pavilion in place and complete any updates or repairs as part of the next phase of design. This solution will help to drive the architecture for the comfort station. The building should be inspected to see if any standard maintenance should be completed at the time of construction.
- The second alternative is to construct a new pavilion at the existing site. This solution provides the largest range of alternatives for the architecture, and other site amenities at the pavilion.

Utilities

- The existing pavilion has an electrical panel and lighting. The panel needs to be replaced.
- The lighting has been removed due to vandalism and maintenance. Future lighting should incorporate vandal resistant - led technology. The lights should be controlled by a light sensor and an astronomical clock.
- Outlets may also be considered to provide additional opportunities for visitors.
- A frost resistant spigot should be considered as part of the design to easily allow for washing down the picnic pad.
- A security camera with warning signs should be considered.

Prefabricated Timber Frame Pavilion

Prefabricated Steel Frame Pavilion

Stick-Built Pavilion

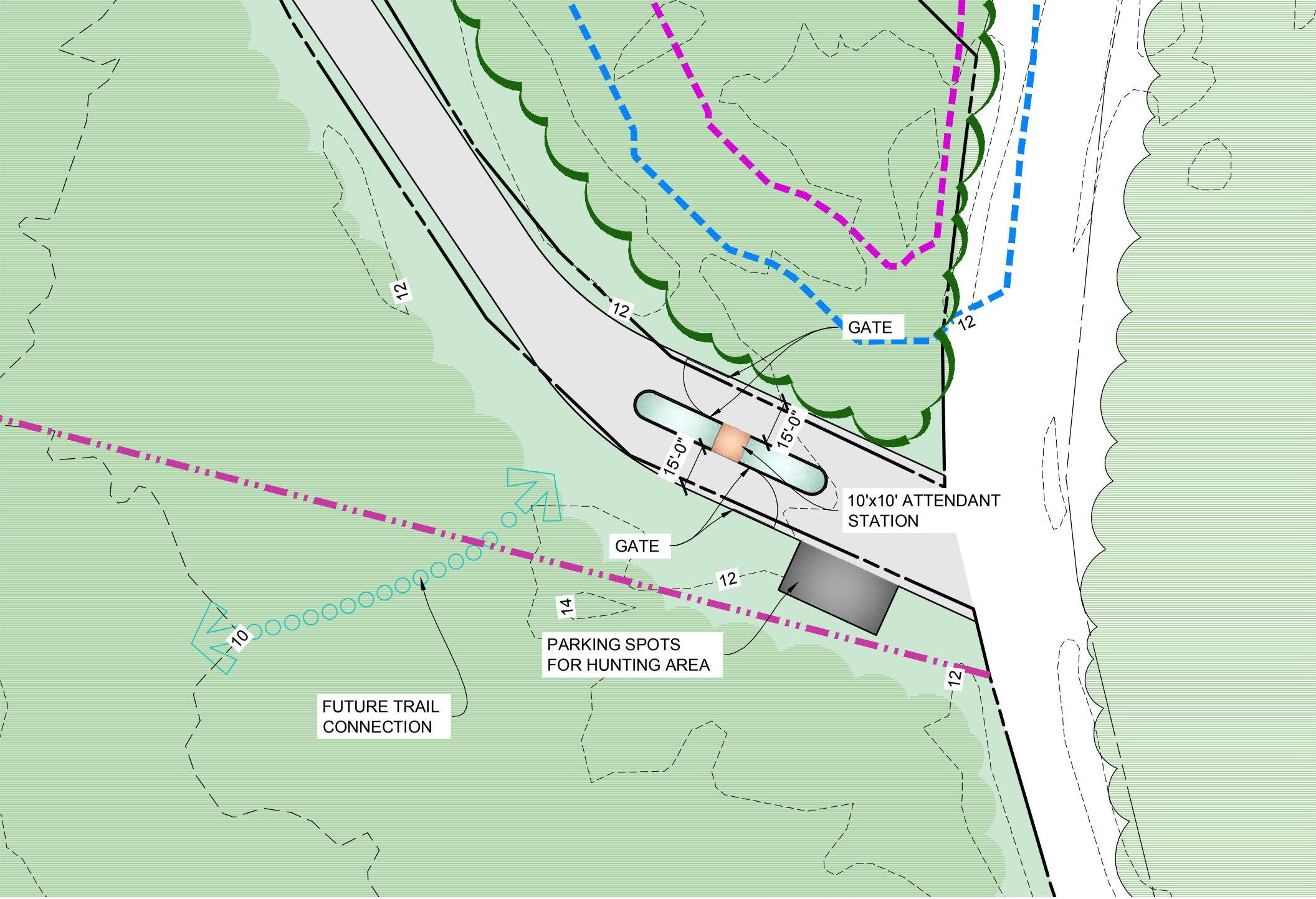
Attendant Station

- Provide ADA accessible space for up to 2 attendants.
- Windows on front, back and both sides for clear sight lines in and out (100 square feet).
- The side windows should accommodate the ability to take payment and answer questions.
- The architectural form, color, and texture should reflect the Southern Maryland park setting. The structure should be easy to maintain both inside and out with a 50 year life cycle.
- The station should have lighting, electrical and air conditioning.
- Internet access should also be considered so that alternative forms of payment may be considered.
- A security camera with warning signs should be considered.

Prefabricated Station with Board & Batten Concrete Form-liner

Stick-built Station with White Clapboards

Prefabricated Station with Stone Embellishment



ELMS BEACH PARK - PARK ENTRANCE

ST. MARY'S COUNTY RECREATION & PARKS

0 20 40 80 FEET

SCALE: 1" = 40'

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Playground

- Have separate play spaces for younger (2-5 years old) and older children (5-12 years old).
- Provide a playground that is ADA accessible.
- Provide a range of activities and play equipment (Play World equipment).
- Area approximately 6000 square feet to cover fall zone for play equipment pieces.
- Have an engaging theme for children of all ages and abilities.
- Provide accessible play surface (RainbowTurf).
- Play equipment could follow a theme appropriate to the park's location).

ADA Accessible - Rainbow Turf Permeable Play Surface

Climbing

Swinging

Spinning

Sliding

Parking Lot

- Provide spaces for approximately 120 individual cars. The minimum parking space size is 9'x 18'.
  - Larger parking spaces can be included to accommodate vehicles towing trailers
- Surface material to be asphalt with painted pavement markings.
- Concrete curb around entire parking lot to be 6" in height.
- To meet ADA requirements, 5 accessible spaces (4 standard, 1 van) will be provided.
  - The curb in front of these spaces will be flush.
  - Accessible spaces to be concrete and follow ADA standards for maximum slope.
  - Wheel stops to be provided at the accessible spaces.
  - Mountable curb for maintenance vehicle access with bollards.
  - Treat stormwater runoff with bioretention in island and bioretention adjacent to the parking lot.
  - The bioretention will be graded at the low point of the parking lot and the asphalt surfaces will be sloped into the bioretention (at a slope between 2-5%).
  - Curb cuts will allow water into the bioretention from the parking lot and splash pads (concrete, paver, or river rock) will dissipate the flow of the water to prevent the planting media and material from washing away.
  - Bioretention to be planted with a variety of perennial species that can survive flooded conditions as well as times of drought
  - Provide two bridges across the bioretention facilities to allow easy access to both sides of the parking lot
  - Shade and ornamental trees to also be placed in bioretention
- The parking lot can be expanded along the entry road in the future to accommodate overflow vehicles.

Bioretention Inlet

Curb Inlet

Bioretention Internal Weir

Bioretention Bridge Crossing

Bioretention with Wheel Stops and Flush Curb

Bioretention Planting with Trees

Site Furnishings

- All picnic pads adjacent to trails to be paved (concrete) to meet ADA requirements
  - Picnic areas not adjacent to trail to remain unpaved
- Include picnic table, grill, and 55-gallon drum for coal disposal at each location (use models existing on site)
  - All grills on concrete pads to be mounted at an ADA accessible height
  - Coal disposal drums are to be located adjacent to the grills
  - Picnic tables to be movable and meet ADA accessible requirements
- Trash and recycling cans should be located near the picnic sites, comfort station, and pavilion for easy disposal (use County Park standard green and blue cans)
- Environmental way-finding should be considered throughout the site to provide information, orientation, and rules for the park visitors.
- A fish cleaning station should be considered
- Dog waste station at a number of locations should be considered

Environmental Way-finding Example

ADA Accessible Grill

55 Gallon Trash & Recycle Receptacle

ADA Accessible Picnic Site

ADA Accessible Picnic Table

Paths & Trails

- Where the topography allows, the paths should be ADA accessible
  - Because the site has numerous mature trees where the main path and trails will be located, it's important to use a material that will not inhibit water and nutrients from getting to the tree roots
- Main path width: 10' minimum
  - Main path material: concrete or asphalt
- Sidewalk around parking lot width: 5' minimum
  - Sidewalk material: concrete
- Trail width: 5' minimum
  - Trail material: permeable concrete, permeable flexible surface (Flexi Pave or similar), Concrete, or Asphalt. Each proposed material for the trails have benefits and constraints:

Material	Benefits	Constraints
Asphalt	• Relatively inexpensive • Less likely to crack in cold weather • Installs more quickly than concrete	• Can be cracked by tree roots looking for water or nutrients (making the path non-ADA compliant) • Somewhat short lifespan • Requires maintenance every few years to re-seal
Standard concrete	• Lasts a long time • Lower maintenance • Can customize the color with admixtures	• Less easy to repair • Prone to cracking & heaving = non-ADA • More expensive per square foot than asphalt
Permeable flexible pavement	• Color can be customized • Permeable (reduce stormwater requirements) • Minimal maintenance • ADA compliant	• Expensive • Not ideal for high-vehicular traffic areas • Remains ADA accessible under most circumstances
Permeable concrete	• Permeable (reduce stormwater requirements) • Can customize color with admixtures	• Maintenance required when it clogs • Can be difficult to get the concrete mix correct • Prone to cracking & heaving = non-ADA

- Beach access to also be ADA accessible
  - Permanent materials: grating or a boardwalk
  - Lockable wheelchair storage can be included near the beach
- Possible remote trail experience loop and extension could be added to the Southern side of the parking lot
  - Any wetland and wetland buffer impacts to be coordinated with MDE throught the wetlands and waterways permit application

Asphalt Path

Concrete Path

Permeable Flexible Pavement

Grating Access to Beach

Permeable Concrete Path

Boardwalk Access to Beach

Stormwater Management

Per the Critical Area Commission regulations, the stormwater management will need to meet the Critical Area 10% pollutant reduction requirement and also comply with the Maryland Department of the Environment's Environmental Site Design manual. Chapter 5 of the MDE manual provides a series of tools to meet our stormwater requirement and pollutant loading. These include:

- Alternative surfaces
- Green Roofs
- Permeable Pavements
- Reinforced Turf
- Non Structural Practices
- Disconnect of Rooftop Runoff
- Disconnect of Non-Rooftop Runoff
- Sheetflow to Conservation Areas
- Micro-Scale Practices
- Rainwater Harvesting
- Submerged Gravel Wetlands
- Landscape Infiltration
- Infiltration Berms
- Dry Wells
- Micro-Bioretention
- Rain Gardens Swales
- Enhanced Filters

Each of the listed stormwater tools comes with its own benefits and limitations. Because of this, we choose the practice that best fits the site, the vision, the program, and the budget. Permeable pavements were one of the tools that we reviewed for Elms Beach Park. One of its greatest characteristics is as a site space saver. Most of the other practices require a site footprint in which to treat the stormwater while permeable pavement allows stormwater treatment under the pavement. This basically allows it to take up the same space for pavement and treatment.

Nevertheless, these pavements also have some limitations. These include:

a. The high upfront cost per gallon of stormwater treated. Permeable pavements square footage cost is typically three to five times more expensive than asphalt depending on the permeable material that is chosen, excavation costs, and permeability of the existing soils.
b. Contractors that understand the specialized construction installations of permeable pavements (especially concrete and asphalt)
c. Specialized maintenance equipment that the county does not currently have and would have to purchase or contract to maintain the pavement.

Because of the above limitations, the master plan is proposing a parking lot surface of standard asphalt with an internal bioretention to treat the stormwater. This also provides space for additional trees to be planted with added ecosystem services benefits. These include an increase in habitat, tree diversity, aesthetics, additional stormwater reduction, and reducing the heat-island effect.

Permeable pavements, however could be used for the pedestrian trails throughout the site. These pathways are currently asphalt and are not in great condition due to the surrounding tree roots growing underneath and heaving the pavement. This creates not only a tripping hazard, but the paths then are not ADA accessible. By replacing the asphalt with a flexible, permeable material, the tree roots can grow and access nutrients while maintaining a continuous walking surface.

Master Plan Legends

SITE DEVELOPMENT

SYMBOL	NOTES
	PARKING (Impervious cover)
	PLAYGROUND (Impervious cover)
	STRUCTURE (Impervious cover)
	PLAZA/GATHERING SPACE (Impervious cover)
	BIORETENTION (Pervious cover)
	WALKWAY (Impervious cover)
	PEDESTRIAN TRAIL (Pervious cover)
	PICNIC PAD (Impervious cover)
	BOARDWALK (Pervious cover)
	FLOATING PIER (Pervious cover)
	LAWN

PLANT SCHEDULE

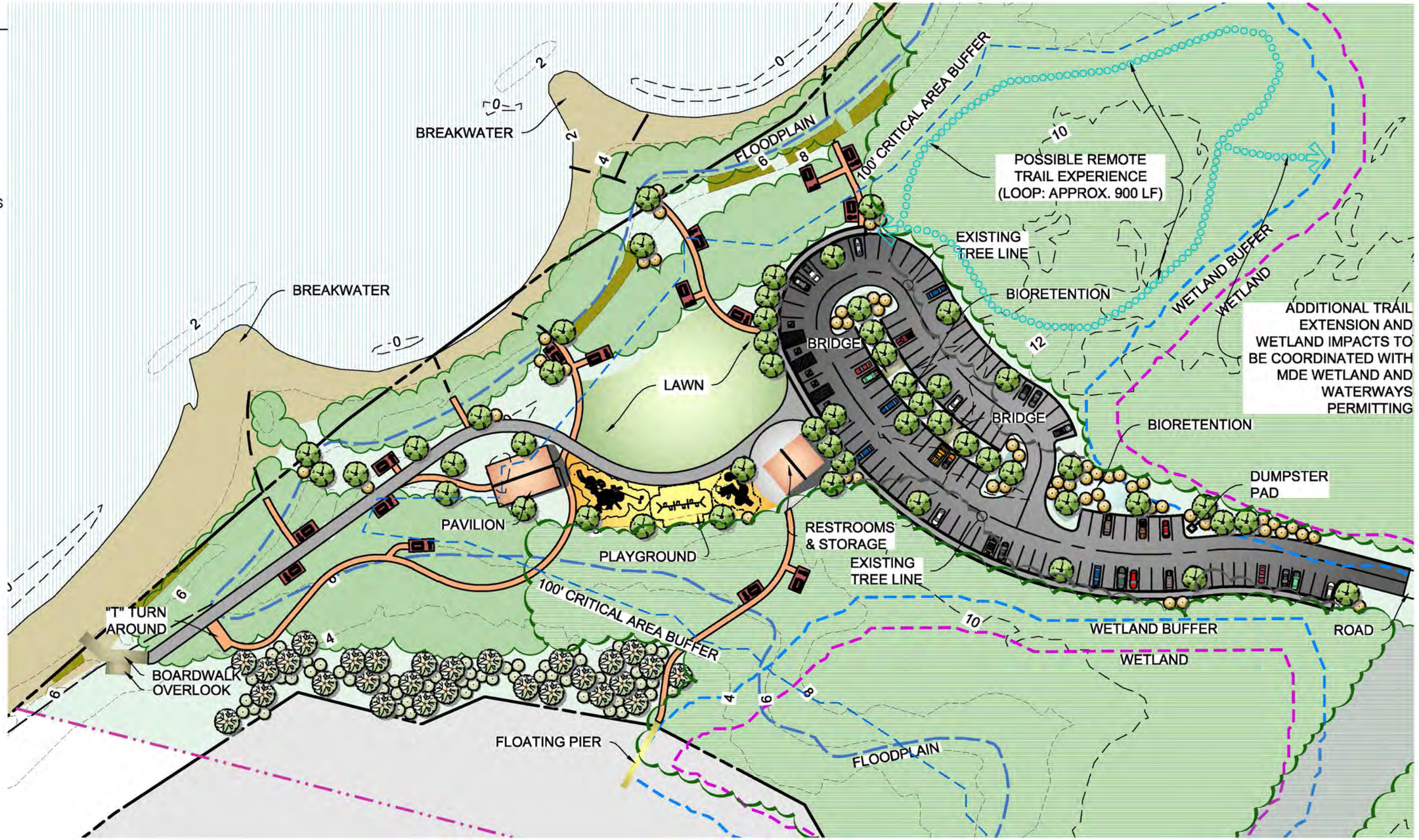
TREES	QTY	COMMON NAME
	52	SHADE TREE
	52	ORNAMENTAL TREE
	28	SHADE TREE (FOREST INFILL)
	53	UNDERSTORY TREE (FOREST INFILL)

LEGEND:

- *PROPERTY BOUNDARY*
- *APPROXIMATE ELMS BEACH PARK AREA BOUNDARY*
- *EXISTING b' CONTOURS*
- *EXISTING a0' CONTOURS*
- *POND*
- *a00' CRITICAL AREA BUFFER*

LEGEND

SYMBOL	NOTES
	PROPERTY BOUNDARY
	APPROXIMATE ELMS BEACH PARK AREA BOUNDARY
	EXISTING 2' CONTOURS
	EXISTING 10' CONTOURS
	POND
	STEEP SLOPES
	PARKING (116 SPACES)
	PLAZA/GATHERING SPACE
	WALKWAY
	PEDESTRIAN TRAIL
	PICNIC PAD
	LAWN
	BEACH
	PLAY STRUCTURE (AGES 2-5)
	PLAY STRUCTURE (AGES 5-12)
	PLAY STRUCTURE - SWING SET
	PICNIC TABLE
	COAL DISPOSAL DRUM
	GRILL
	TREES



ELMS BEACH PARK - MASTER PLAN

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0 40 80 160 FEET

SCALE: 1" = 80'

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LEGEND

SYMBOL	NOTES
	PROPERTY BOUNDARY
	APPROXIMATE ELMS BEACH PARK AREA BOUNDARY
	EXISTING 2' CONTOURS
	EXISTING 10' CONTOURS
	POND
	STEEP SLOPES
	PARKING (116 SPACES)
	PLAZA/GATHERING SPACE
	WALKWAY
	PEDESTRIAN TRAIL
	PICNIC PAD
	LAWN
	BEACH
	PLAY STRUCTURE (AGES 2-5)
	PLAY STRUCTURE (AGES 5-12)
	PLAY STRUCTURE - SWING SET
	PICNIC TABLE
	COAL DISPOSAL DRUM
	GRILL
	TREES

BREAKWATER
BREAKWATER
FLOODPLAIN
100' CRITICAL AREA BUFFER
POSSIBLE REMOTE TRAIL EXPERIENCE (LOOP: APPROX. 900 LF)
ADDITIONAL TRAIL EXTENSION AND WETLAND IMPACTS TO BE COORDINATED WITH MDE WETLAND AND WATERWAYS PERMITTING
EXISTING TREE LINE
WETLAND BUFFER
WETLAND
BRIDGE
BIORETENTION
BRIDGE
LAWN
RESTROOMS & STORAGE
PLAYGROUND
PAVILION
EXISTING TREE LINE
BIORETENTION
DUMPSTER PAD
ROAD
100' CRITICAL AREA BUFFER
WETLAND BUFFER
WETLAND
"T" TURN AROUND
BOARDWALK
OVERLOOK
FLOATING PIER
FLOODPLAIN

ELMS BEACH PARK - MASTER PLAN

ST. MARY'S COUNTY RECREATION & PARKS

0 15 30 60 FEET
SCALE: 1" = 30'

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Appendix 1:
Opportunities and Constraints Report

Opportunities and Constraints Report

for the

Elms Beach Park

Prepared for:

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The 1,020 acre Elms property was acquired as a future power plant site by the State of Maryland in 1975. Since that time, the property has been used for environmental education, recreation, wildlife management (hunting), and forestry management.

An Elms Management Plan was approved by the BOCC in March 2003. The plan places emphasis on environmental education and recreation and led to a new, 25-year lease between the Maryland Department of Natural Resources and the County. The new lease became effective on June 1, 2004 and runs until May 31, 2029. The property includes approximately ±476 acres that are leased to St. Mary's County for the St. Mary's County Public Schools Elms Environmental Education Center and the St. Mary's County Department of Recreation and Parks Elms Beach Park (and separate County-managed bow hunting area); the remaining 544± acres are manged by DNR.

The Department of Recreation and Parks manages the Elms Beach Park, which is a scenic waterfront park located in the First Election District on the Chesapeake Bay, at 19350 Back Door Road, Lexington Park, Maryland. Amenities at the park include approximately 500' of beach front on the Chesapeake Bay which is used for sunbathing, unsupervised wading and swimming, and fishing; a picnic area and pavilion; a floating pier, used for launching canoes and kayaks and crabbing in a large tidal pond; nature trails; a children's playground; gravel parking area; and portable restrooms. There are offshore stone breakwaters located directely adjacent to the park property. The breakwaters capture seaweed, trash, and debris from the Chesapeake Bay and they collect along the beaches to the southeast. The beach located to the northwest of the breakwaters, however, is very desireable and heavily used.

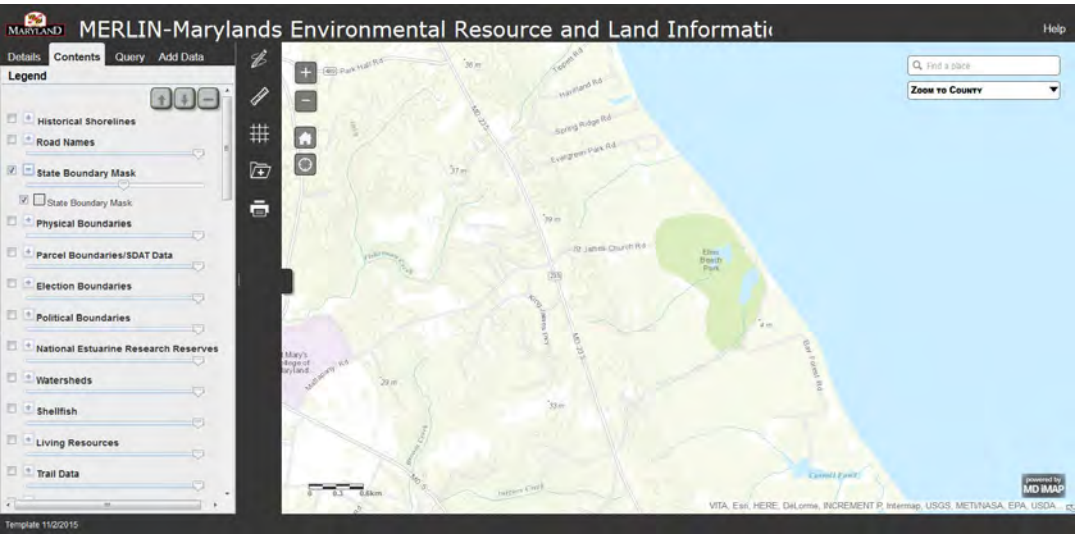
The utilities at the park are currently limited to on site electrical. The site does not currently have on site potable water, sanitary sewer or storm sewer. The heavily used park is constrained by limited parking and lack of suitable restroom facilities.

Because of the high use of the park, it is necessary to update and upgrade many of the amenities already on site as well as add new amenities to help the park stay successful for many years to come. Some of the amenities to be included in the master plan are as follows:

- **restroom facility:** this is one of the higher priority amenities as users of the park currently use porta potties
- **picnic pavilion:** the existing picnic pavilion can be upgraded from the cinder block structure to a metal structure
- **supplemental picnic areas:** less formal picnic areas to be placed throughout the park to help create ample seating for families and smaller groups who need to utilize a picnic table and grill
- **playground:** the existing playground will be eligible for replacement by the time the project goes to construction
- **walkways:** upgrade the existing walkways to meet accessibility standards
- **parking areas:** expand the existing parking to accommodate users on the weekends and upgrade the surface from gravel to a more permanent material
- **enhanced park entrance:** relocate the gatehouse to a more convenient location and create a welcoming entrance into the park
- **nature trails and pathway connections:** coordinate any future trail construction with the adjacent Board of Education Elms Environmental site
- **interpretive signage:** park users tend to be multilingual (Koren, Chinese, Vietnamese, Spanish speaking, and others) and regulatory signage currently combines symbols and text to help alleviate any language barriers

GEOSPATIAL DATA

From the Maryland Department of Natural Resources



Data Collection & Methodology

AMT compiled available records of "mappable" features from sources to include St. Mary's County GIS (http://www.stmarysmd.com/gis/), Maryland DNR Geospatial Data (http://dnrweb.dnr.state.md.us/gis/data/data.asp), USDA Web Soil Survey (http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm) and Maryland's Environmental Resource and Land Information Network (MERLIN). This information was used to create maps of the various elements on site (see the appendices). Among other data, the maps include:

- **Critical area:** a mapped set of criteria that minimizes the adverse effects of human activities on water quality and natural habitats while fostering consistent, uniform, and more sensitive activity within the critical area; land classifications include intensely developed areas (IDAs), limited development areas (LDAs), and resource conservation areas (RCAs)
- **Forest & trees:** areas of land covered by trees, understory plants, and groundcovers
- **Existing conditions:** existing amenities including structures, walkways, driveways, parking areas, and play spaces
- **Wetlands & water:** tidal and non-tidal wetlands and corresponding buffers
- **Steep slopes & soils:** areas that could be highly erodible or less likely to drain after the soil is saturated, hydric soils limit construction suitability
- **Habitats:** rare, threatened, and endangered species and forest interior dwelling species

Ultimately, the information gathered was collected into a composite map showing the entire project area with all of the aforementioned areas to show the most suitable places for construction. AMT ground-truthed the mappable features via on-site investigations to verify the accuracy of the remotely gathered information.

Critical Area

Of the three land classifications within the critical area (Intensely Developed Areas - IDAs, Limited Development Areas - LDAs, and Resource Conservation Areas - RCAs), the only applicable classification is the RCA. RCAs are the largest land classification in the critical area (approximately 80%) and therefore provide the greatest opportunity for meeting the goals of the Critical Area Program. In order to do so, the land use regulations are the most restrictive and performance standards that address lot coverage, forest and developed woodland retention/replacement, construction on steep slopes, stormwater management, and habitat protection have been created for development (see Figure A).

- New development is limited to residential uses and uses associated with resource utilization activities. Residential density is limited to one dwelling unit per 20 acres.
- Lot coverage is limited to 15% of the parcel or lot (it is defined by the percentage of the lot or parcel that is occupied by structures, parking areas, roads, walkways, pavers, gravel, or any man-made material; decks that allow water to pass through the spaces between the planks are not counted.
- Forested areas are extremely important to the health of the Chesapeake Bay, Atlantic Coastal Bays, and all of their tributaries. It is important when developing an area within the RCA to maintain and increase forest cover to increase various species habitats, stormwater infiltration, shoreline stabilization, nutrient absorption, and water temperature mediation. If no forest coverage existed prior to development, 15% of the area must be planted with trees.
- All development projects are subject to a replacement ratio that ranges from 1:1 to 3:1 for any area of forest cleared. The range is dependent upon the percentage of total forest acreage cleared. If it is impossible to replace the forest cover on the project site, local jurisdictions collect fees-in-lieu that are used to reforest other areas within the Critical Area. St. Mary's County prefers to expand and enhance the existing forest on site rather than reforest another area within the Critical Area.
- Critical area regulations prohibit any development on areas where slopes exceed 15%.
- Stormwater treatment is required for most development projects within the RCA. Treatments could include infiltration, grassed swales, rain gardens, ponds, wetlands, and filtering devices.
- Local governments are required to address agriculture, forestry, fisheries, and aquaculture through inter-agency coordination and the use of Soil Conservation and Water Quality Plans for farms, Timber Harvest and Forest Management Plans for forestry uses, and Water-Dependent Facilities regulations for fisheries and aquaculture.
- 100-foot, naturally vegetated, forested buffer landward from the mean high water line of tidal waters or from the edge of tidal wetlands and tributary streams (to assist in the removal or reduction of sediment, nutrients, and toxic substances from runoff while minimizing human activities on habitat within the critical area); no disturbance of the buffer is permitted unless conditional approval is granted.
- Buffer expansion: for steep slopes the buffer is expanded four feet for every 1% slope or to top of slope (whichever is greater), for nontidal Wetlands of Special State Concern (WSSC) the buffer is expanded to include the wetland and it's 100-foot buffer, for nontial wetlands the buffer is expanded to the edge of the wetland, for hydric soils the buffer is expanded to landward edge of soil or 300 feet (including the required 100-foot buffer; whichever distance is less) and local governments are given flexibility when the expanded buffer encompasses 75% or more of lot area,.
- 25-foot vegetated buffer around non-tidal wetlands (new development cannot substantially damage or change the character or the non-tidal wetlands).
- New development that is water-dependent or of substantial economic benefit to the public is allowed to disturb non-tidal wetlands; however, measures must be taken to replace lost non-tidal wetlands and provide water quality benefits and habitat protection equal to or greater than what was provided by the original wetland(s).
- Threatened and endangered species within the critical area protected since they are highly susceptible to local land disturbances. There are numerous measures and approaches to protect the threatened and endangered species that include: designation of areas of non-disturbance around essential habitat, establishment of conservation easements, and land acquisition.
- Significant plant and wildlife that have been identified for protection include: colonial water bird nesting areas (heron, egret, tern, etc.), aquatic areas of historic waterfowl concentration, riparian forests (forested areas of 300 feet in width along streams and the Bay's shoreline), relatively undisturbed and large tracts of forest (100+ acres) which support breeding populations of forest interior-dwelling birds (vireos, warblers, flycatchers, woodpeckers, etc.), certain plant and animal communities that are the best example of their kind in Maryland, and other areas determined to be of local significance.
- Local jurisdictions have designated areas around significant habitats where disturbances are prohibited and also implemented protection programs that employ the acquisition of the habitat, conservation easements, cooperative agreements with landowners, or other similar measures.
- Andromous fish (rockfish, yellow perch, white perch, shad, or river herring) spawning waters are areas where the fish migrate from their primary ocean habitat to freshwater areas for breeding purposes. The construction or placement of dams that would interefere with the movement of spawning fish or their larval form is prohibited in spawning areas. There are also time-of-year restrictions on development activities occurring within or near streams. Channelization or other physical alteration, including the introduction of artificial surfaces (rip rap, etc.) are limited.

Forest & Trees

There are three distinct types tree cover on the Elms Beach Park property (see Figure B).

- **Forest:** the majority of the vegetated cover of the property is forested.
- **Previously maintained forest:** along the entry drive, there are areas of land that were previously mowed and used as demonstration areas. Over time, however, after some time of not being maintained, they have turned into early successional forest stands with small trees. These areas are also very wet and have high water tables.
- **Tree stand:** the remaining areas with tree cover are currently being maintained by the Department of Recreation and Parks. They are mowed areas with some trees that cover gathering spaces, benches, picnic tables, and grills.

All tree cover is subject to critical area regulations for replacement depending on the number of trees on the property and the size of the trees being removed. Trees located in the buffer generally cannot be removed unless they are dead, dying, diseased, or hazardous. A buffer management plan is required for removal of all vegetation within the buffer with exception of mowing an existing lawn. The following are the tree replacement criteria within the critical area:

- Clearing of up to 20% of existing forest requires 1:1 replacement
- Clearing between 20% and 30% of existing forest requires 1.5:1 replacement
- Clearing over 30% of existing forest requires 3:1 replacement and conditional approval

The size and location of the tract of forest qualifies as habitat for forest interior dwelling species (FIDS) . They require large forests (50+ acres of forest with at least 10 acres of habitat or riparian forests that are at least 300 total feet with 50+ acres of total forested area) to have an habitat that is optimal for reproduction and survival. There are approximately 25 species of FIDS birds that potentially breed in the critical area and about half of them are highly area sensitive meaning they are most vulnerable to forest loss, fragmentation, and habitat degradation. Much effort should be taken to prevent the removal of the high-quality FIDS habitat and mitigation for lost/converted habitat is required.

View of previously maintained forest adjacent to a forest tract

Existing Conditions

Elms Beach Park is a park that is well used by the community in St. Mary's County and beyond. The park has approximately 2.66 acres of lot coverage from the exisitng impervous features on site. Currently, the existing features are as follows:

- Playground with synthetic play surface and play equipment for children aged 2-5 and 5-12. It was installed in 2006 and had to be repaired in 2009 after being vandalized. The master plan is to be implemented in 2020 and will be within a few years of the 20-year replacement cycle
- Pavilion for large groups that is rented from April 1 to October 30 (except holidays). It has approximately 15 picnic tables. The lights were removed due to maintenance issues, however there is access to power in this area.

Existing play equipment

Typical informal picnic area

- Informal picnic areas are scattered around the site to be used by smaller groups and families. They are typically located underneath the maintained forest areas. Adjacent to the picnic areas are metal grills with barrels for used coals to be disposed of. There is one cinder block grill structure, however the Department of Recreation and Parks prefers the metal grills.
- Benches are also scattered around the site near the informal picnic areas. They are wooden and were made either by the Boy Scouts or county employees.

Typical bench

- A badminton/volleyball net is located in the existing lawn area.
- There is a storage container (8' x 20') located within the maintained forest that is used by the county to store canoes, extra trash cans, and other necessities for use by various camps and by the park staff.

Changing rooms

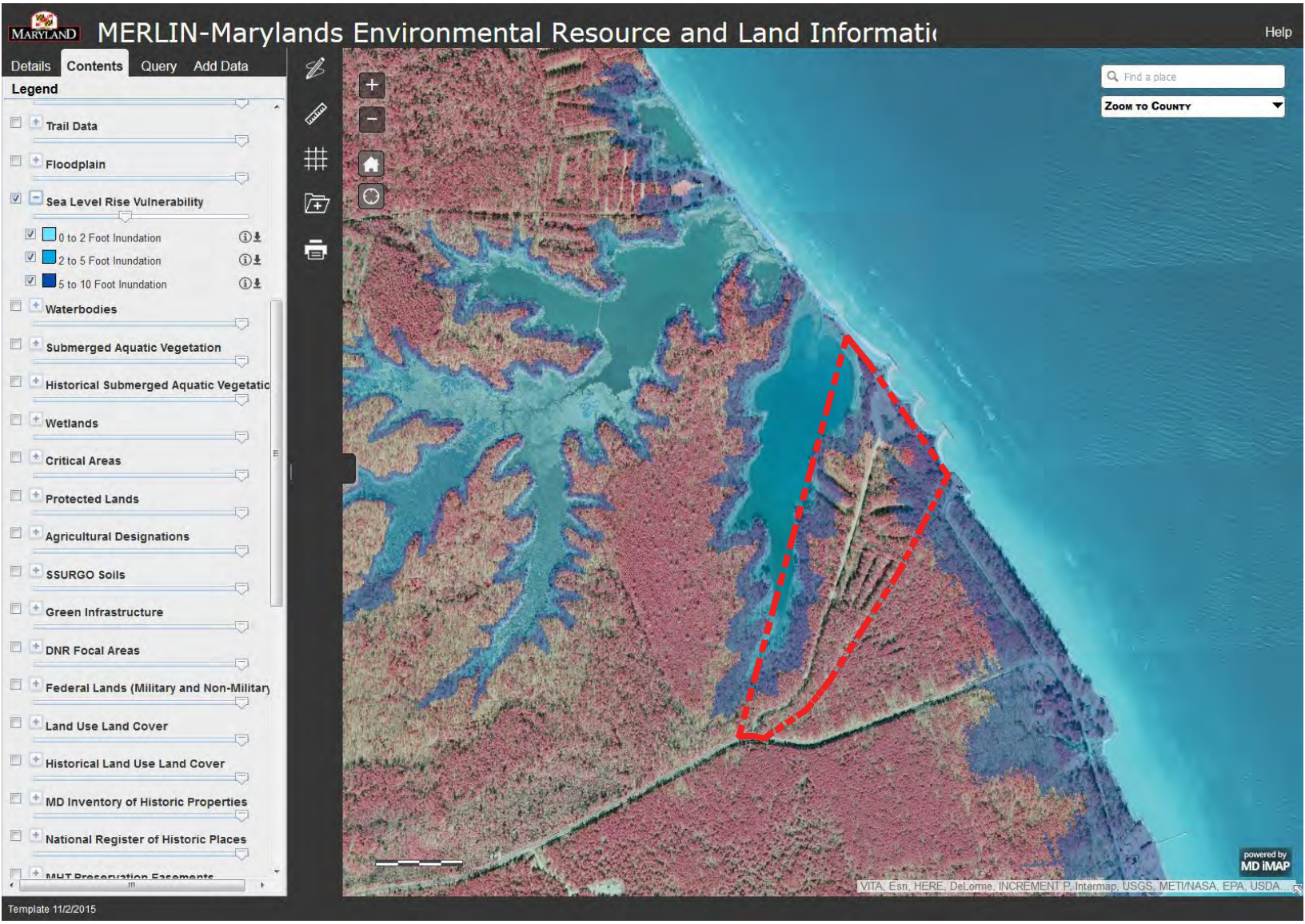
- A small structure (8' x 32') provides small changing rooms for individuals who need to change into or out of bathing suits. The rooms are unisex and have two separate changing areas that can be used by an individual or a parent and child.
- A guard structure is located on the right side of Back Door Road where individuals entering the park pay for entry and can get more information from the park employee.
- A floating pier is located on the tidal pond on the Western part of the site. It was gifted to the County by DNR and is primarily used for fishing, however it could be used by canoe users and kayakers to launch their vessels into the pond.
- The parking is currently a gravel lot with 2 reserved accessible spaces and one wounded warrior space. Approximately 120 cars will fit on the site during busy weekends with parking extending along portions of the access road.
- At the entrance of the park, there is an opportunity to create a small parking area for hunters to use the adjacent hunting area on county leased land.
- See Figure C for plan information.

Floating pier

Wetlands & Water

Wetlands are areas of transition between the land and the water that provide essential habitat for fish, birds, and other wildlife. They also have additional benefits of controlling floods, filtering pollutants, and providing recreational opportunities. Tidal wetlands are found along the shorelines of the Chesapeake and Coastal Bays and their tidal tributaries. Non-tidal wetlands are wetlands that are not affected by the tides like tidal wetlands. According to the critical area regulations for stormwater management, there is a 10% pollutant reduction requirement for any projects within the IDA (see Figure D).

According to mapped GIS data, there are numerous tidal and non-tidal wetlands that are located withing the park boundary. A large portion of the park property is covered in both tidal and non-tidal wetlands. A portion of the park property is mapped as 100-year floodplain. The majority of the developed portion of the park is also extremely vulnerable to sea level rise (see MERLIN map below). If the sea level were to rise 0-2 feet, not much would change on the Elms Beach Park property; however, just North would be affected and the tidal marsh would likely expand. If the seal level rose 2-5 feet, water bodies on the Park property would likely expand. Finally, if the sea level rose 5-10 feet, the shoreline and inland water bodies would look extremely different. The main park area (everything except the driveway) would be under water. Additionally, storm surges inundate the property with water. The storm surges for a Category 4 hurricane would put the entire park under water. The lesser categories of hurricanes also greatly impact the property.

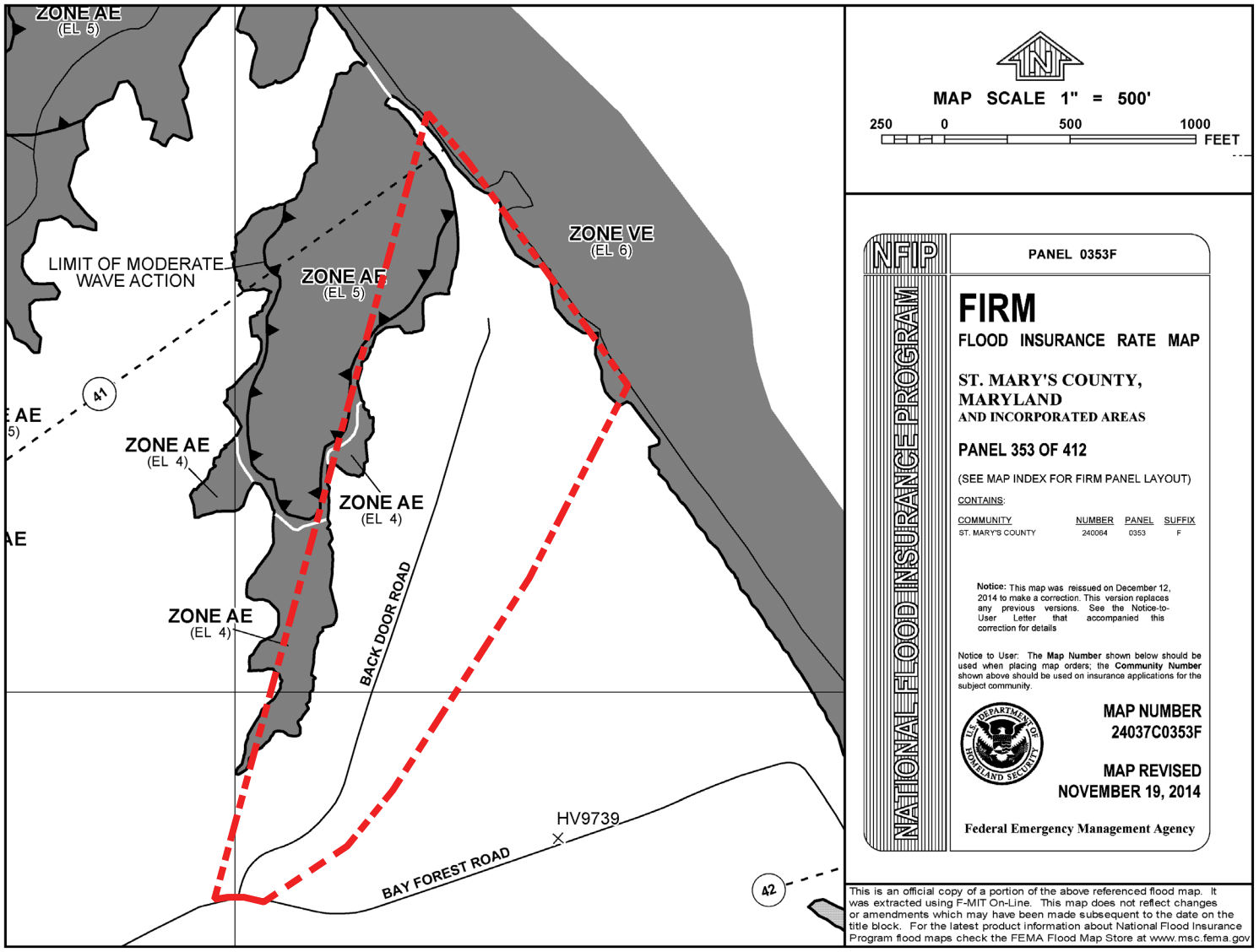


Sea rise vulnerability

Floodplain

A floodplain is an area of low-lying ground adjacent to a river, formed mainly of river sediments and subject to flooding. On the FEMA Flood Insurance Rate Map (see below), there are two areas of special flood hazard (shaded in grey) that are subject to innundation by the 1% annual chance flood (also known as the 100-year flood). The base flood elevation is the water surface elevation of the 1% annual chance flood.

There are two different zones within the study area (see Figure D). The first of which is Zone AE. This zone has the base flood elevations determined and range from 4 to 5 feet. This area lies predominantly in the vicinity of Briscoe Pond. With this floodplain zone, there are some building regulations such as requiring the lowest floor elevation of a building (including utility and sanitary facilities) to be at or above the base flood level or constructed such that the structure is water tight with walls substantially impermeable to the passage of water and can resist hydrostatic and hydrodynamic loads/the effects of buoyancy. The second zone is Zone VE. This zone is a coastal flood zone with velocity hazard. The base flood elevation havew been derived from detailed hydraulic analyses and is 6 feet. This area is located along the coastline. With this floodplain zone, there are also building regulations. All new construction must be located landward of the reach of mean high tide and the lowest horizontal structural member of the lowest floor (excluding pilings and columns) is elevated to or above the base flood level and the pile or column foundation and structure is anchored to resist flotation, collapse, and lateral movement from wind and water loads. The use of fill for strucutal support of buildings is also prohibited in Zone VE.



Steep Slopes & Soils

Steep slopes and erodible soils can lead to runoff that will eventually pollute the Chesapeake Bay. Within the critical area, development on slopes of 15% and greater is prohibited. The critical area buffer is extended to encompass ecologically sensitive areas such as steep slopes and soils with development constraints. Despite the fact there are very few steep slopes, the critical area buffer (see the appendices) extends over the vast majority of the site because of the soils (see Figure E).

There are a variety of soil types found on site:

SOILS TABLE					
MAP UNIT SYMBOL	MAP UNIT NAME	K-FACTOR (WHOLE SOIL)	HYDRIC RATING	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
Ek	Elkton silt loam	.43	Partially hydric	C/D	Poorly drained
MhB2	Mattapex fine sandy loam, 2-5% slopes, moderately eroded	.32	Partially hydric	C	Moderately well drained
Ot	Othello silt loam	.43	Partially hydric	C/D	Poorly drained
Tm	Tidal marsh	.37	Hydric	D	Very poorly drained
W	Water	--	--	--	--

The current park and amenities are mainly built upon the Mattapex fine sandy loam (MhB2) soil type. However, the relationship between the different soils is also important.

- **k-factor:** this number is an evaluation of the soil erodibility. Generally, soils that will easily detach and erode are valued from 0.05 to 0.2. Soils in this category are generally coarsely textured and have a high concentration of sand in them. Moderately erodible soils are rated from 0.25 to 0.4. These soil types generally are medium textured (such as a silt loam). Soils of this type can also produce moderate runoff. The most erodible soil types have a high silt content. They tend to have a K-value greater than 0.4 and can produce high rates of runoff.
- **hydric rating:** soils that are considered hydric formed under conditions of saturation, flooding, or ponding during the growing season that eventually caused anaerobic conditions in the upper part of the soil. These soils generally are saturated or inundated during the growing season to support hydrophytic vegetation. Hydric soils associated with wetlands are required to be protected.
- **hydrologic soil group:** there are 4 different soil groups that describe the various runoff potentials. Soils can have a dual hydrologic group (A/D, B/D, or C/D) where the first class noted is for drained areas and the second classifies undrained areas.

  Group A: soils with a high infiltration rate and low runoff potential when thoroughly wet; this includes excessively drained sands or gravelly sands.

  Group B: soils with a moderate infiltration rate when thoroughly wet; soils in this group are generally fine to moderately coarse in texture

  Group C: soils with a slow infiltration rate when thoroughly wet; these soils generally have a layer that impedes the downward movement of water or soils that have a moderately fine or fine texture

  Group D: soils with very slow infiltration rates when thoroughly wet; the soils are generally clays that have a high shrink-swell potential, have a very high water table, have a clay-pan or clay layer at or around the surface, and shallow soils over a nearly impervious material.
- **drainage class:** this refers to the duration of wet periods that closely mimic the conditions under which the soils were formed.

Summary

The Elms Beach Park property is entirely included within the critical area (RCA) and will require careful consideration for proposed improvements (see Figure G). The following are environmental considerations to consider:

- Lot coverage: 15% (structures, parking areas, roads, walkways, pavers, gravel, or any man-made material; decks are exempt)
  - For the entire parcel (1,020 acres), the maximum lot coverage allowed is 153 acres
  - For the Elms Beach Park Area (81 acres), the maximum lot coverage allowed is 12.15 acres
- No development on slopes 15% and greater
- Stormwater management can include infiltration, grassed swales, rain gardens, ponds, wetlands, and filtering devices
- Protect and do not disturb threatened and endangered species habitats (including plant, animal, and fish)
- Do not disturb 100- foot tidal buffer (unless conditional approval is granted)
- Minimize or do not damage 25-foot non-tidal wetland buffer
- Maintain as much existing forest as possible
- If forest removal is necessary, replace at the following rate as applicable:

1:1 replacement	If clearing less than or equal to 20% of existing forest
1.5:1 replacement	If clearing between 20% and 30% of existing forest
3:1 replacement	If clearing more than 30% of existing forest

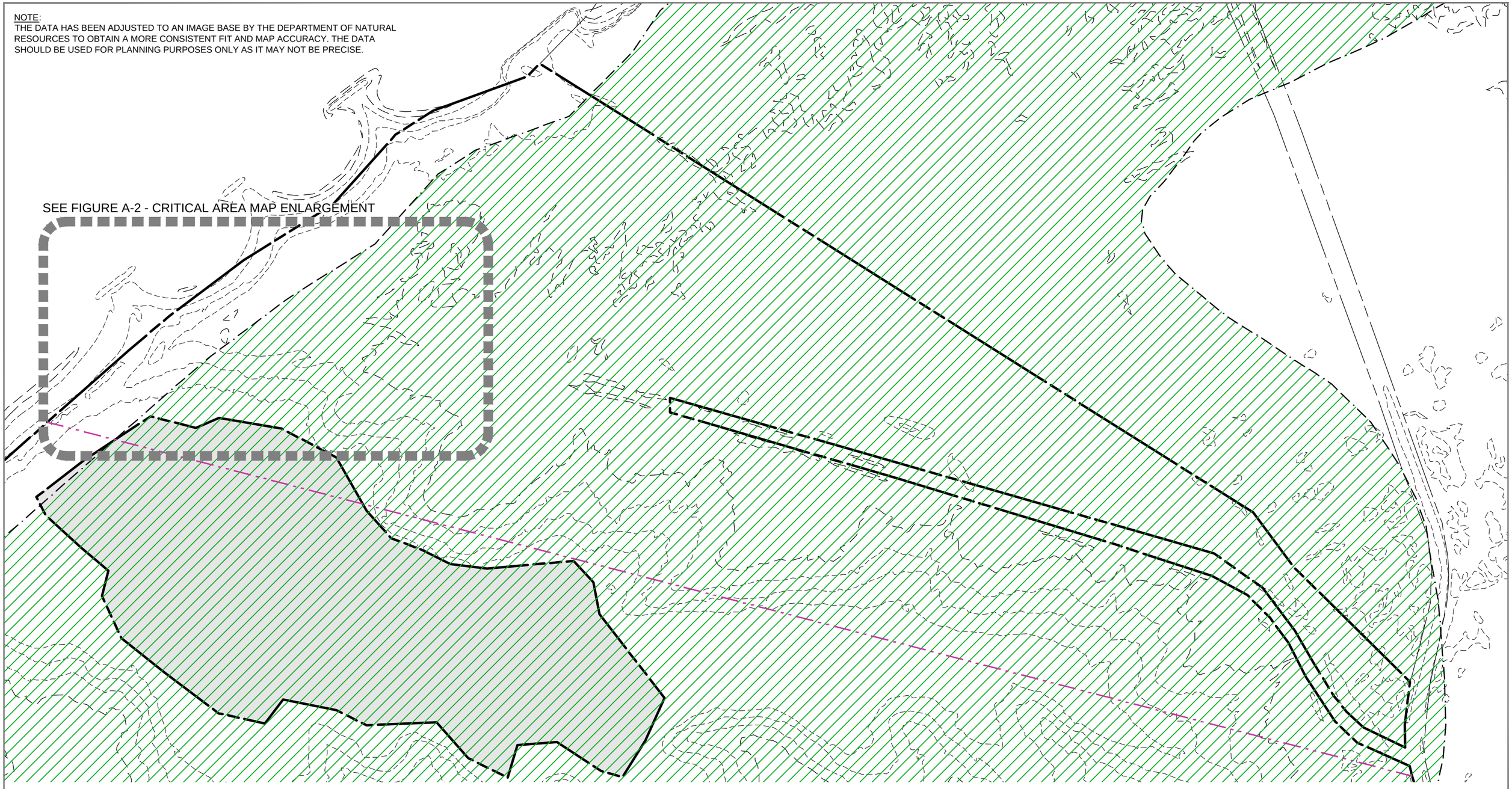
- Maintain any FIDS habitats on site
- Accommodate the potential scenario of rising seal level and storm surges through material choice and amenity locations

In addition to environmental concerns, there are numerous opportunities to upgrade the amenities of the park to make more user-friendly. The following are design considerations and options to improve elements of the park:

- Upgrade parking to a more permanent surface and to accommodate a reasonable number of vehicles
- Combine storage, changing rooms, and bathroom into one structure
- Upgrade play equipment since it will be nearing the end of it's usable life; move/reconfigure based on location of parking
- Update pavilion
- Reconfigure informal picnic areas based on location of parking
- Relocate benches based on location of informal picnic areas
- Reconfigure the park entrance to locate the gate house centrally in the driveway so drivers can more easily access it to pay for entry
- Ensure paths throughout the park are accessible
- Gain and improve access to water's edge
- Improve access to the beaches
- Utilize existing views and vistas

NOTE:
THE DATA HAS BEEN ADJUSTED TO AN IMAGE BASE BY THE DEPARTMENT OF NATURAL RESOURCES TO OBTAIN A MORE CONSISTENT FIT AND MAP ACCURACY. THE DATA SHOULD BE USED FOR PLANNING PURPOSES ONLY AS IT MAY NOT BE PRECISE.

SEE FIGURE A-2 - CRITICAL AREA MAP ENLARGEMENT



LEGEND:

PROPERTY BOUNDARY

APPROXIMATE ELMS BEACH PARK AREA BOUNDARY

EXISTING 2' CONTOURS

EXISTING 10' CONTOURS

RESOURCE CONSERVATION AREA (RCA, FROM DNR GIS)

POND

FIGURE A-1: CRITICAL AREA MAP

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

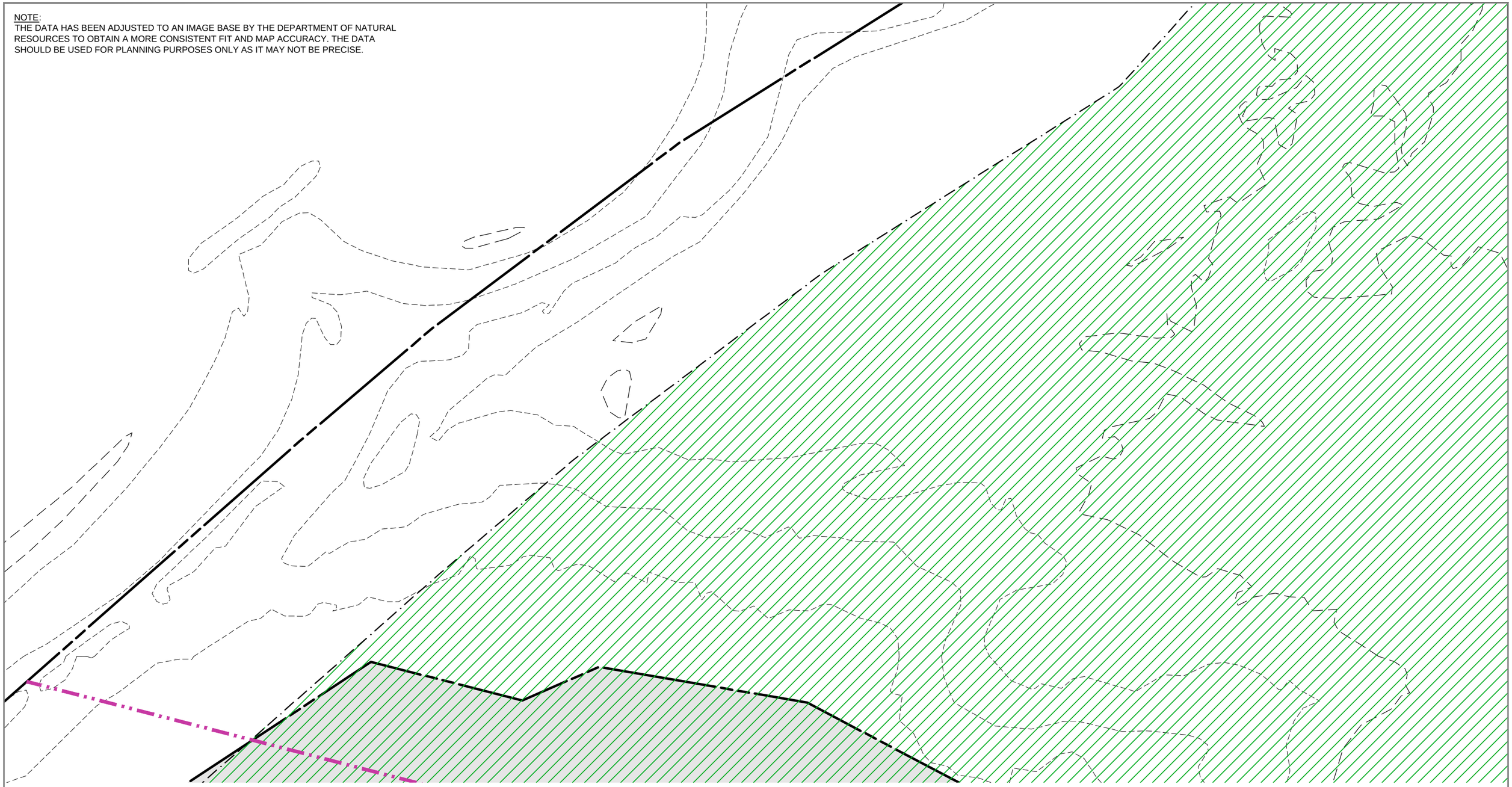
June 2016

SCALE: 1" = 200'

200' 0 100' 200' 400'

A. Morton Thomas and Associates, Inc.
800 King Farm Blvd, Fourth Floor, Rockville, MD 20850
Tel: 301.881.2545 Fax: 301.881.0814

NOTE:
THE DATA HAS BEEN ADJUSTED TO AN IMAGE BASE BY THE DEPARTMENT OF NATURAL RESOURCES TO OBTAIN A MORE CONSISTENT FIT AND MAP ACCURACY. THE DATA SHOULD BE USED FOR PLANNING PURPOSES ONLY AS IT MAY NOT BE PRECISE.



LEGEND:

PROPERTY BOUNDARY

APPROXIMATE ELMS BEACH PARK AREA BOUNDARY

EXISTING 2' CONTOURS

EXISTING 10' CONTOURS

RESOURCE CONSERVATION AREA (RCA, FROM DNR GIS)

POND

FIGURE A-2: CRITICAL AREA MAP (ENLARGEMENT)

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 60'

60' 0 30' 60' 120'

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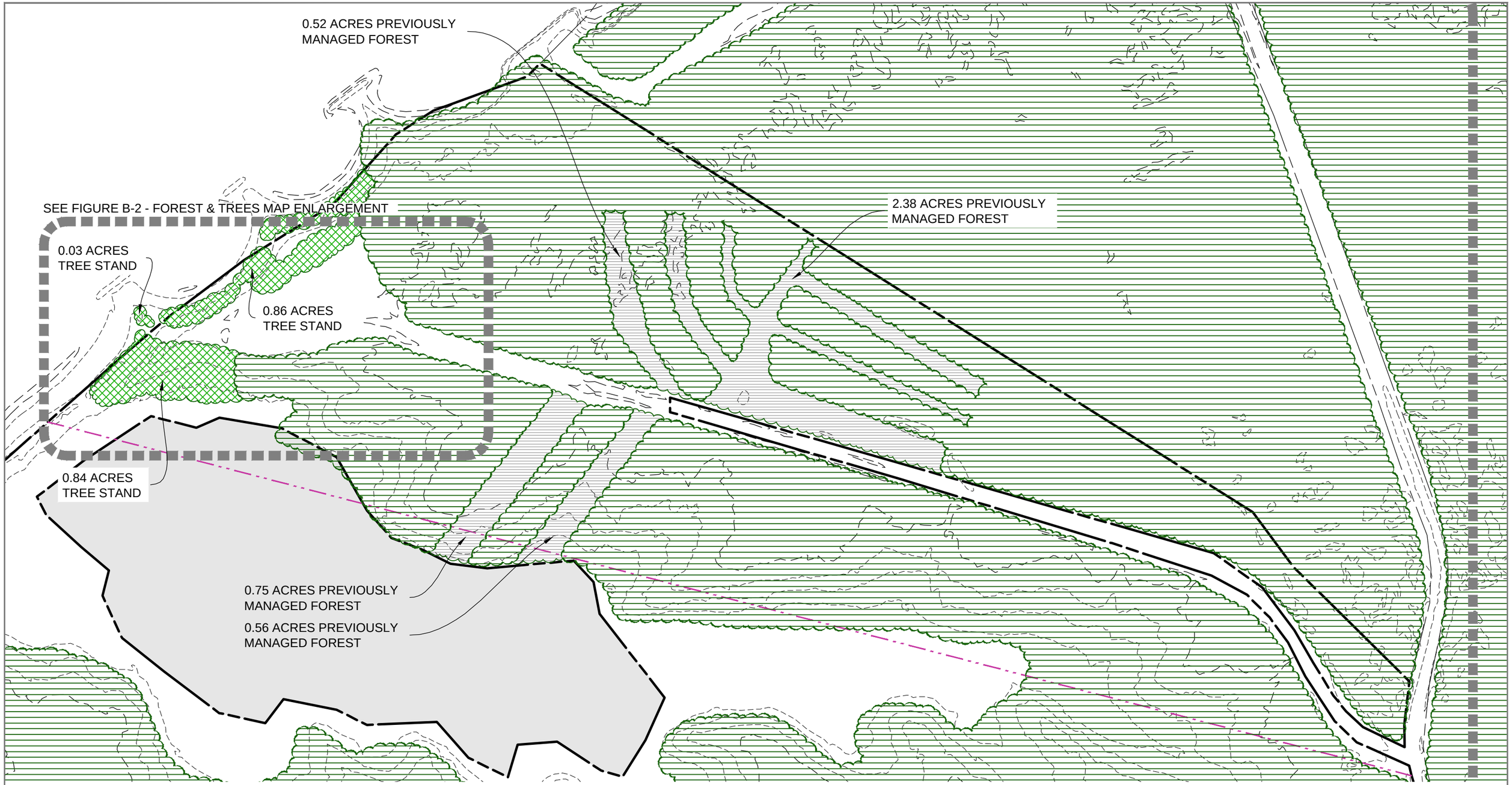

LEGEND:

PROPERTY BOUNDARY | APPROXIMATE ELMS BEACH PARK AREA BOUNDARY | EXISTING 2' CONTOURS | EXISTING 10' CONTOURS | EXISTING FOREST AREA | PREVIOUSLY MANAGED FOREST | TREE STAND | POND

FIGURE B-1: FOREST & TREES MAP

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 200'

200' 0 100' 200' 400'

A. Morton Thomas and Associates, Inc.
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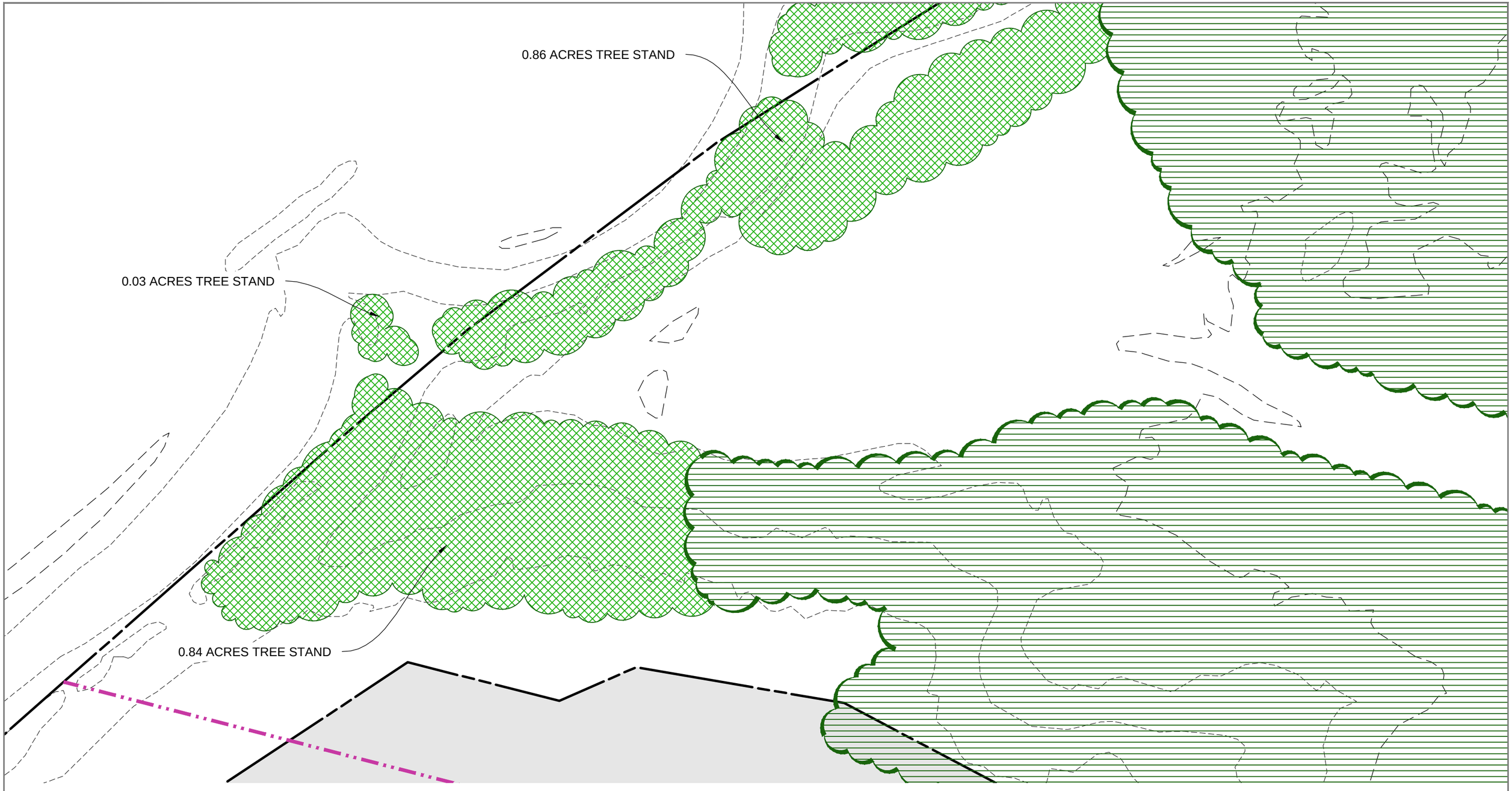

LEGEND:

PROPERTY BOUNDARY | APPROXIMATE ELMS BEACH PARK AREA BOUNDARY | EXISTING 2' CONTOURS | EXISTING 10' CONTOURS | EXISTING FOREST AREA | PREVIOUSLY MANAGED FOREST | TREE STAND | POND

FIGURE B-2: FOREST & TREES MAP (ENLARGEMENT)

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 60'

60' 0 30' 60' 120'

A. Morton Thomas and Associates, Inc.
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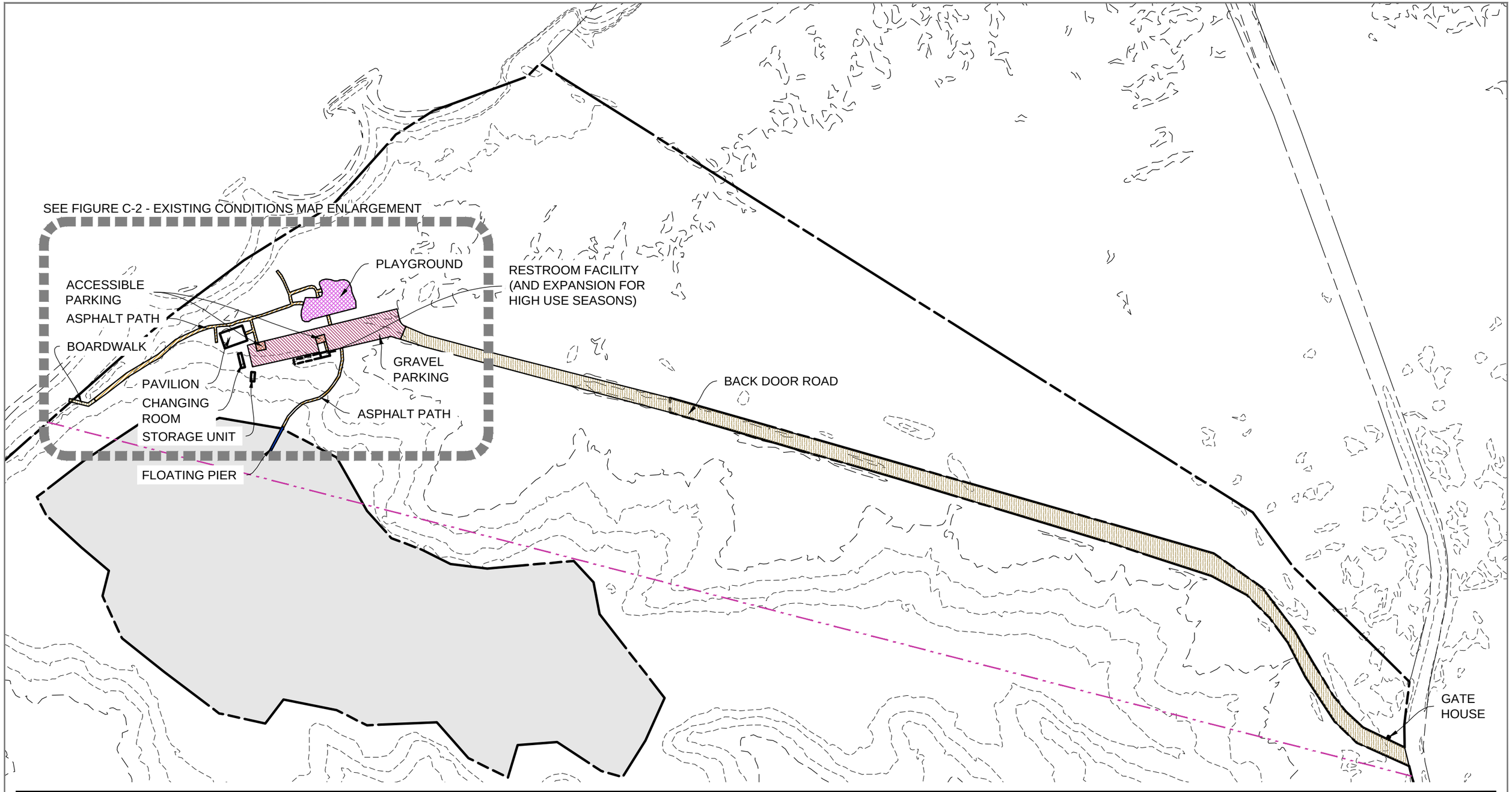


LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE ELMS BEACH PARK AREA BOUNDARY
- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- EXISTING STRUCTURE
- EXISTING ROADWAY
- EXISTING ASPHALT PATHS
- EXISTING BOARDWALK
- EXISTING PLAYGROUND
- EXISTING FLOATING PIER
- EXISTING PARKING
- ACCESSIBLE PARKING SPACES
- POND

FIGURE C-1: EXISTING CONDITIONS MAP

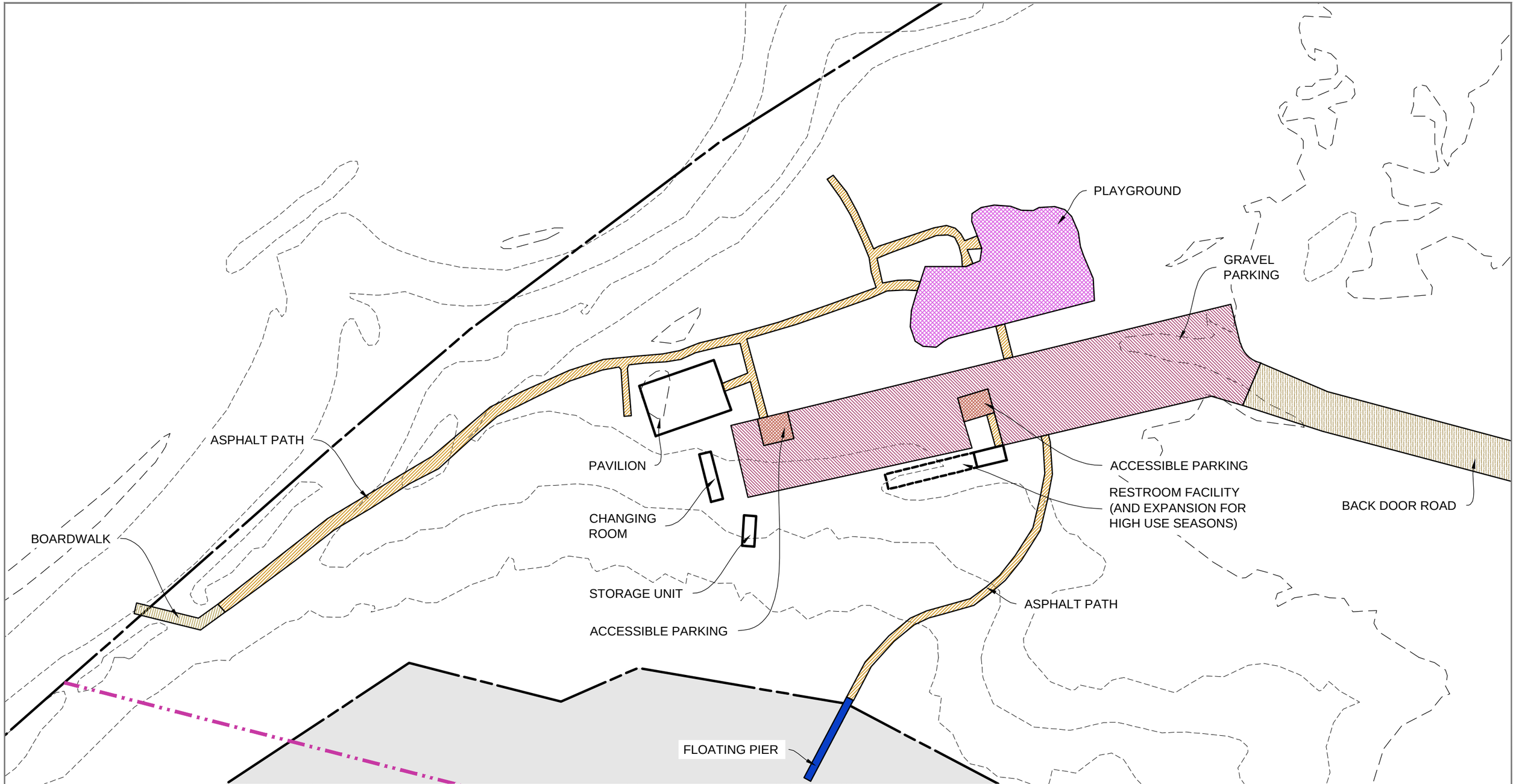
ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 200'

200' 0 100' 200' 400'

A. Morton Thomas and Associates, Inc.
800 King Farm Blvd, Fourth Floor, Rockville, MD 20850
Tel: 301.881.2545 Fax: 301.881.0814



LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE ELMS BEACH PARK AREA BOUNDARY
- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- EXISTING STRUCTURE
- EXISTING ROADWAY
- EXISTING ASPHALT PATHS
- EXISTING BOARDWALK
- EXISTING PLAYGROUND
- EXISTING FLOATING PIER
- EXISTING PARKING
- ACCESSIBLE PARKING SPACES
- POND

FIGURE C-2: EXISTING CONDITIONS MAP (ENLARGEMENT)

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 60'

60' 0 30' 60' 120'

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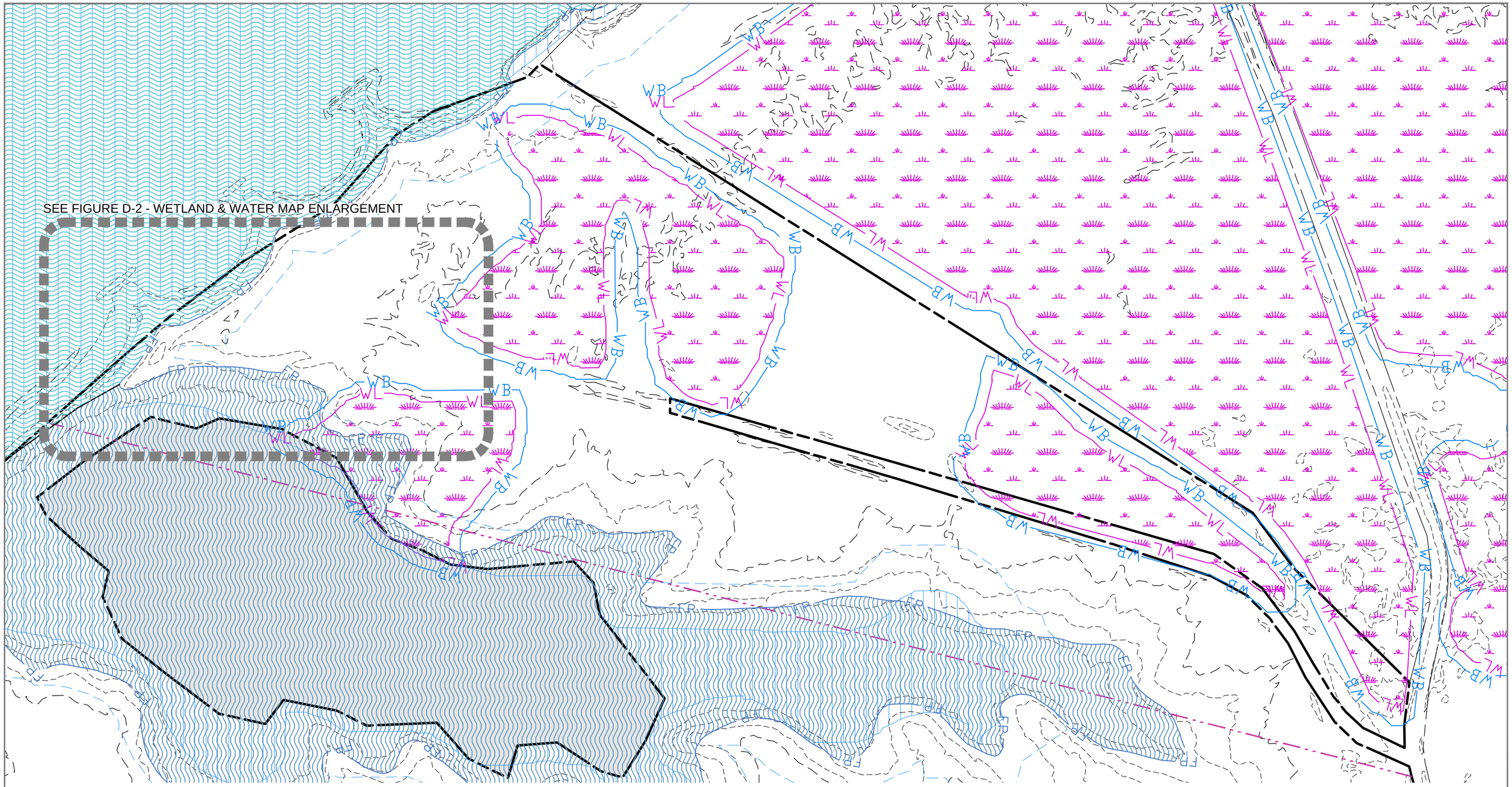

LEGEND:

PROPERTY BOUNDARY

APPROXIMATE ELMS BEACH PARK AREA BOUNDARY

EXISTING 2' CONTOURS

EXISTING 10' CONTOURS

EDGE OF TIDAL MARSH (FROM ST. MARY'S COUNTY GIS)

100' TIDAL BUFFER

NONTIDAL MARSH BUFFER

100-YEAR FLOODPLAIN

EDGE OF NONTIDAL MARSH (FROM ST. MARY'S COUNTY GIS)

POND

AE FLOODPLAIN

VE FLOODPLAIN

FIGURE D-1: WETLAND & WATER MAP

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 200'

200' 0 100' 200' 400'

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LEGEND:

PROPERTY BOUNDARY

APPROXIMATE ELMS BEACH PARK AREA BOUNDARY

EXISTING 2' CONTOURS

EXISTING 10' CONTOURS

EDGE OF TIDAL MARSH (FROM ST. MARY'S COUNTY GIS)

100' TIDAL BUFFER

NONTIDAL MARSH BUFFER

100-YEAR FLOODPLAIN

EDGE OF NONTIDAL MARSH (FROM ST. MARY'S COUNTY GIS)

POND

AE FLOODPLAIN

VE FLOODPLAIN

FIGURE D-2: WETLAND & WATER MAP (ENLARGEMENT)

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 60'

60' 0 30' 60' 120'

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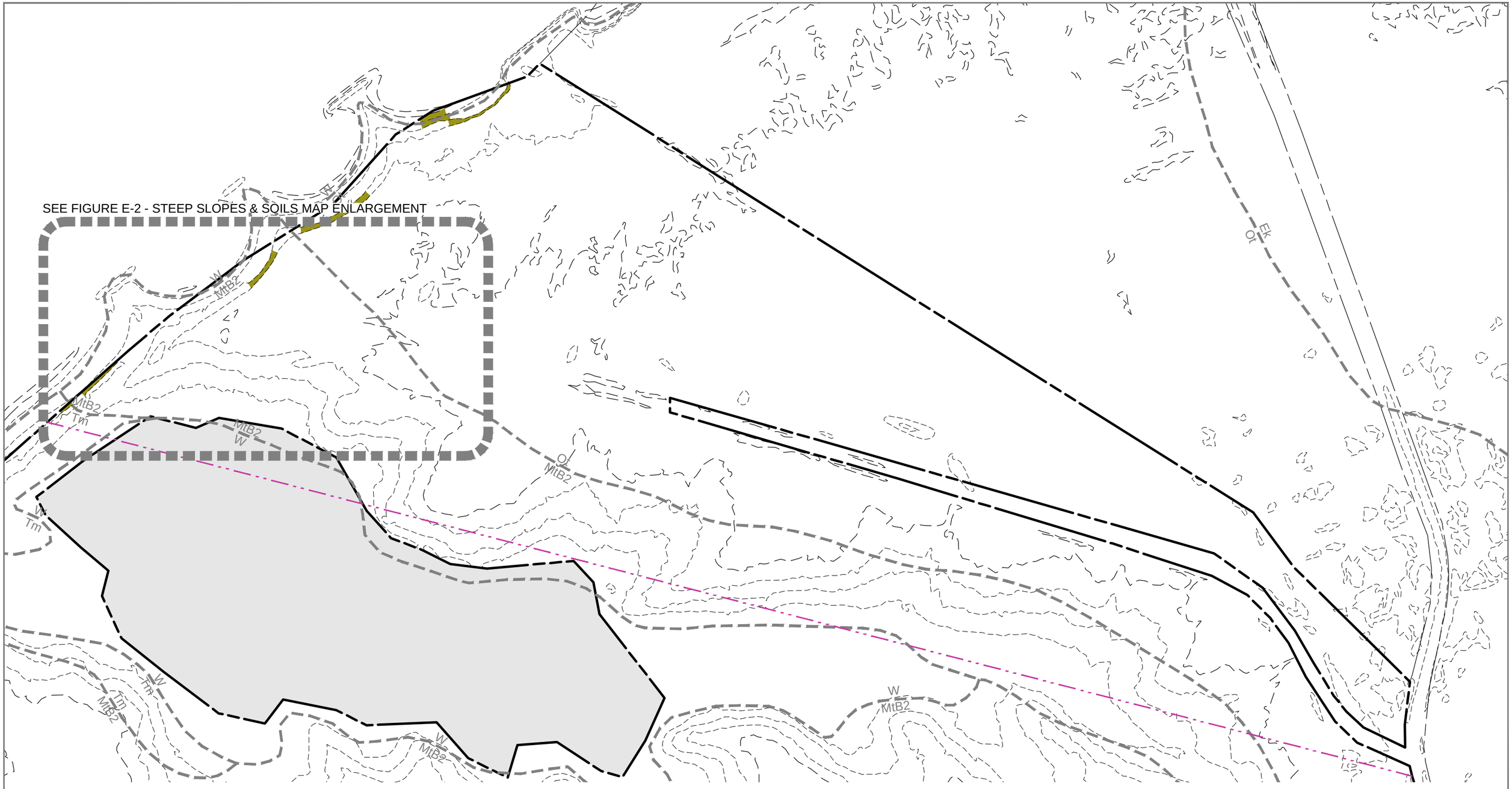
SEE FIGURE E-2 - STEEP SLOPES & SOILS MAP ENLARGEMENT



LEGEND:

PROPERTY BOUNDARY

APPROXIMATE ELMS BEACH PARK AREA BOUNDARY

EXISTING 2' CONTOURS

EXISTING 10' CONTOURS

Tm SOIL TYPE & BOUNDARY

STEEP SLOPES (15% OR GREATER)

POND

FIGURE E-1: STEEP SLOPES & SOILS MAP

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 200'

200' 0 100' 200' 400'

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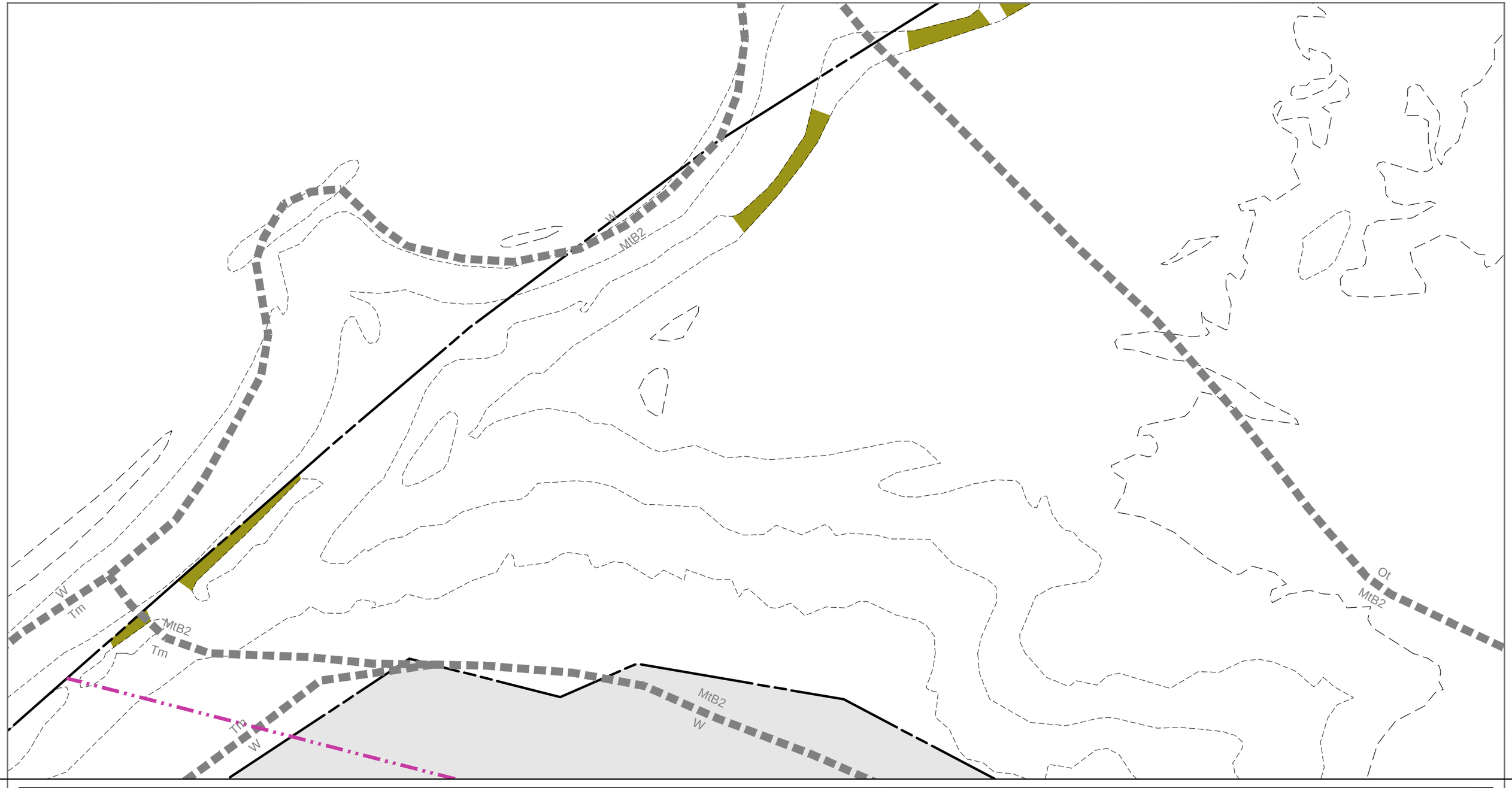

LEGEND:

PROPERTY BOUNDARY

APPROXIMATE ELMS BEACH PARK AREA BOUNDARY

EXISTING 2' CONTOURS

EXISTING 10' CONTOURS

Tm SOIL TYPE & BOUNDARY

STEEP SLOPES (15% OR GREATER)

POND

FIGURE E-2: STEEP SLOPES & SOILS MAP (ENLARGEMENT)

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 60'

60' 0 30' 60' 120'

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SEE FIGURE F-2 - VIEWS & VISTAS MAP ENLARGEMENT

1
2
3
4
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6
7

LEGEND:

PROPERTY BOUNDARY

APPROXIMATE ELMS BEACH PARK AREA BOUNDARY

EXISTING 2' CONTOURS

EXISTING 10' CONTOURS

POND

VIEW (SEE F-3 FOR PHOTOS)

FIGURE F-1: VIEWS & VISTAS MAP

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 200'

200' 0 100' 200' 400'

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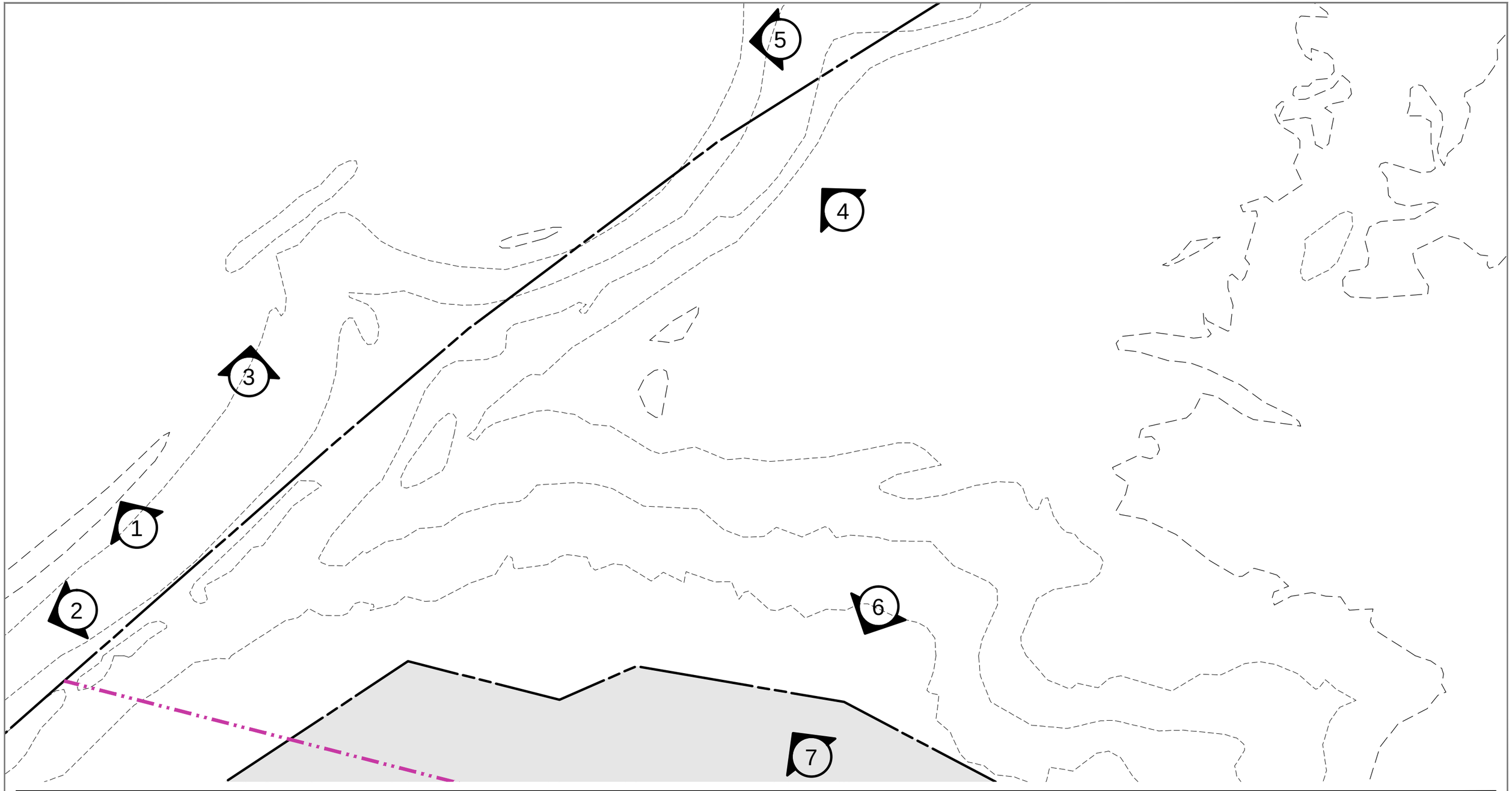

LEGEND:

PROPERTY BOUNDARY

APPROXIMATE ELMS BEACH PARK AREA BOUNDARY

EXISTING 2' CONTOURS

EXISTING 10' CONTOURS

POND

VIEW (SEE F-3 FOR PHOTOS)

FIGURE F-2: VIEWS & VISTAS MAP (ENLARGEMENT)

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 60'

60' 0 30' 60' 120'

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1

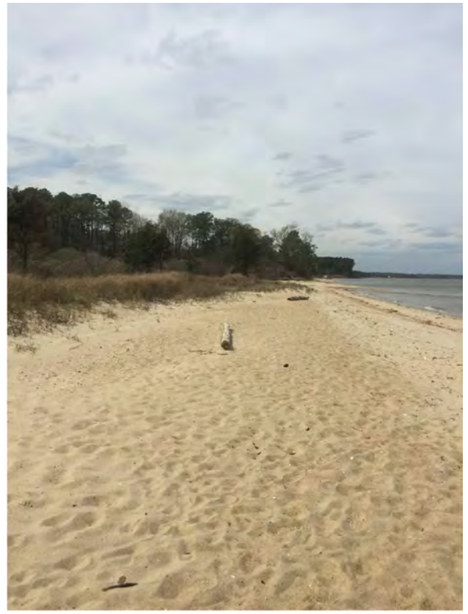

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FIGURE F-3: VIEWS & VISTAS PHOTOS

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

A. Morton Thomas and Associates, Inc.
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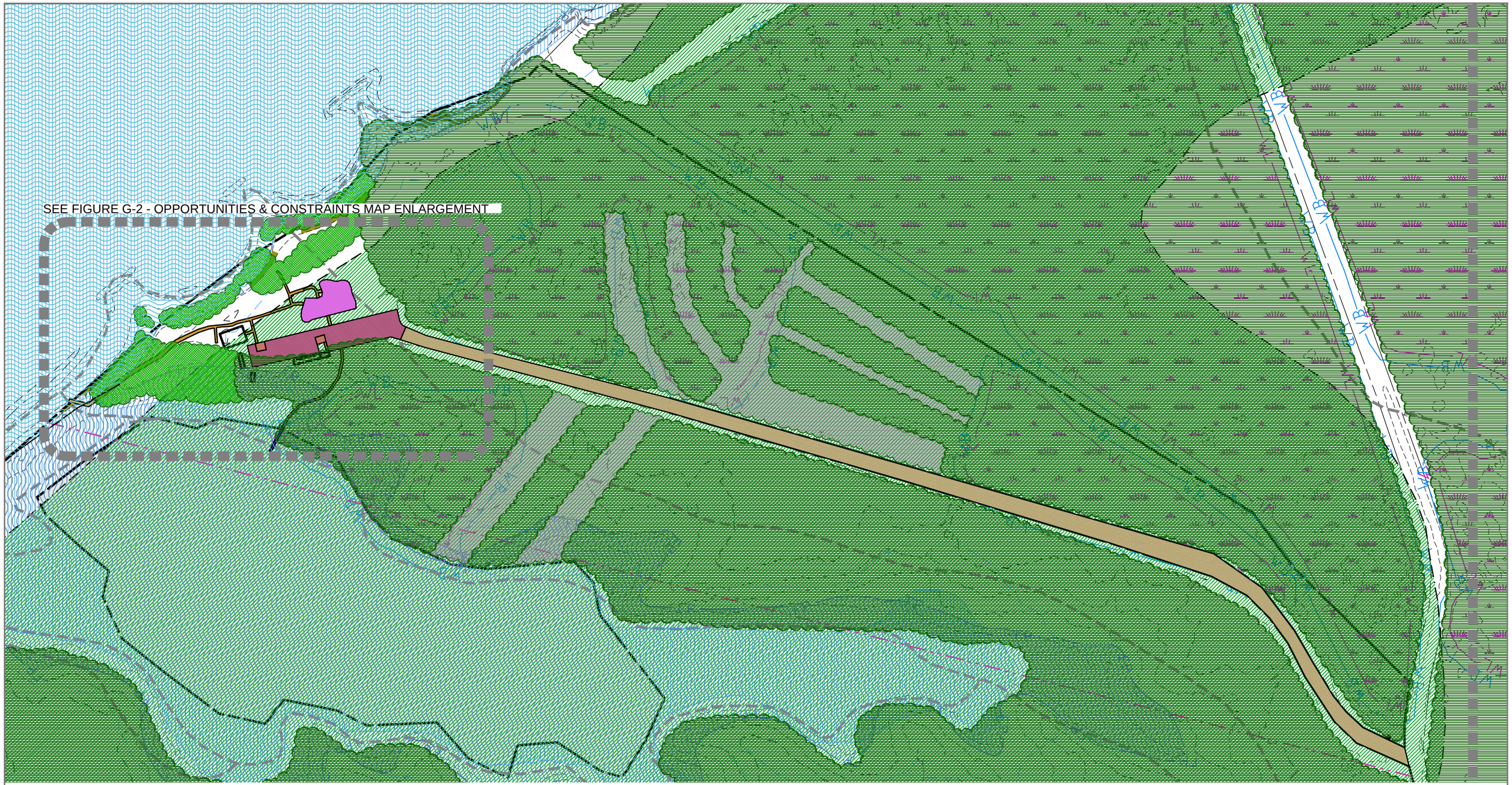

LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE ELMS BEACH PARK AREA BOUNDARY
- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- RESOURCE CONSERVATION AREA (RCA, FROM DNR GIS)
- EXISTING FOREST AREA
- PREVIOUSLY MANAGED FOREST
- TREE STAND
- EXISTING STRUCTURE
- EDGE OF TIDAL MARSH (FROM ST. MARY'S COUNTY GIS)
- EDGE OF NONTIDAL MARSH (FROM ST. MARY'S COUNTY GIS)
- EXISTING ROADWAY
- EXISTING ASPHALT PATHS
- EXISTING BOARDWALK
- EXISTING PLAYGROUND
- EXISTING FLOATING PIER
- EXISTING PARKING
- ACCESSIBLE PARKING SPACES
- 100' TIDAL BUFFER
- NONTIDAL MARSH BUFFER
- 100-YEAR FLOODPLAIN
- POND
- Tm SOIL TYPE & BOUNDARY
- STEEP SLOPES (15% OR GREATER)
- AE FLOODPLAIN
- VE FLOODPLAIN

FIGURE G-1: OPPORTUNITIES & CONSTRAINTS MAP

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 200'

200' 0 100' 200' 400'

A. Morton Thomas and Associates, Inc.
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LEGEND:

- PROPERTY BOUNDARY
- APPROXIMATE ELMS BEACH PARK AREA BOUNDARY
- EXISTING 2' CONTOURS
- EXISTING 10' CONTOURS
- RESOURCE CONSERVATION AREA (RCA, FROM DNR GIS)
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- POND
- Tm SOIL TYPE & BOUNDARY
- STEEP SLOPES (15% OR GREATER)
- AE FLOODPLAIN
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FIGURE G-2: OPPORTUNITIES & CONSTRAINTS MAP (ENLARGEMENT)

ELMS BEACH PARK PARK - 19350 BACK DOOR ROAD, LEXINGTON PARK, MD

June 2016

SCALE: 1" = 60'

60' 0 30' 60' 120'

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Appendix 2:
Cost Estimate

Elms Beach Park
Master Plan Probable Costs for Construction

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
GENERAL					
1	Erosion and Sediment Control	LS	1	$60,000.00	$60,000.00
				General Sub-total	*$60,000.00*
DEMOLITON AND REMOVAL					
3	Tree Clearing and Vegetation Removal	LS	1	$40,000.00	$40,000.00
4	Playground Demolition and Removal	LS	1	$20,000.00	$20,000.00
5	Path Demolition and Removal (5" Depth)	CY	100	$70.00	$7,000.00
6	Soil Remediation for Existing Parking Lot	CY	315	$40.00	$12,600.00
				Demolition and Removal Sub-total	*$79,600.00*
PARKING LOT					
7	Furnish and Install 1.5 inch Hot Mix Asphalt Superpave Surface Paving 9.5 mm PG 64-22 (Main Parking Lot)	TON	385	$130.00	$50,050.00
8	Furnish and Install 4 inch Hot Mix Asphalt Superpave Base Paving 19.0 mm PG 64-22 (Main Parking Lot)	TON	1,027	$120.00	$123,240.00
9	Furnish and Install 1.5 inch Hot Mix Asphalt Superpave Surface Paving 9.5 mm PG 64-22 (Hunter Parking Lot)	TON	6	$130.00	$780.00
10	Furnish and Install 4 inch Hot Mix Asphalt Superpave Base Paving 19.0 mm PG 64-22 (Hunter Parking Lot)	TON	16	$120.00	$1,920.00
11	Furnish and Install 6" Graded Aggregate Base	TON	834	$60.00	$50,040.00
12	Furnish and Install Standard Concrete Curb and Gutter	LF	1,570	$20.00	$31,400.00
13	Furnish and Install Wheel Stops	EA	5	$200.00	$1,000.00
14	Furnish and Install Concrete Sidewalk (with Stone Base)	SF	5,000	$6.00	$30,000.00
				Paving Sub-total	*$288,430.00*
CURB, GUTTER, SIDEWALK, AND TRAILS					
15	Furnish and Install Concrete Main Pedestrian Path (with Stone Base)	SF	10,537	$7.00	$73,759.00
16	Furnish and Install Concrete Picnic Pads (with Stone Base)	SF	3,814	$7.00	$26,698.00
17	Furnish and Install Concrete Plaza/Gathering Space (with Stone Base)	SF	1,747	$7.00	$12,229.00
18	Furnish and Install Flexible Permeable Pedestrian Trail	SF	7,750	$21.00	$162,750.00
19	Furnish and Install Boardwalk	SF	589	$35.00	$20,615.00
20	Boardwalk Overlook	SF	100	$45.00	$4,500.00
21	Furnish and Install Floating Pier	AL	1	$21,000.00	$21,000.00
22	Furnish and Install Detectable Warning Surface at Curb Ramps	SF	20	$30.00	$600.00
				Curb, Gutter, Sidewalk, and Trails Sub-total	*$322,151.00*
STORMWATER MANAGEMENT					
23	Furnish and Install Bioretention Facilities (includes mulch)	CY	475	$70.00	$33,250.00
24	Furnish and Install Bioretention Plantings	LS	1	$10,000.00	$10,000.00
				Stormwater Management Sub-total	*$43,250.00*
LANDSCAPE PLANTING					
25	Furnish and Install Native Shade Trees	EA	80	$200.00	$16,000.00
26	Furnish and Install Native Understory Trees	EA	105	$200.00	$21,000.00
27	Furnish and Install Lawn seed with Soil remediation	SY	1,647	$8.00	$13,176.00
				Landscape Planting Sub-total	*$50,176.00*
SITE FURNISHINGS					
28	Envronmental Wayfinding	AL	1	$10,000.00	$10,000.00
29	Furnish and Install Trash Receptacle	EA	10	$500.00	$5,000.00
30	Furnish and Install Recycling Receptacle	EA	10	$500.00	$5,000.00
31	Furnish and Install Picnic Tables	EA	14	$1,800.00	$25,200.00
32	Furnish and Install Coal Disposal Drums	EA	14	$500.00	$7,000.00
33	Furnish and Install Grills	EA	14	$800.00	$11,200.00
34	Furnish and Install Playground Equipment	AL	1	$200,000.00	$200,000.00
35	Furnish and Install Playground Surfacing	SF	6,065	$25.00	$151,625.00
				Site Furnishing Sub-total	*$415,025.00*
STRUCTURES					
36	Park Attendant Station	AL	1	$45,000.00	$45,000.00
37	Restroom/Storage Facility	AL	1	$350,000.00	$350,000.00
38	Electrical Connection	AL	1	$25,000.00	$25,000.00
39	Composting Toilet System	AL	1	$150,000.00	$150,000.00
39	Well Development	AL	1	$30,000.00	$30,000.00
				Structures Sub-total	*$600,000.00*
				Subtotal	**$1,858,632.00**
				Subtotal General Conditions (3%)	**$55,758.96**
				Subtotal Overhead & Profit (8%)	**$148,690.56**
				Subtotal Insurance & Bonds (2%)	**$37,172.64**
				Subtotal Escalation - 5% for each year until construction (15%)	**$278,794.80**
				Contingency (10%)	**$185,863.20**

Elms Beach Park
Master Plan Probable Costs for Construction

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
				Total Cost	**$2,564,912.16**