3
Jamestown Yacht Basin

3.1 Existing Site Conditions

The total area of the Jamestown Yacht Basin (JYB) property is approximately 34.2 acres. Approximately 4.5 acres is currently developed as a marina with boat sales and service, boat ramp, boat lift, two covered docks, parking and boat storage areas. Approximately 9.4 acres of the site are wetland and forested areas some of which are Resource Protection Area (RPA) buffers (See Figures 1-3 and 1-6). A full summary of the land areas are given below in Section 3.2.

3.1.1 Existing Zoning

The JYB property is currently zoned as a General Business (B-1) which is described in JCC code Sec. 24-389. Implementation of the proposed improvements would require that the property be rezoned to Mixed Use (MU). The permitted uses for Mixed Use as allowed by JCC code are given, in part, below.

Sec. 24-521. Permitted uses:
In the mixed use districts, all structures to be erected or land to be used shall be for one or more of the following uses:

(1) Residential uses:
Apartments, Multiple-family dwellings, Single-family dwellings, Townhouses, Two-family dwellings.

Dwelling units, regardless of structure type, should be clustered or otherwise grouped to maximize the preservation of open space and other aesthetic amenities consistent with the intent of article VI, division 1, Residential Cluster Development.

(2) Nonresidential uses:
- Antique shops, arts and crafts shops, banks and other similar financial institutions.
- Barber and beauty shops.
- Business, professional and governmental offices.

- Clubs, public or private, civic or service clubs, country clubs, lodges and fraternal organizations.
- Community recreation facilities, public or private, including parks, playgrounds, clubhouses, boating facilities, swimming pools, ball fields, tennis courts and other similar recreation facilities.
- Drug stores, dry cleaners and laundries.
- Farmer's markets, gift stores, handicrafts stores.
- Health clubs, exercise clubs and fitness centers.
- Hotels, motels, tourist homes and convention centers.
- Photographer, picture, artist and sculptor stores and studios, post offices.
- Public billiard parlors, arcades, pool rooms, bowling alleys, dance halls and other indoor centers of amusement.
- Public meeting halls.
- Restaurants, tea rooms and taverns.
- Retail and service stores, including the following stores: books, candy, coin, dressmaking, florist, furniture, furrier, garden supply, greeting card, ice cream, jewelry sales and service, music and records, picture framing, shoe, sporting goods, stamp, tailor, tobacco and pipes, toys, travel bureau, wearing apparel.
- Retail food stores, bakeries and fish markets.

Sec. 24-522. Uses permitted by special use permit only.
In the mixed use districts, all structures to be erected or land to be used for one or more of the following uses shall be permitted only after the issuance of a special use permit by the board of supervisors:

- Campgrounds, fast food restaurants, flea markets.
- Marinas, docks, piers, yacht clubs, boat basins, boat storage and servicing, repair and sale facilities for the same; if fuel is sold, then in accordance with section 24-38.
- Marine or waterfront businesses to include the receipt, storage and transshipment of waterborne commerce, or seafood receiving, packing or distribution under cover or screened with landscaping and fencing from adjacent property.
- Museums and theme parks.

3.1.2 Existing Utilities

Information related to existing utilities was provided by JCC from existing records for review by VHB. VHB also supplemented records review with limited walk-through visual inspections conducted onsite. There was no mapping or surveying of surface or underground utilities performed during the master planning process. Utilities depicted on diagrams and plans within

this report are approximate and based on information provided by JCC and other sources. The findings of the existing utility research and observations at the time of the study are summarized below and depicted in Figure 3-1.

- **Water**
  The site is within the JCSA Public Service Area (PSA) and water service to the property is readily available.

  Existing Electrical Meters

  The water connection from route 359 to the water meter was recently upgraded by JCSA. From the water meter, the service is connected into the existing water system onsite serving the three buildings. The condition of the existing network of water piping is unknown, but assumed to be of small diameter piping and not suitable for reuse. The main line from Route 359 is of small diameter and would require to be removed and replaced with a larger diameter pipe. The existing system onsite would be completely removed and upgraded..

- **Sanitary Sewer**
  Public sanitary sewer service is available to the property as it is within the PSA. The existing sanitary system consists of a grinder pump located in the grass area behind the main building. The grinder pump is a small capacity system and not suitable for reuse. See Figure 3-1 for existing sanitary sewer system information.

- **Dominion Virginia Power**
  The site is served by Dominion Virginia Power (DVP) by overhead electric service lines and pole mounted transformers. Overhead power lines enter the site from the point of the Virginia Capital Trail crossing at Jamestown Road. The overhead service appears to be in generally good condition however the proposed improvements would require additional transformers and re-routing of the electrical service underground. Therefore, essentially none of the DVP electrical service from the point it enters the property would be reused.

  Existing Electrical Connection within Covered Slips

  The electrical system on the owner's (JCC) side of the meter consists of service to the buildings and docks. They are in generally poor condition and not suitable for reuse.

- **Natural Gas**
  There is Virginia Natural Gas (VNG) service currently provided to the back of the main building.
- **Telephone**
  Telephone service by Verizon is provided to the main marina building and one-story house. The existing telephone service infrastructure would be removed and replaced for future improvements.
- **Fiber Optic**
  At this time, there is no known fiber optic lines serving the site.
- **Fuel Tank**
  There is an above ground fuel tank and fuel dispenser located at the dock in front of the main building. There appears to be no containment system for the tank and the dispenser is in in a state of disrepair. Neither the tank nor the dispenser are suitable for reuse.

Existing Fuel Tank

3.1.3 Traffic and Existing Access

The existing entrance to the site is from Route 359, which connects Jamestown Road to the Colonial Parkway. The posted speed limit is 25 MPH on Route 359 and the site distance at the entrance is approximately 700 feet towards Jamestown Road and approximately 450 feet toward the Colonial Parkway.

The existing entrance was improved recently with the re-routing of Route 359 in conjunction with the construction of the Jamestown Settlement parking lot. The entrance is in good condition and suitable for continued use in its current state.

Year 2007 traffic data from VDOT indicate that annual average daily traffic (AADT) on Route 359 was 1100 and that annual average weekday daily traffic (AAWDT) was 1200. At the current summer peak of marina uses the traffic into and out of the marina is estimated to be approximately 310 vehicle trips per day per ITE 7th Edition. .

3.1.4 Existing Roads

The existing entrance to the property is located on the curve of Route 359 across from the Jamestown Settlement main parking lot. The entrance road is paved from Route 359 past the main building to the vicinity of the first covered dock.

At the entrance, the asphalt and curb is in good condition and suitable for continued use. The internal road through the site is in fair to poor condition, as there is cracking and broken asphalt. The pavement is not suitable for reuse due to its condition and location.

GREENSPRINGS ROAD
JAMESTOWN ROAD
FRONTAGE ROAD
WATERLINE
EXISTING TRANSFORMER
JAMESTOWN SETTLEMENT
6" SEWER LINE
JYF ACQUISITION
6"x2" TEE
WATER SERVICE LINE (SIZE UNKNOWN)
2" FM
WATER WELL PUMP
RT. 359
CO
CO
ELECTRIC PANELS
SAN. LATERAL
2"x1½" REDUCER
CO
E-ONE PUMP STA.
BOARDWALK
EDGE OF WATER
BOAT RAMP
COVE
BOAT STORAGE
COVERED SLIPS
COLONIAL PARKWAY
YACHT BASIN
POWHATAN CREEK

Legend

- PROJECT LIMIT LINE
- EXISTING SANITARY LINE
- EXISTING WATERLINE
- EXISTING ELECTRIC LINE
- EXISTING BOARDWALK
- EDGE OF WATER
- ELECTIC POLE
- E-ONE PUMP STATION
- SANITARY CLEAN OUT

Not to Scale

SHAPING OUR SHORES
Master Plan for Jamestown Beach Campground, Jamestown Yacht Basin & Chickahominy Riverfront Park

Figure 3-1
Existing Utilities
Jamestown Yacht Basin

3.1.5 Existing Parking

Vehicle parking for the marina can be broken down into five general areas as follows:

- Parking lot at the marina store building - This parking lot along the entrance road is paved and is in fair condition. It has approximately 28 to 30 spaces. No ADA accessible spaces were noted.
- Covered Slip Parking- The existing covered slip parking is located along the bulkhead adjacent to the covered docks. The parking area is a gravel/dirt area with unorganized parking for approximately 30 vehicles.
- Commercial boat parking area- There is unorganized parking on dirt for approximately 6 to 8 vehicles at the docks located on the east side of the cove within the grant area.
- Parking adjacent to building at boat maintenance area- this area has unorganized gravel and grass parking for approximately 10 vehicles.
- Boat Ramp Parking- there is grassed parking space nearby for approximately 20 vehicles and boat trailers.

3.1.6 Existing Buildings

There are three buildings at the Yacht Basin; the large main office/boat sales building, a restroom/shower building and a one-story house. Based on a limited walk-around evaluation of the buildings by the consulting team, these structures are of little value to the proposed long-term development of the property and would be demolished to provide greater opportunities for new construction. Refer to Appendix D for an existing Building Inventory and brief description of the condition of the existing buildings.

Main Building

3.1.7 Existing Landscaping and Amenities

The existing landscape at the Jamestown Yacht Basin consists of several distinct areas. The higher elevation portions of the site toward Jamestown Road consist of sporadic specimen trees and loosely maintained grass areas. This portion of the site contains old maintenance equipment and abandoned vehicles. Along the east side, the formation of a mixed hardwood forest begins near the property line.

Caretaker House

The second distinct area of the site contains the existing marina operations which are characterized by asphalt, gravel and dirt roads, docks and

boat/trailer storage areas. There is no formal landscaping in this area, only natural tree growth and very minimal and poorly maintained grass areas.

The third distinct area of the site is the lowland area along Powhatan Creek. The western portion of this area is adjacent to the Colonial Parkway and is highly visible from both the site entrance and the parkway. The landscape of this area is characterized by wetland grasses and young secondary succession hardwoods and volunteer species. The eastern portion is characterized primarily by more mature hardwoods along the creek and east of the existing marina boat storage areas.

3.1.8 Waters of the U.S and Associated Chesapeake Bay Protection Areas

3.1.8.1 Results of Fieldwork

Wetland delineations and Perennial Stream Determinations (PSDs) were completed by VHB wetland scientists at the Jamestown Yacht Basin in early 2008. Delineations were carried out in accordance with the three parameter approach outlined in the U.S. Army Corps of Engineers Wetland Delineation Manual (1987). PSDs were conducted using the North Carolina Division of Water Quality Identification Methods for Origin of Intermittent and Perennial Streams, Version 3.1. The subsequent designation of RPA features was carried out in strict adherence to both the above-cited DCR guidance and County ordinance.

The U.S. Army Corps of Engineers' Jurisdictional Determination for the Jamestown Yacht Basin is included in Appendix E. County approval of the PSD and the resulting Resource Protection Areas are also included in Appendix E.

Tidal Wetlands

The Jamestown Yacht Basin is located along Powhatan Creek and is currently being utilized as a marina with amenities such as covered boat slips; a launch ramp, boat lift and an office building (See related Figure in Appendix E). A large portion of this site adjacent to Powhatan Creek consists of created land (i.e., udorthents soil classification) associated with the deposition of old dredged spoil material and soils excavated from uplands. Two man-made basins occur on the property classified as excavated, permanently inundated, tidal riverine systems with an unconsolidated bottom (R1UBVx). The largest basin serves as the primary navigable system serving the marina, while a narrow basin is located on the east side of the property. The narrow basin contains several old docks and the boat lift.

Vegetated tidal wetlands consist of freshwater marsh (PEM1R) associated with Powhatan Creek. Common plants include big cordgrass (*Spartina cynosuroides*), common reed (*Phragmites australis*) and three-square bulrush (*Scirpus pungens*), with wax myrtle (*Myrica cerifera*) and eastern false willow (*Baccharis halimifolia*) shrubs along the uppermost edges of the marsh. However, none of the plant species listed under "vegetated wetlands" in Chapter 22 of the County Code or §28.2-1300 of the Code of Virginia were observed just landward of the field delineation (i.e., between MHW and 1.5 times the mean tide range). In fact, the uplands flanking either side of the basin are inhabited by commonly mowed grasses with a wetland status designation of Facultative (FAC), Facultative Upland (FACU), or Obligate Upland (UPL) that include such species as broomsedge

(*Andropogon virginicus*), fescue grass (*Fescuta spp*.), and Bermuda grass. The easternmost upland finger (i.e., east of the lesser boat basin) is colonized chiefly by loblolly pine (*Pinus taeda*), which is also not present on the County or State lists of plants that confer "vegetated wetland" status. Therefore, the tidal wetland line and the delineated and surveyed line are equivalent.

Non-Tidal Wetlands

Three non-tidal wetland systems can be found on the property. Two systems occur as small headwater drains located on the east and west sides of the open water basin, where tidal systems transition into forested wetlands (PFO) further upslope (See related Figure in Appendix E). Common vegetation includes red maple, sweet-gum, and American sycamore (Platanus occidentalis) in the overstory with wax myrtle and common greenbriar in the understory.

An isolated, emergent wetland (PEM1C) approximately 0.14 acres in size is located in a maintained field at the northern end of the property near Jamestown Road. This is a small concave feature in the landscape that collects and stores storm water runoff for periods sufficient to sustain hydrophytic vegetation. The system has no apparent outfall. Vegetation includes various panic grasses (Panicum spp.) and knotweeds (*Polygonum spp*.).

Resource Protection Areas

Powhatan Creek is a perennial stream, and thus all wetlands connected by surface flow to and contiguous with the creek are RPA-worthy features. This includes tidal emergent and non-tidal forested wetlands to the west and east of the yacht basin. Therefore, the 100-foot RPA buffer is drawn 100 feet from the delineated line and the location of the artificial shoreline of the marina bulkhead. (See related Figure in Appendix E showing the RPA buffer lines)

The isolated wetland in the northeast corner of the site is not connected by surface flow or contiguous with a perennial feature, and is thus not an RPA feature. Besides Powhatan Creek, no other stream features are present within or in close proximity to the project area. Thus, no PSDs were performed for this component of the master plan.

3.1.9 Threatened and Endangered Species

Refer to the Threatened and Endangered Species section in Chapter 2 which also covers the JYB area. There are no known threatened or endangered species within the proximity of the JYB project site that would inhibit the proposed development.

3.1.10 Cultural Resources

Cultural Resources are summarized by Archaeological & Cultural Solutions, Inc. (ACS) in the Cultural Resources section in Chapter 1. There is a significant archeological site along the east property line which has been avoided in the planning of the site. The approximate area of the archaeological site is indicated in Figure 1-3.

3.1.11 Soils

Soil types on the site are depicted in the soils map (See Appendix F, Figure F-2), Data source: VBPM VGIN 2006/07 Orthophotography and NRCS Digital Soils Database). Appendix F also contains a list describing the soil types noted on the map which are generally silty loam and clay that is moderate to well drained. No geotechnical investigation or testing was performed on site as part of this evaluation. From an historic perspective of significant building development on the site, the soils are likely to be suitable for proposed building construction. A thorough program of geotechnical sampling and testing within proposed development areas would be required for future design efforts.

3.1.12 Docks and Boat Slips

The marina basin berths approximately 90 to 96 vessels from less than 20 feet in length up to the largest of approximately 32 feet. The size of vessels using the marina is limited due to the 12 foot height constraint of the Colonial Parkway bridge. The elevation of the docks are at approximately +4.0′ MLW.

The uncovered docks and finger piers are of wood pile and timber construction with wood decking. Based on visual observations by the consulting team, the decking boards and substructure are in very poor condition (i.e. boards are missing and cracked, nails have loosened and protrude from the boards, the dock surface is uneven and wood piles and timbers are severely deteriorated). The dock piles and mooring piles are approximately 8-inch diameter piles, many of which are out of plumb.

Failing Pilings

The slips are provided with water and electric service. The water piping consists of galvanized pipe, plastic (PVC) pipe and flexible hose and is in generally poor condition. The electrical boxes and wiring are also in poor condition. In general, the docks and finger piers are in poor condition and not suitable for reuse for the proposed master plan improvements.

There are two covered floating docks located along the east bulkhead. The floating docks are constructed of metal frames with styrofoam (expanded polystyrene foam) floatation. The metal framing is corroded and the styrofoam is exposed and deteriorating. (It is not sealed or encapsulated in molded plastic as are modern floating docks.) The roof structure is constructed of aluminum sheet panels and appears to be in fair condition. The docks are provided with water and electric service which is in generally poor condition. The covered floating docks could be kept in service during a period of phased marina renovation, however not for the long-term full build-out of the marina. For example, a new covered floating dock could be constructed first and put into service before the demolition and removal of the existing floating docks. The long-term continued use of the existing covered floating docks is limited and should not be considered for use for the full build out of the marina renovation.

3.1.13 Shoreline

Some of the perimeter of the marina basin is hardened with timber tongue-and-groove bulkhead extending from the northwest basin corner to the eastside point of land up to the first covered dock. The shoreline then has concrete rubble dumped from the termination of the bulkhead to a point past the second covered dock. The shoreline then becomes a natural edge south to the basin entrance channel. The west edge of the basin is vegetated, but not stabilized with revetment or bulkhead. On the west side of the basin, the bulkhead elevation varies from approximately +3.4′MLW to +4.2′ MLW on the east side.

The bulkhead is in generally poor condition, as there is evidence of bulkhead failures indicated by deteriorated sheet piling and loss of backfill behind the bulkhead and beneath the dock structure. The area around the bulkhead and some surrounding parking area experience periodic flooding. The slopes of the non-bulkhead portions of the basin are generally stable with some small localized areas of minor erosion.

Concrete Rubble Edge on East Side of Marina

The shoreline along Powhatan Creek was not evaluated as there is no proposed development outside the marina basin that would impact the shoreline. Refer to the section above regarding wetland and RPA buffer areas located on the site.

To the east of the marina is a cove with natural shorelines. There is no hardening of the shoreline areas and the shoreline is generally stable with no significant erosion problems.

3.1.14 Marina Basin Water Depth

A preliminary hydrographic survey of the marina basin was conducted for the purpose of determining the approximate water depth so that potential dredging requirements could be approximated. The survey was performed from a small work boat using conventional survey methods. The results of the survey indicate that the deepest portion along the fairway in the middle of the basin ranges from -4.0′ mean low water (MLW) to -4.4′ MLW and shallows up to a minimum of approximately -2.0′ MLW at the bulkheads.

The water depths have been reported to be too shallow in many areas which impede vessel navigation and full use of certain slips. The basin is in need of maintenance dredging to increase its depth to a minimum of -5.0′ MLW throughout the basin. It is estimated that approximately 20,000 CY of material is needed to be dredged.

3.1.15 Stormwater Drainage

The existing site drains generally north to south to Powhatan Creek via sheet flow, swales, and one pipe discharging to the basin from the BMP. Slopes generally range from 1 to 2 percent throughout most of the site with an increase to steep slopes east of the main building. The stormwater drainage patterns of the project area were reviewed on GIS topographic mapping and field observation. Topographic survey in the field was not conducted for the study with the exception of the basin perimeter and wetland boundaries.

The only drop inlet structure observed on the site is part of the BMP system located at the entrance. A 15" concrete pipe exits the BMP riser structure and connects to a drop inlet located alongside which outfalls into the basin. Other than the VDOT BMP, there are currently no stormwater detention/treatment systems or Low Impact Development (LID) measures in place on site.

3.1.16 Floodplain

Portions of the yacht basin parcel are within the 100-year floodplain as designated on FEMA Flood Insurance Rate Map Number 51095C0185C, effective date September 28, 2007. The base flood elevation on the parcel is 7.5 feet (Zone AE). The flood zone encompasses the areas east and west of the basin and just past the bulkhead to the north. (See Figure 1-6)

3.1.17 Hazardous Materials

There were no reports of hazardous materials known to be located on the property and none were observed during field inspections. A Phase I Environmental Site Assessment was performed by PBS&J for James City County. Refer to the PBS&J report titled, "Phase I Environmental Site Assessment Jamestown Beach Campsites and Yacht Basin Properties James City County, Virginia" dated November 30, 2005 for additional information.

3.1.18 Resource Protection Areas

RPA buffer areas on the site are depicted on the constraints map and marina planning proceeded with respect to the buffers and the objective of minimizing impacts to the buffer areas. Water-dependent and, in part, redevelopment uses, within the buffer, such as docks, dry stack boat storage and boat ramp were minimized to the extent possible in order to minimize impacts. A full discussion of the RPA buffer line determination and associated wetland delineations are contained the Waters of the U.S. and Associated Chesapeake Bay Protection Areas section above.

3.1.19 Property Line Setback

Per James City County Zoning Ordinance, Section 24-527 the dimensional standard for minimum yard requirement (building set-back) is a 50-foot set back from the property line and is shown on the constraints plan (Figure 1-3). The set back line identifies the outer boundary limit for potential development. (Refer to Code Sec. 24-527. Setback requirements for Mixed Use Districts, the proposed zoning for the Yacht Basin).

3.1.20 Summary of Site Constraints

There are no other known or observed issues related to existing infrastructure that create significant constraints on the site in terms of future development and improvements.

The objective of the preliminary site evaluations was to determine the site opportunities and constraints and to evaluate the project area for areas most feasible for further improvements and development. The table below summarizes the areas of various types of designated land and buffer areas.

Description of Areas	Approximate Area (acres)
Overall Site	34.2 ac
USACOE Confirmed Wetlands	14.9 ac
Resource Protection Area (100' buffer)	9.9 ac
VLCF and CELCP Grant Area	2.1 ac
Steep slopes (> 30%)	0.2 ac
Property Line Set Back	4.8 ac
Developable Areas[1] (per Master Plan):	**7.4 ac**

[1] Developable area consists of land within the property line and outside of the above listed constraints

Figures 1-3 and 1-6 depict the environmental and site constraints of the property. As can be seen by the table above, of the overall 34.2 acres, approximately 14.9 acres are USACOE confirmed wetlands and approximately 7.4 acres of the total are developable.

3.2 Conceptual Site Improvements

The following section discusses the details of the concept plan depicted in Figure 3-2. The plan shows the proposed elements, roads, parking, and associated amenities relative to the environmental, physical and zoning constraints of the site. Each topic below summarizes the program elements of the concept plan.

The JYB's location within the Primary Service Area (PSA) combined with the existing marina infrastructure and operations made it the leading candidate of the three sites included in this plan for a more active development scenario.

Consideration was given to an alternative marina concept that limits the development to strictly marina related improvements (no commercial retail, residential or lodging/inn space) consisting of new docks, dry-stack building, boat ramp, marina restaurant, ship's store and dock master's

office building, parking and other marina related amenities. A diagram (Figure L-1) showing the program elements is provided in Appendix L. This alternative was not fully developed as a master plan but rather to show a less intense approach to revitalizing the marina that would minimize environmental impacts.

Once the overall site constraints were understood and documented in the constraints map, program elements were laid out. Throughout the master planning process, various layouts evolved which were based on the continuing evaluation of the site and by public input. Several variations of the JYB concept plan layouts were considered, evaluated and revised by the project team prior to the development of the proposed plan and associated alternatives.

As discussed in the Executive Summary, the Board of Supervisors did not support residential (item 3.2.13 and portions of items 3.2.12 and 3.2.15 below) or hospitality (item 3.2.10 below) components as part of the JYB development.

Table 3-1 summarizes the proposed program elements.

Table 3-1 Proposed Development Summary

	Prop. Quantity	Approx. Existing Quantity
Wet slips (uncovered)	100	50
Wet slips (covered)	60	40
Dry Stack Boat Storage	168	0
Boat Ramp	1	1
Buildings	21,900 SF	7,500 SF
Retail space Restaurant	25,000 SF	
Condos	48 Units	
Inn	40 Rooms	

The sections below that are designated "A" through "U" refer directly to program elements depicted on the master plan, Figure 3-2.

3.2.1 A-Renovated Marina

The proposed plan shows a complete removal and replacement of the existing bulkhead and extension of the new bulkhead to the boat ramp on the west side and to the dry stack storage launch dock on the east side. Suitable materials for the final design of the bulkhead include fiberglass (composite material), plastic (PVC) or tongue and groove treated wood sheet piling. The proposed elevation of the bulkhead would be raised to approximately +5.0′ to +6.0′ MLW.

Typical Marina

Shaping Our Shores
VHB
Guernsey Tingle Architects
LPDA

SHAPING OUR SHORES
Master Plan for Jamestown Beach Campground, Jamestown Yacht Basin & Chickahominy Riverfront Park

Figure 3-2
Master Plan
Jamestown Yacht Basin

The two main "T" docks are proposed to be floating docks as is the proposed third covered slip dock. The smaller finger piers along the bulkhead and transient boater area are conventional wood pile and timber fixed dock structures. In addition, the two existing covered docks would ultimately be replaced as part of the complete marina renovation.

Dedicated slip space would be provided for public safety boats and marina-based businesses such as tour boats and commercial fishing boats.

Additionally, James City County would follow the Virginia Clean Marina Program and become a designated "Virginia Clean Marina." The Virginia Clean Marina Program promotes the voluntary adoption of measures that prevent or reduce pollution from marinas, boatyards and recreational boats. Some primary goals of the program are to prevent release of petroleum products into the environment, encourage the proper use of pumpout facilities by boaters and to reduce the volume of gray water discharges. The overboard discharges of domestic sewage and gray water contribute significantly to water quality degradation and introduce dangerous pathogens into the water and increase Biological Oxygen Demand (BOD) and nutrients in the water and lower dissolved oxygen which contribute to undesirable algal blooms. A pumpout facility is provided at the fuel dock as noted below. The proposed marina renovation, including an updated pumpout system, stormwater treatment facilities and adherence to the Clean Marina Program would be an improvement to Powhatan Creek which is designated as an impaired waterway.

Additional information regarding the Virginia Clean Marina Program can be found at http://www.virginiacleanmarina.com

3.2.2 B-Marina Building and Fuel Dock

The building would house a small "ship's store," an office and point of sale for fuel. The building would also include restrooms with showers, a laundry facility, and a utilities room to control electrical requirements for the marina, and storage to support both the ships store and the dockmaster operations. The total area would be approximately 1,200 SF.

The fuel dock would also be equipped with a sewage pumpout system with a direct connection into the sanitary sewer system on site. The pumpout station would be conveniently located to ensure vessel holding tanks are pumped out rather than discharged into open water.

3.2.3 C-Marina Parking

Approximately 86 spaces are provided for the marina and boat storage parking area. This number is based on accepted industry standards indicating 0.3 spaces per wet slip and less than 0.3 for average use of the dry stack facility. The overall ratio of parking spaces to wet slips and dry slips was adjusted to 0.25 parking spaces to slips to account for residents of the condominiums that have a slip and do not drive to the marina and park. The total number of parking spaces provided is approximately 84 to 94 spaces. The marina parking would utilize low impact development (LID) techniques such as porous concrete pavers throughout and rain gardens to collect and treat runoff alongside parking and within parking lot islands.

3.2.4 D-Dry Stack Boat Storage and Launch

The dry stack boat storage facility can accommodate between 168 and 224 boats up to 24′ in length with a 53′ aisle and stacked four high. This results in a building of 100′ x 210′ (168 boats) with a building height of approximately 35′. While the structure would likely be a typical steel structure to accommodate the boats, the exterior would be architecturally clad with siding materials to make the structure blend with the character of the buildings in the rest of the development and reduce the apparent size of the building. The roof would be a sloped roof similar in appearance to the roofs in the rest of the development. The finished floor elevation would be set above the flood elevation of 7.5′ with the perimeter of the building fully landscaped to the extent possible to soften the visual impact of the mass of the building not only from onsite, but also from the Colonial Parkway as this is a very sensitive viewshed.

Typical Dry Stack Storage Facility

The intent is to improve the view from the Colonial National Parkway bridge. This would be achieved in three ways; 1) improved architecture of the buildings. The current buildings have no architectural appeal and are in various states of disrepair. The new buildings would architecturally fit into the waterfront environment, 2) clean up and removal of stored boats and trailer from the site. Currently, many of boats stored in the location of the proposed dry-stack storage building are in direct view from the bridge. By removing the boats, or storing them in the dry stack building, a cleaner looking site and smaller footprint area would be used for boat storage. And 3) full planting of landscaping including tall tree species and restoration of the buffer area to provide a green foreground to the marina development.

An optional treatment for the dry stack building would be to reduce the number of boats stored and use the space gained to accommodate boat sales and boat service facilities. A space approximately equivalent to the existing onsite sales and service space of 7,500 to 8,000 SF would still allow dry storage for about 104 boats.

In support of the dry-stack storage operations, a launch dock would be constructed from which a forklift would launch and recover boats from the water.

3.2.5 E-Transient Boater Slips

The transient boater slips would utilize the same construction methods and materials as the docks and bulkheads described above. The area indicated on the plan can accommodate from 14 to 20 transient boats. There is potential grant funding of up to 75% (25% minimum match required) for transient boat facilities like this through the Boating Infrastructure Grant administered by the U.S. Fish and Wildlife Agency.

3.2.6 F-Relocated Boat Ramp and Parking

The concept plans shows a relocation of the boat ramp from the northeast corner of the basin to the west side in order to avoid potential use conflicts, traffic congestion, and aesthetic impacts associated with parked trailers. This location on the west side of the basin facilitates a separation of site uses and reduces launched boat traffic within the main interior area of the marina by providing a more direct route to the channel. It also is in close proximity to the transient docks for boaters leaving their boats at the transient docks for overnight periods. In addition, trailer parking (a largely seasonal activity) at this location can take advantage of increased vegetative screening during peak boating season. Parking for up to 18 vehicles with trailers on grass with pervious grass pavers for the drive aisles is provided at the boat launch.

There is a broad consensus of the consulting team and JCC project staff that maintaining a boat ramp facility at the marina is a necessary part of its operation. The area depicted for the boat ramp and parking has several environmental constraints but it can feasibly provide a basic launching facility for limited use. The main issues associated with this area are that it is located in a low-lying area within the RPA buffer and the 100-year floodplain.

Construction of a relocated boat ramp within the RPA can be justified as a water dependent use and be designed to minimize its footprint and land disturbance. The non-water dependent portions, such as support parking, would likely require public hearing and approval before the Chesapeake Bay Board.

The existing grade elevation of the area can be raised one to two feet in order to minimize occasional flooding that has been reported in this area and to improve the effectiveness of a bioretention facility to treat runoff. The fill used to raise grade would include some granular material suitable for a bioretention/filtration system to compensate for the generally poor infiltration of on-site soils.

Another option for a boat ramp location is depicted in the alternative marina development diagram. This concept restricts parking and minimizes land disturbance. Refer to the related discussion below regarding the alternative marina concept plan.

3.2.7 G- Picnic Area with Tables

In conforming to the stated desire to keep access to portions of the site for public use, a public picnic and daytime use area with tables and trash/recycling containers is designated next to the boat ramp and transient docks. This area offers passive recreational uses and scenic views of the marina and Powhatan Creek natural areas for boaters and non-boaters alike.

3.2.8 H-Waterfront Promenade

The Waterfront Promenade features hardscape and landscape areas that define the edge of the proposed buildings and their relationship to marina components as well as provide necessary and practical parking areas for the retail spaces. Parking is conveniently located directly in front of the retail shops and restaurants in order to maximize patronage of the businesses and minimize walking distance to parking. The hardscape areas would feature furnishings and areas

for gathering, dining and passive activities. The landscape areas would provide shade as well as serve as bioretention areas for the runoff from the impervious surfaces.

Biscayne National Park

3.2.9 I-Urban Park

The Urban Park is the central outdoor feature of the JYB development. This area would reflect materials used at the waterfront promenade, thereby connecting it to this lawn and open space feature. The Urban Park area would provide open space for the residential units on the site as well as provide a central gathering area for features and festivals. The Urban Park open space also provides a clear view of the marina from the proposed roundabout on Jamestown Road. This provides essential visibility for the waterfront businesses and aids in wayfinding. Landscape and lawn areas of this feature should be well maintained and irrigated to achieve the fullest landscape potential.

3.2.10 J-Inn/Lodging

The three story building on the west end of the development is a 40 room inn would have its own entrance on the west side facing the Jamestown Settlement. The presence of the multi-purpose/meeting room described below adds to the potential amenities available to the inn (including the ability to service small conferences with the catering support of the adjacent restaurant). Should it prove desirable, it may also be possible to develop a swimming pool on site for joint use with the condominium development. (See Appendix H for architectural building style images)

The buildings on the site, including the Inn ("J") and the restaurants, condominiums and retail space ("L," "M" and "N" discussed below) would be designed with environmental stewardship in mind and the goal of utilizing Leadership in Energy and Environmental Design (LEED) and sustainable design concepts and techniques. It is recommended that sustainable design guidelines be made a core principle in shaping the development and that all structures incorporate sustainable design principles such as for water conservation and energy efficiency and the use of green materials and construction practices.

During the final design of the buildings, careful consideration should be given to evaluating and implementing LID measures, including green-roof techniques, rain-water collection and reuse and other measures for the buildings as a way of minimizing and mitigating environmental impacts related to high-density use of the site.

3.2.11 K-Multi Purpose Room

This is an approximately 2,500 SF Multi-purpose Room that would support meetings, conference functions, and special events, either connected with the inn, or community functions. It is located such that the adjacent restaurant could provide catering support for functions that occur there. The space would also be available to support groups such as the U.S. Coast Guard Auxiliary for

their meetings, training and educational programs. The multi-purpose space would have a view out to the marina and an outdoor terrace on the water side.

3.2.12 L-Restaurants/Condominiums Above

Restaurants: There are two restaurants shown in the plan, each approximately 5,000 SF in size. They would occupy the prominent corner locations on the first floor of each building, with one side facing the marina, and one side facing the center street/Urban Park. Service would be provided to the restaurants from the rear courtyards of the buildings. Each restaurant would have outdoor eating space on both the street and marina faces of the restaurant, with an elevated view out over the promenade and marina to the south.

King Farm Retail

Condominiums: The south (or marina) face of the buildings would be four stories in height, with condominiums on the upper floors above the restaurants and retail spaces on the first floor. The portions of the buildings that do not face the marina would be three stories in height.

3.2.13 M- Condominiums

These three story high portions of the buildings would be condominiums, with retail spaces on the first floor of the buildings that face the center Urban Park and street that runs between the two buildings. The condominiums would all have exterior balconies and the majority would have water views. The condominiums would have their own secure entry and elevator service. With the presence of retail, restaurants, the views, and the ability to have a boat at the marina, these condominiums would offer a combination of features that is rare in the area, and should make them attractive to potential buyers.

3.2.14 N- Service Areas

The service areas would provide areas for trash and recycling, conditioning systems for the buildings, and receiving areas for supplies and shipments for the retail and restaurant uses. This area would be screened using architecturally compatible materials with gates to allow vehicular access.

3.2.15 O- Retail/Condominiums Above

This portion of the building (which faces the marina) would be four stories, with retail and the main condominium entries on the first floor, and three stories of condominium units above. All of the condominium units in this portion of the building would offer wonderful exposure to water views and views to the promenade below, along with a sunny southern exposure. These condominiums would have substantial balconies/screened porches to optimize the enjoyment of the view and the life of the marina below.

3.2.16 P- Service Accessable Courtyards

The service accessible courtyards would allow delivery vehicles to the access the site. Due to their central location, these areas would also serve as the pedestrian connection areas between the wings of the buildings and should maintain the same architectural materials and furnishings as the waterfront and Urban Park areas.

3.2.17 Q- Kayak/Canoe Launch

A launch facility for kayaks and canoes is located in the cove area to the east. This location separates motorized vessels from non-motorized vessels and provides a safe and very sheltered launch area and entrance into Powhatan Creek for paddlers. Space in this area would also be dedicated to canoe/kayak schools and other water-related training.

The existing docks for commercial fishing vessels would be removed and the buffers and shoreline restored and improved. Eliminating the use of commercial boats in the cove and restoration of the buffers would help improve the water quality of the cove and Powhatan Creek.

3.2.18 R- Wetlands Interpretation Area

This area presents an excellent opportunity for wetland interpretation and in support of it a boardwalk and observation deck with informational signage is depicted on the plan. This use is compatible with related grant requirements. It should be noted that plan does not depict the entire JYB parcel and wetland grant area east of the marina (approximately 60 acres) that is to be preserved and remain undeveloped. It is a tremendous public benefit which preserves the natural habitat and viewshed along this portion of Powhatan Creek.

3.2.19 S- Bioretention Basin

The constraints of the site require that stormwater be treated as close to the source of run-off as possible. Small bioretention basins contoured to compliment the landscaping and which facilitate a direct drainage route from the hard surface areas are proposed. The plan depicts 14 basins and the expansion of the existing BMP, but other opportunities exist on the site to create more bioretention areas adjacent to buildings and paved surfaces. Refer to the Stormwater Management section below for further discussion of stormwater treatment.

Example Bioretention

3.2.20 T- New Covered Slips

An additional covered floating dock is added to the two existing covered docks. The covered docks are currently the most desired and marketable docks in the marina. An alternative is to eliminate the covered roof over the new dock, if reducing the visual appearance of the structure is desired, or for other aesthetic reasons or costs concerns.

3.2.21 U-Vehicular Connection to JYF Aquisition

Under the agreement for the sale of the property to JYF, an additional access point to the marina property is to be provided by an easement and is depicted on the plan as a secondary point of

ingress/egress primarily for residents and vehicles using the main parking lot north of the buildings.

3.2.22 Proposed Landscape

Generally, the design intent of the proposed landscape would be to maintain as much of the character of the site as possible while preserving and improving what currently exists. The edges along proposed vehicular access ways would be densely planted with appropriate landscaping meeting or exceeding JCC zoning ordinance requirements. The landscape frontage along Jamestown Road, while not directly a part of this planning effort, would comply with the Community Character Corridor requirements set forth in the Comprehensive Plan and be used to characterize the gateway to the new Jamestown Beach Campground "signature park," Jamestown Island, Jamestown Settlement and other attractions, both planned and existing.

The plan presents a rare opportunity to fully screen and landscape the stretch of Jamestown Road from Greensprings Road to Route 359. Currently, there are three parallel roads along this section; Greensprings Road, Jamestown Road and the frontage road. The construction of the roundabout at Greensprings involves the removal of both Greensprings and the frontage roads in this area resulting in a wide planting area on both sides of Jamestown Road that can be fully restored and landscaped. The improvement along this portion of the Community Character Corridor would be a long term benefit to the community considering its historic nature and high-visibility.

Mixed-Use Plaza and Park Areas

The plaza and park areas provided on the site are designed to complement the proposed uses and architecture and draw visitors to the waterfront spaces and activities. These spaces would be highly landscaped urban spaces for commerce, socializing, as well as providing water quality management practices in conjunction with the landscape.

Promenade, Marina and Dry Stack Storage Areas

The marina would be planted with native trees, shrubs and grasses so that the landscaping complements the area and provides an aesthetically pleasing visual connection to its surroundings. Appropriate landscape for these areas would soften the development edges and provide shade and water quality management practices in conjunction with the landscape.

3.2.23 Vehicle Circulation

Main Entrance proposed at Route 359

The existing main entrance to the yacht basin remains in its current location with improvements made only as required to bring it up to current VDOT standards. From the entrance, the traffic circulation is to the east along the waterfront promenade where a connection is made with the central urban park feature. The internal road continues east where it leads south to the covered slips and dry-stack storage area or to the north and wraps around the development back to the east where the secondary point of ingress and egress is proposed. This entrance would be used primarily by condominium residents and vehicles using the north parking lot.

Internal Road

The road width would be kept as narrow as possible with a typical width of 22 feet. The pavement would be brown river rock aggregate asphalt for a softer, more pedestrian and park-like appearance with paver brick borders and cross-walks highlighting the promenade area. For low-traffic and parking areas, pervious pavers would be used to reduce the total amount of impervious area. (See related discussions below and Appendix I for pervious paver information)

3.2.24 Parking

Adequate parking has been provided in the plan for the proposed program elements. Approximately 360 spaces are proposed in the master plan. Below is a table showing the proposed parking for the marina development.

Table 3-1 Parking Summary

Location	Parking Spaces
Marina Parking	86
Boat Ramp Parking	24
Promenade	66
Main Parking Lot	181
TOTAL	**357**

3.2.25 Site Access and Traffic Impacts

The primary site access for ingress and egress to the site would remain in its existing location on Route 359 with a secondary point of ingress and egress through the JYF Acquisition parcel.

A preliminary traffic impact analysis was performed to determine potentially whether turn lanes may be required on Route 359. The analysis used 2007 VDOT average daily traffic (ADT) data provided by JCC and the number of vehicle trips generated by the proposed uses from the Institute of Transportation Engineers (ITE) publication, Trip Generation, 7th Edition. The left and right turn lane warrants analysis followed the VDOT Road Design Manual, Appendix C method.

The result of the analysis is that no left or right turn lanes into the marina entrance are required. Refer to Appendix G for detailed information in support of the preliminary traffic impact analysis and to the traffic impact discussion in Chapter 2 regarding the overall potential impacts to Jamestown Road.

Note: Existing traffic patterns and available traffic data provided by JCC were considered in the overall development of the concept plans; however, a Traffic Impact Study (TIS) was not included in the project scope of work nor performed as part of the evaluation. It is understood that a Traffic Impact Study would be required for the proposed program elements. The TIS is required to determine the final traffic impacts to adjacent roads and site access requirements.

3.2.26 Stormwater Management

The JYB property drains from Jamestown Road to the marina basin at a bulkhead elevation of approximately +4.0′ MLW. The proposed stormwater run-off would drain primarily by sheet flow and shallow grass swales along the entrance road and perimeter of parking areas ultimately to several bioretention basins located around the site. The proposed bioretention basins are filtering systems described as D-1 in the James City County Guidelines for Design and Construction of Stormwater Management BMPs.

Overall, pre- and post-development impervious cover areas for the entire site as well as specifically for the site area within the RPA were calculated. Refer to the table below for the amount of impervious area.

	Impervious Cover Pre-Development	Impervious Cover Post Development	Impervious Cover Post-Development with Pervious Pavers (40% Pervious Rate)
JYB Area within RPA	2.5 Acres	3.8 Acres	2.5 Acres
JYB Area outside RPA	0.9 Acres	7.6 Acres	5.3 Acres
Alternate JYB Concept within RPA	2.5 Acres	2.2 Acres	1.4 Acres
Alternate JYB Concept outside RPA	0.9 Acres	2.8 Acres	2.3 Acres

As can be seen in the table above, the concept plan limits the post development impervious cover (with the use of pervious pavers) so that it would not increase the impervious cover within the RPA. Refer to Appendix J for a diagram designating impervious areas and amounts.

There is an existing stormwater retention pond located within the VDOT Route 359 ROW adjacent to the site entrance. It is understood that under the sale agreement of the property to JYF, there is an allowance for the inclusion of a facility to be located on this site for the JYF parcel. The proposed stormwater plan proposes to enlarge the existing VDOT BMP by approximately four times in order to accommodate run-off from the JYF parcel and a portion of the western side of the north parking lot. Expanding the VDOT retention pond would accommodate the full build out of the JYF parcel (6.6 acres) with a maximum allowed impervious area of 60%. The entire BMP would have to be re-engineered with a reconfigured outlet structure and piping in order to accommodate the quantity requirements for release of the 2- and 10-year events.

According to section 23-9-b-1-b of the James City County code, impervious cover shall not exceed 60 percent of the site. Developable area for the JYB site is calculated to be approximately 17.2 acres. Preliminary calculations show the proposed impervious cover to be approximately 10.1 acres, or 58.9% of the developable area. Based on James City County code section 23-10-4, a stormwater management plan shall be submitted for JYB as part of the plan of development process and in conjunction with site plans for preliminary approval. In addition, because the JYB site exceeds 10% impervious cover, it is required to have a structural BMP.

Within the parking lots, stormwater would be collected near its source and routed to landscape islands where it would be treated with low impact development (LID) measures. From the parking lot islands and shallow grass swale systems, run-off would be conveyed to small bioretention basins prior to discharging into the existing marina basin or other adequate channel. In an effort to further reduce the net impervious area, pervious pavers (as noted in the table above) would be used throughout the project where effective infiltration rates are viable.

Currently in JCC, compliance with nonpoint source pollution control requirements for CBPA is based on the BMP Point System per the "James City County Guidelines for Design and Construction of Stormwater Management BMP." The proposed concept plan attempts to avoid the need for an additional conventional detention pond so as to maximize the usable land area for improvements and to maintain viewsheds. In addition to using bioretention methods for water treatment, JCC allows the use of several other systems suitable for the site such as an Infiltration Trench, Perimeter Sand Filter and Wet and Dry Swales. For the portion of the site around the marina that is flat with confined small areas, preliminary bioretention basin sizing calculations indicates that a combination of the above methods would provide the required water quality treatment as shown in Figure 3-2 while minimizing visual and environmental impacts.

Based on sizing guidelines per 3.11-9 of the Virginia Stormwater Management Handbook, First Edition, Volume 1 the floor area of the bio-retention basin needs to be a minimum of 4% of the impervious area on the drainage shed to treat the first 1.0 inches of runoff. In planning calculations for sizing the bioretention basins, a conservative 10% of the impervious area was used as the surface area of the basin. Using this guideline, the bioretention basins shown on the concept plan (1.34 acres) is sufficient for treating total impervious area of the site (10.1 acres). Some of the bioretention basins depicted are oversized and could treat up to an additional 3.28 impervious acres.

Assuming a 40% pervious ratio for the pervious pavers, the use of pervious pavers throughout the site would reduce the total site impervious area from 10.1 acres to 6.9 acres (see Appendix I for related pervious paver information.) The soils in some of the lower elevation areas would likely have low percolation rates; therefore proper design of the pervious pavement section is critical for gaining the infiltration benefit of the pavers. Raising the elevation of the site around the marina with suitable granular fill would improve water infiltration and increase the depth to the water table.

A total of 14 bioretention basins are proposed throughout the site to achieve the 10 BMP points. A total of 9.84 points would be achieved using the proposed bioretention basins and 1.34 points would be achieved by designating the wetland area adjacent to boat ramp parking lot as a conservation easement. Refer to Table 2 in Appendix J for bio-retention locations and sizing calculations.

It must be noted that the plan attempts to fully utilize the site and in doing so, there is maximum development and limited space for water quality treatment and mitigation for environmental impacts. Approval of the plan by JCC and other regulating agencies would require that very innovative LID measures be implemented to the extent possible in addition to the stormwater

management systems proposed above. These additional systems may include, but are not limited to, the use of green roofs, tree box systems (such as Filtera systems), and capturing rainwater for irrigation or other reuse. While green roofs may not be feasible for all building roofs from an architectural standpoint, portions of the buildings would likely be suitable for accommodating state-of-the-art green roof technology. In anticipation of the unique environmental challenges and mitigation measures that would be required for site plan approval, a specific line item cost was included in the estimated development costs to cover related expenses.

Powhatan Creek Watershed

According to the Powhatan Creek Watershed map, Jamestown Yacht Basin site is situated in the Tidal Mainstream subwatershed. The tidal creek section is classified as impacted; however, given the importance of this estuarine habitat, special protection is warranted for future development. The tidal mainstem is designated a Resource Protection Subwatershed. Normally, this natural and scenic segment contains high quality tidal wetlands dominated by softstem bulrush, rice cut grass, pickerel weed, narrow leaved cattail, arrow arum and bald cypress, however, the JYB is man-made feature that has been an operating marina for nearly 50 years and lacks much of the natural characteristics common along the mainstem such as the adjacent 60 acres to the east which are in conservation and never to be developed.

The intention in the site development would be to follow the Powhatan Creek Watershed Management Plan, however, since the marina basin is man-made (i.e. a dredged basin) and not a natural feature of the main stem, it is not a natural extension of the Powhatan Creek Mainstem and therefore not considered to be included in the requirements for the mainstem buffer areas. Nevertheless, in the planning of the site, it is treated consistently with the requirements for non-main stem subwatersheds. The major stormwater management strategy involves using on-site stormwater management for future development in conjunction with clustering retail, residential and commercial uses together and recommending conservation areas.

Special Stormwater Criteria

Special Stormwater Criteria is applies to the site as a condition, mitigation or compensation measure for a waiver to County's CBP or the County BMP manual. According to Table SSC-1 of the "Special Stormwater Criteria Task Group" for a site like JYB with a proposed disturbance between 10 and 50 acres a minimum of 5 unit measures from Table SSC-2 Menu of Special Stormwater Criteria Practices (SSCP's) are required. A total of five or more units could be achieved onsite by using some of the measures which include, but are not limited to the following: using pervious pavers (1,000 SF minimum), increasing time of concentration flow paths, permanent check dams in swales, maintaining sheet flows, dry swales, level spreaders, and enhanced outlet protection measures at pipe and channel outfalls. The site provides ample opportunity to meet the 5 unit measures of the Special Stormwater Criteria.

3.2.27 Proposed Utilites

Water Service

Water service would be provided to the site via a direct connection to the existing 8-inch water main located along Route 359. Water meters and fire protection systems including double detector checks/meters and fire department connections would be placed as needed near the buildings served by the fire water service. Where possible, existing utility corridors would be utilized, so as to minimize further land and cultural resource disturbance to the site. The existing water service to the site is located on the JYF parcel, therefore an easement would be required for the connection as depicted, or a new connection made directly to the water main from the JYB property. (See Figure 3-3).

Sanitary Service

The proposed sanitary concept plan calls for a minimum of one connection to the existing James City County sanitary system force main located along Route 359.

Sanitary connections to buildings would be made via gravity lines to a central pump station located near the entrance. Although much of the site can be serviced by gravity sewer to the pump station, the more remote buildings such as marina office building and boat storage building would need to be served by small manufactured grinder pump systems (i.e. Environment-One System) and pumped to the central pump station. The existing sanitary service to the site is located on the JYF parcel, therefore an easement would be required for the connection as depicted in Figure 3-3, or a new connection made directly to the force main from the JYB property

Dominion Virginia Power

The existing electrical service onsite was evaluated to determine potential reuse of the system and to determine possible routing of new electrical service lines. The existing system consists of overhead lines and pole mounted transformers. Overhead electric is not aesthetically appropriate for the site and has a lower reliability in wooded areas. The proposed concept plan calls for all the electrical service to be installed underground with at-grade transformers. A conceptual electrical schematic of the proposed electrical system is provided in Figure 3-3.

Natural Gas

Final design plans for buildings and infrastructure would likely require Virginia Natural Gas service to the buildings. New gas service is available and would be provided to building locations as needed based upon the architectural design requirements.

Telephone

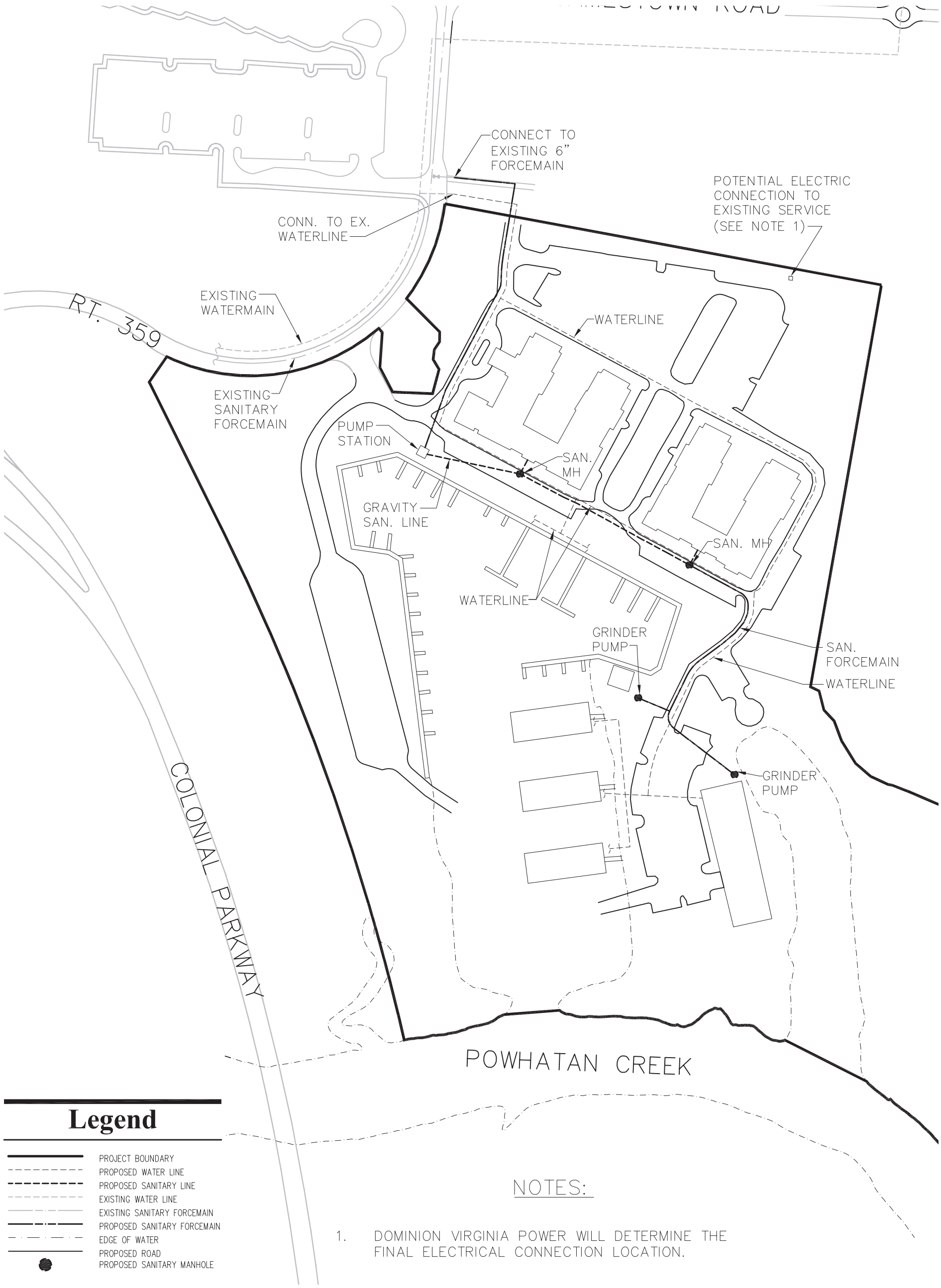
Future improvements would require that telephone and high-speed communication capabilities are provided to the site in support of proposed program elements. Telephone service is readily available to the site.

Fiber Optic

Proposed improvements would require fiber optic/high-speed communication capabilities in support of proposed program elements.

3.2.28 Cultural Resources

Areas identified by ACS in their report as having significant cultural resources have been avoided in the planning of program elements so as to minimize impacts to potential resources. Cultural resource areas, as provided by ACS, are depicted in Figure 1-3.



Not to Scale

SHAPING OUR SHORES
Master Plan for Jamestown Beach Campground, Jamestown Yacht Basin & Chickahominy Riverfront Park

Figure 3-3
Proposed Utilities
Jamestown Yacht Basin