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September 8, 2011

Mr. Kenneth D. Eades
County Administrator
Northumberland County
P. O. Box 129
Heathsville, VA 22473

**RE: Bluff Point Evaluation Study**

Dear Mr. Eades:

AES Consulting Engineers along with Kerr Environmental Services, DRW Consultants, LLC and Mid-Atlantic Commercial has completed the Bluff Point Evaluation Study for the proposal planned unit development in Northumberland County. Our services were provided in accordance with Fee Proposal and Scope of Work for Professional Services dated April 7, 2011 and signed by you on April 18, 2011. We will conclude with the presentation of our report to the Board of Supervisors at their regularly scheduled meeting this evening.

Per your request, I am enclosing ten (10) bound copies of the report. The attached copies include the portions of the study prepared by AES, Kerr Environmental Services and DRW Consultants. The portion of the study prepared by Mid-Atlantic Commercial will be submitted under separate cover. I will also forward to you digital versions of the study in a PDF format.

It has been a pleasure working with you on this important project and I look forward to working with you again in the future.

Sincerely,

AES Consulting Engineers

Donald G. James, P.E.

Vice President – Gloucester

Attachments:

Bluff Point Evaluation Study (10 copies)

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# Evaluation Study

# Bluff Point

# Planned Unit Development

# County of Northumberland, Virginia

**Submitted:**
**September 8, 2011**

# Evaluation Study
# Bluff Point

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**Tab 2: Prepared by Kerr Environmental Services**

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**Note: The Fiscal Impact Analysis consisting of Tasks 2, 3, 4 and 5 prepared by Mid Atlantic Commercial has been submitted under separate cover.**

# Tab 1

## Task 1. Property Use

*Per the signed proposal, we were to conduct a thorough review of County ordinances and zoning code and develop a "by-right" land use and density analysis. This was to include a review of the subdivision layout configurations submitted by the developer. Considerations were to include provisions for open space, designated areas for residential and potential commercial uses, recreational uses, and preservation of sensitive features such as wetlands, shorelines, and floodplains, utility infrastructure, and storm water management. We were to assure the "by-right" land use is consistent with the County's Comprehensive Plan Vision and Planning Principles. The "by-right" analysis shall include review as to potential plan approval and a basis for comparison with the proposed PUD.*

### A. Review of Ordinances:

#### 1. Subdivision Ordinance:

Whether the property is developed as "by-right" or as a PUD, the requirements of the Subdivision Ordinance must be met. As stated in § 128-2 Purpose "the purpose of these standards and procedures is to provide a guide for the change that occurs when lands and acreage become subdivided as a result of development for single-family dwellings, business or industrial purposes; to provide assurance that the purchasers of lots are buying a commodity that is suitable for development and use; and to make possible the provision of public services in a safe, adequate and efficient manner." According to the definition of SUBDIVIDE in §128-4 this development will be defined as a subdivision and must meet the criteria set forth in the Ordinance.

The General Requirements for Subdivisions are outlined in Article IV of the Ordinance. After a review of the general requirements, we would offer the following comments:

**§128-17 Land must be suitable.** "The Subdivision Agent shall not approve the subdivision of land if, from adequate investigations conducted by all public agencies concerned, it has been determined that, in the best interest of the public, the site is not suitable for platting and development purposes of the kind proposed."

*Comment: It appears that all roads, lots and commercial improvements shown on the Plan are not within wetland areas (there are a few lots that contain a minor amount of wetlands, but buildable area is provided).*

**§128-18 Building site.** "To ensure that residents will have sufficient land upon which to build a house which is reasonably flood-free, the Agent may require the subdivider to provide elevation and flood profiles sufficient to demonstrate the land to be completely free of the danger of floodwaters."

*Comment: It appears the majority of the site is outside the flood zone areas as designated by the Federal Emergency Management Agency on the Flood Insurance Rate*

*Map for Northumberland County on Panels 302, 304 and 308. However, the portion of the site shown on Panel 308 appears to be located in Zone AE (EL 5.2). According to the USGS topographic map for Bluff Point Neck, the ground elevation in this area is at or below elevation 5. Therefore, this area will be subject to inundation by the 1% annual chance flood.*

**§128-19 Improvements.** "All required improvements shall be installed by the subdivider at the subdivider's cost. The subdivider's performance bond shall not be released until all construction has been inspected and approved by the appropriate engineers. All improvements shall be in accordance with the following requirements:

A. (4) Minimum Widths. The minimum width of proposed streets measured from lot line to lot line shall be as specified by the Virginia Department of Transportation for acceptance into the State Secondary System."

*Comment: In Appendix 7 of their submittal, the developer has defined a Bluff Point Streetscape Hierarchy. The hierarchy consists of four street types: Village Road, Main Entry Road, Rural Road, and Lane. The first three types call for a right of way width of 50 feet which would meet the minimum width required by VDOT, however, the fourth type (Lane) which calls for a minimum right of way width of 20 feet would not meet the VDOT minimum requirement. A variance to this section of the Ordinance would be required.*

A. (6) Cul-de-sac. "Generally, minor terminal streets (cul-de-sacs) designed to have one end permanently closed shall serve no more than 20 lots. Each cul-de-sac must be terminated by a turnaround of not less than 100 feet in diameter."

*Comment: In the "by-right" development, the H Lots have 37 +/- lots served by on cul-de-sac. Also, all turnarounds on the "by-right" plan appear to scale 80 feet in diameter.*

A. (8) Private streets and reserve strips. "There shall be no private streets platted in any subdivision. Every subdivided property shall be served from a publically dedicated street. There shall be no reserve strip controlling access to streets."

*Comment: In Section 9.1 of their submittal, the developer has stated that "All roads will be privately maintained in order to reduce the tax burden on the County. Roads leading to the Harbor Village and the Bluff Point Inn and Spa will be open to the public. Other neighborhoods, including the Jarvis Creek Area, the Central Area and the Bay Cottages, may be gated out of respect for the resident's privacy." The use of private streets will require a variance to this section of the Subdivision Ordinance.*

E. Private water and/or sewerage facilities. "Nothing in this regulation shall prevent the installation of privately owned water and/or sewerage facilities in the areas where public water and/or sewerage facilities are not available; provided, however, that such installations must meet all the requirements of the State Water Control Board, the State

Health Department and any other state or local regulation having authority over such installation."

*Comment: In Chapter 13 and Appendix 5 of the submittal, the developer has proposed a privately owned and operated central sewer and water system that will serve the project. As stated in the Ordinance, nothing in the Subdivision Ordinance shall prevent the installation of these systems. However, both systems will require permitting through the Department of Environmental Quality, Virginia Department of Health and Environmental Protection Agency.*

I. Fire Protection. Fire hydrants in a subdivision at locations approved by the Agent shall be installed by the subdivider, provided that central or public water is available.

*Comment: Since the Developer is proposing a central water system, fire hydrants will be required. In Appendix 5 of their submittal, storage capacity for the required fire flows is calculated and it is stated that a water storage tank will be provided. The Developer shall be required to provide fire hydrants at locations approved by the Agent.*

**§128-21 <u>Blocks.</u>**

A. Length. Generally, the maximum length of blocks shall be 1,200 feet, and the minimum length of blocks upon which lots have frontage shall be 500 feet.

*Comment: In the by-right layout this criteria is generally met, however, in the PUD layout there appears to be three instances where this criteria is not met.*

**§128-21 <u>Bond.</u>**

A. The subdivider shall furnish a performance bond, which can be a cash bond or equivalent, letter of credit, a surety bond of a surety company or a certified check payable to the Treasurer of Northumberland County, in an amount equal to the total cost plus maintenance for a period determined by the governing body, of the improvements required in the foregoing § 128-19, so as to guarantee they will be installed within a designated reasonable length of time in a manner acceptable to the governing body and to ensure that such improvements will be properly maintained for a period determined by the governing body. Said bond or check shall accompany the final plat, as provided in § 128-10, when it is submitted to the governing body.

*Comment: The requirement to bond the improvements required by the Ordinance will apply to either the "by-right" development or the PUD. This requirement will allow the governing body to ensure that the improvements as required are installed and that the necessary maintenance is provided.*

**§128-24 Sketch.**

A. The subdivider may, if he or she chooses, submit to the Agent a preliminary plat for the proposed subdivision for a tentative approval prior to this preparing engineered final plats. The purpose of such preliminary plat is to permit that the Subdivision Agent may mark the preliminary plat, indicating necessary changes, and any such marked plat shall be returned to the subdivider.

*Comment: Per the requirements of this section of the Subdivision Ordinance, the Developer has submitted a "by-right" Preliminary Subdivision Plat. The layout in based on a cluster home development which is allowed by right in the Residential Waterfront District R-2 and the Agricultural District A-1. The Preliminary Plan was approved by the County on 1/31/11 Pending Approval by VDOT, U. S. Army Corps of Engineers, DEQ and the Health Department.*
*The approved Preliminary Plan specifies a total of 502 residential lots and a total of 6 commercial lots.*
*The approved Preliminary Plan specifies a total of 344.39 acres of open space which equates to a total of 55% of the property which exceeds the required 50% open space required in a cluster home development.*
*The approved Preliminary Plan also specifies a total impervious surface of 73.80 acres which equates to a total of 11.8% of the property which is less than the 35% impervious surface allowed in a cluster home development.*

**2. Zoning Ordinance:**

According to the Zoning Plan, Exhibit 3-D, the property consists of several parcels and the zoning of each parcel is listed below:

| Parcel | Current Zoning |
|---|---|
| 52(1)75 | R-2 Residential Waterfront District |
| 52(1)76 | A-1 Agricultural District |
| 52(1)76 | R-2 Residential Waterfront District |
| 52(1)76 | C-1 Conservation District |
| 52(1)1 | A-1 Agricultural District |
| 53(1)3 | A-1 Agricultural District |
| 54(1)1 | R-2 Residential Waterfront District |
| 54(1)61 | C-1 Conservation District |
| 54(1)56 | C-1 Conservation District |
| 54(1)56-A thru 56-Y | C-1 Conservation District |

**ARTICLE II <u>Conservation District C-1 (§ 148-5 - § 148-16)</u>**

**§ 148-5 <u>Purpose</u>**

This district covers the portions of the County which are occupied by various open spaces, such as forests, parks, farms, lakes, marshlands and wetlands subject to the Wetlands Board. This district is established for the specific purpose of facilitating existing and future farming operations, conservation of water and other natural resources, reducing soil erosion, protecting watersheds and reducing hazards from flood and fire. Uses not consistent with the existing character of this district or with the provisions of any other law, state or federal, applicable to these portions of the County are not permitted.

*Comment: Based on the above stated purpose of the Conservation District C-1, uses not consistent with the existing character of this district or with the provisions of any other law, state or federal, applicable to theses portions of the County are not permitted. Some of the permitted uses in this District that relate to this project include: single-family dwellings; swimming pools or tennis courts, private and commercial; accessory structures; seafood processing; boat sales or rentals; private pier and shoreline stabilization structures.*
*Commercial or community piers are permitted upon the issuance of a conditional use permit as provided in § 148-149.*

*In the by-right plan, the uses proposed for the C-1 District are allowed by the Ordinance. In the PUD Plan, the uses proposed by the plan are not allowed in the C-1 District, however, in* ***Article XI <u>Special Exceptions</u>*** *certain uses are deemed to be of special nature and may be approved or denied as to location and subject to any condition by the*

*governing body, regardless of zoning district. Planned Unit Development is included as one of the enumerated uses.*

In §148-7 Area regulations; exemptions the Ordinance states "Any division of land after the enactment of this provision (April 5, 2007) shall have one lot equal to 50% of the total acreage of said parcel. The aforesaid parcel shall have no further division and shall remain as one parcel. The remainder of the parcel may be further divided, provided each lot created shall be a minimum of 10 acres. Public water and sewer systems shall be exempt from area regulations. Exempt also from this area regulation are family division as defined in Article 1, §128-4B in Subsection (3) of the definition of "subdivide", of the Northumberland County Subdivision Ordinance. The minimum area for permitted uses in family divisions shall be 80,000 square feet.

*Comment: Based on the area regulations in the C-1 District, the intent of the Conservation District is to maintain large parcels of land intact; e.g.; the requirement for any division of land to have one lot equal to 50% of the total acreage of the said parcel. In the PUD plan, the areas designated as Harbor Village Neighborhood, Bluff Point Inn, Marina and Harbor Village are located within the Conservation District.*
*The Planned Unit Development is allowed as a special exception by Article XI of the Ordinance. The PUD may be approved or denied as to location and subject to any condition by the governing body.*

## ARTICLE III Agricultural District A-1 (§ 148-17 - § 148-29)

### § 148-17 Purpose

This district covers the portions of the County which are occupied by various open uses, such as forests, parks or farms. This district is established for the specific purpose of facilitating existing and future farming operations, conservation of water and other natural resources, reducing soil erosion, protecting watersheds and reducing hazards from flood and fire. To ensure the success of the above goals, it is necessary to maintain as low a density of development as possible. The character of this district should remain agricultural in nature, with industry or commercial business allowed in it when it will benefit the area without degrading the environment.

*Comment: Based on the above stated purpose, this district is established to facilitate existing and future farming operations. In order to meet this goal, development density is to be kept as low as possible.*
*Some of the permitted uses in this District that relate to this project are: single-family dwellings; motels and hotels; swimming or tennis clubs, private and commercial; restaurants; clinics; child-care centers; retail food stores; general stores; mobile home sales yards; boat sales and rentals; service and repair shops; tent camping; and cluster home developments. The following uses are among those allowed in this District with a conditional use permit: condominiums; cluster home developments; guardhouse/security building; two-family dwellings; and, multiple-family dwellings/apartment houses.*

*In the by-right plan, the uses proposed for the A-1 District are allowed by the Ordinance. In the PUD Plan, the uses proposed by the plan are allowed in the A-1 District either by right or by conditional use. Also, in* ***Article XI Special Exceptions*** *certain uses are deemed to be of special nature and may be approved or denied as to location and subject to any condition by the governing body, regardless of zoning district. Planned Unit Development is included as one of the enumerated uses.*

In §148-19 Area regulations the Ordinance states "for lots containing or intended to contain permitted uses, the minimum lot area shall be one acre. Public water and sewer systems shall be exempt from area regulations. In §148-27 Additional regulations for clustering the Ordinance states that clustering allowed as a permitted use in the Agricultural District shall have a density equal to the area regulation set forth in §148-19.

*Comment: The by right plan uses the cluster home development which is a permitted use in this District. The density of the by right plan is in accordance with Ordinance. In the PUD plan the density in the A-1 District is less than the proposed density in the by-right plan.*

## ARTICLE V Residential Waterfront District R-2 (§ 148-42 - § 148-53)

### § 148-42 Purpose

The purpose of this district is to protect the water and shorelines of the County by providing for safe and orderly shoreline development. In this district, residential, recreational and conservancy uses are permitted and a limited number of commercial uses that would be compatible with the area.

*Comment: Based on the above stated purpose, this district is established to provide for safe and orderly shoreline development.*
*Some of the permitted uses in this district that relate to this project are: single-family dwellings; swimming pools or tennis courts, private; farming and forestry without livestock; restaurants; country general stores; seafood processing; tent camping; cluster home developments; and, public water and sewer systems. The following uses are among those allowed in this District with a conditional use permit: multiple family dwellings; condominiums; cluster home developments; swimming or tennis clubs, commercial; clinics; child-care centers; service and repair shops; guardhouse/security building; and, two-family dwellings.*

*In the by-right plan, the uses proposed for the R-2 District are allowed by the Ordinance. In the PUD Plan, the uses proposed by the plan are allowed in the R-2 District either by right or by conditional use. Also, in* ***Article XI Special Exceptions*** *certain uses are deemed to be of special nature and may be approved or denied as to location and subject to any condition by the governing body, regardless of zoning district. Planned Unit Development is included as one of the enumerated uses.*

In §148-44 Area regulations the Ordinance states "for lots containing or intended to contain permitted uses, the minimum lot area shall be one acre. Public water and sewer systems shall be exempt from area regulations. In §148-50.1 Additional regulations for clustering the Ordinance states that clustering allowed as a permitted use in the Residential Waterfront District shall have a density equal to the area regulation set forth in §148-44.

*Comment: The by right plan uses the cluster home development which is a permitted use in this District. The density of the by right plan is in accordance with Ordinance. In the PUD plan the density in the R-2 District is less than the proposed density in the by-right plan.*

## B. Review of Comprehensive Plan Vision and Planning Principles:

### 1. Vision

Taking advantage of its distinctive history, location, and natural environment, Northumberland County will preserve its rural character and its maritime heritage while fostering economic growth and the well-being of its citizens. Economic growth will occur that provides jobs, supports agricultural and water-based activities and provides services to the retired community. Residential, commercial, and industrial development will be supported that enhances the social and economic life of the County and conserves its natural resources. It will become a model of planned waterfront residential and village business development that ensures the quality of life of its residents while attracting desirable new growth.
The education system will continue to improve so as to play a key role in helping children succeed and to become this County's future leaders. The government will continually strive to be fiscally sound and firmly responsive to meet the social needs of all members of the community.

*Comment:*

*The above statement from the Comprehensive Plan provides the vision for future development in Northumberland County. As part of its stated vision, the rural character of the County is to be preserved. An important aspect of the rural character of the County is open space. Both the by-right and the PUD plan incorporate large tracts of open space in the plans. Keeping tracts of open space in tact, helps preserve the rural character of the County. An additional way to maintain the rural character of the County is to provide vegetated buffers around new development. The PUD plan provides more buffers around the proposed development than the by right plan does.*

*In the vision statement, the maritime heritage of Northumberland County is to be preserved. In the by-right plan, a community dock on Jarvis Creek is proposed and a community boat ramp on Barnes Creek is proposed. In the PUD plan, community water access is provided by the marina, kayak launches and beach access. In the Village Plan, a fish market, harbor master, ship's store, crab shedding facilities, oyster house and dock, dry stack boat storage, boat builders shop, and marina facilities are proposed. This would help preserve the maritime heritage of Northumberland County. It should be verified that all facilities are open to the public and access is not restricted to Bluff Point residents only.*

*In the vision statement, Northumberland County will foster economic growth and the well-being of its citizens. In the by-right plan, limited commercial components are proposed and the employment opportunities will be limited. The by-right plan does propose community parks consisting of soccer fields, playgrounds, pool and tennis courts. It is unclear if these facilities would be open to the public or restricted to Bluff Point residents only. There are greater employment opportunities in the PUD plan.*

*Employment would be provided by the marina, the boat storage facility, the restaurant, the commercial and retail areas, and the Inn.*

*In the vision statement, Northumberland County will become a model of planned waterfront residential and village business development that ensures the quality of life of its residents while attracting desirable new growth. In the by-right plan, the Developer has proposed a layout utilizing a cluster home development plan. It does represent an overall development plan utilizing central sewer and water and large open space tracts. It does meet the requirements of the Ordinances and in some aspects would meet the vision as stated in the Comprehensive Plan. The PUD plan takes the planning process one step further and utilizes the special exception of a planned unit development allowed in Article XI of the zoning ordinance. The PUD plan represents a Master Planned community and would meet the intent of the vision statement.*

**2. Planning Principles**

Attainment of this vision will be supported by the following planning principles:

- **Preserve Rural Character**

Maintain the desired rural character of the County through open space preservation while providing sufficient designated growth areas to accommodate expected demand for business and residential growth.

*Comment: Both the by-right plan and the PUD plan provide for open space. The by right plan provides 55% open space and the PUD plan provides approximately 65% open space. In the zoning ordinance, the open space requirement cluster home development is a minimum of 50%. The requirement for open space is met by both plans. Both plans utilize cluster development which will create "neighborhoods" as part of the development with large tracts of open space that will be retained. With the provision of the large open space tracts, the rural character of the County will be preserved.*

- **Seek economic growth**

Seek sufficient economic growth by attracting businesses that will supplement the jobs generated by residential development to provide new jobs for the County residents.

*Comment: Some employment opportunities will be created by the by-right plan. The by-right plan proposes a country general store, a medical office building, a child care center, a mobile home manufacturer/sales yard and a central sewer and water system. The PUD plan will create even greater opportunities for employment. The plan includes a marina, boat storage, boat builder, a restaurant, commercial & retail space, a general store, a fish market, an inn and a central sewer and water system. Both plans would abide by the planning principle to seek economic growth.*

- **Maintain a balance between residential, commercial and industrial development and available public services and facilities**

Ensure that a balance is maintained between residential, commercial and industrial development and available public services and facilities to include schools, utilities, recreational areas and general governmental services needed to accommodate planned growth.

*Comment: In both the by-right plan and the PUD plan, a central sewer and water system are proposed. Recreational facilities to serve the development are proposed in both plans. The number of residential units in both plans is approximately the same; therefore, the impact on other County services would be equal for either the by-right or the PUD plan.*

- **Encourage residential development that meets the housing needs of County residents**

Encourage residential development that meets the housing needs of County residents at all income levels as well as providing a range of home site areas and a variety of housing styles.

*Comment: The PUD plan proposes a mixture of residences:*

| | |
|---|---|
| *Waterfront/Water View Residences* | *90 units* |
| *Interior Residences* | *146 units* |
| *Cottage Residences* | *126 units* |
| *Multifamily Residence* | *168 units* |

*The mixture of housing types and styles would abide by the planning principle to meet the housing needs of County residents.*

- **Ensure development is done in an environmentally sensitive, planned manner**

Ensure that development is done in an environmentally sensitive, planned manner that preserves sensitive features such as floodplains, wetlands, dunes, beaches and natural topography.

*Comment: By their very nature, both plans, the by-right plan and the PUD plan, will involve extensive land disturbance activities. Both will require land disturbance permits, Erosion and Sediment Control Plans, VSMP Permits, Storm Water Pollution Prevention Plans, COE Permits, DEQ permits and VDH permits. In the by-right plan, the use of cluster home development will preserve large tracts of open space that will limit the amount of land disturbance. In the PUD plan, the neighborhood concept will also preserve large tracts of open space which will limit the amount of land disturbance. With the construction of the marina and the excavation that will be required and the dredging*

*of the channel, the PUD plan will result in increased topography alteration than the by-right plan. However, the PUD plan calls for a shoreline stabilization plan and a 200-foot RPA buffer that is not specified in the by-right plan.*

- **Develop the individual village infrastructures**

Develop the individual village infrastructures to support near and long term growth of the villages as the commercial hubs of the County.

*Comment: Bluff Point is not located in any of the current County villages. Both plans call for the construction, maintenance and operation of central sewer and water systems.*

- **Provide water supply needs**

Provide for both near term and long term water supply needs by providing alternative sources at a rate that matches the foreseeable needs of a growing County.

*Comment: Both plans, the by-right plan and the PUD plan, require the construction of a central water supply system to meet the needs of the development. Both plans will require permitting through DEQ. In either case, the by-right or the PUD, the system will be privately owned and operated.*

- **Pursue resources to assist the disadvantaged and disabled**

Pursue resources to assist the disadvantaged and disabled in business development, employment opportunities, health care, and housing

*Comment: The commercial development in the by-right plan will provide limited employment opportunities. The additional commercial development in the PUD plan will provide additional employment opportunities. Also, the by-right plan calls for a medical office building and a child care facility.*

- **Support efforts of retaining open space, rural character and preserving historic resources**

Support the County in the efforts of retaining open space, rural character and preserving the County's historic resources that provide valuable information about the proud history of the County and its residents which is essential to sustain our tourism industry.

*Comment: The by-right plan will retain approximately 55% of the total project area in open space. The PUD plan will provide for a marina, inn, restaurant, nature center, art and education center. As these facilities development and market their services, Northumberland County will be promoted as a travel destination.*

**C. Summary**

The project, Bluff Point, comprises property consisting of approximately 898 acres. This property currently consists of several parcels which are comprised of three different zoning districts: Agricultural District A-1, Residential Waterfront District R-2 and Conservation District C-1. The developer has submitted a development plan entitled Bluff Point Subdivision Plan as a "by-right" plan. The "by-right" preliminary plan received preliminary approval by the County on January 31, 2011. This approval is subject to approval by VDOT, U. S. Army Corps of Engineers, DEQ, and the Health Department. This plan uses the cluster home development option allowed by the zoning ordinance for the property in the Agricultural District A-1 and Residential Waterfront District R-2. The cluster home development option is not available by right for the property in the Conservation District C-1. Therefore, the by-right plan proposes minimal development of the property in the C-1 District. The density proposed by the by-right plan was developed in accordance with requirements of the zoning ordinance and provides for more than the 50% minimum open space as required by the ordinance. The use of the cluster home development option will require central sewer and water systems and the developer has proposed the installation of privately owned and operated sewer and water systems, which is allowed by the ordinance.

As an alternative to the "by-right" plan, the Developer has submitted a proposal for approval a planned unit development (PUD) as allowed as a special exception in the zoning ordinance. The PUD plan uses Article XI Special Exceptions to propose a planned unit development for the property. According to the ordinance the planned unit development is a use that is deemed to be of a special nature and may be approved or denied as to location and subject to any condition by the governing body, regardless of zoning district. The use of the planned unit development special exception will allow for development in the C-1 District that would not be allowed by right. The PUD plan uses the same approximate density of development as the by right plan, however, a large portion of the development will be shifted from the A-1 and R-2 Districts to the C-1 District. This is allowed by the special exception provision in the ordinance since it states "regardless of zoning district", however, the governing body may approve or deny the proposal as to location and may subject the proposal to any condition.

A key component of the PUD Master Plan is the construction of the Harbor Village commercial development centered around the Marina to be located on property in the C-1 District. If the PUD is approved, a condition of approval of the special exception should include approval of the marina by the necessary agencies.

## Task 8. Conditions

*Per the signed proposal, we were to conduct a thorough review of the draft conditions prepared by the County staff together with evaluation of the results of the various analyses for Tasks 1 – 7 and prepare a report containing recommendations for any additions, changes or deletion of conditions that may be an attachment to County approval of the PUD development.*

*On March 17, 2010 the Northumberland County Board of Supervisors held a public hearing on the Bluff Point Planned Unit Development. At the end of that hearing the Board directed staff to work on suggested conditions to address the concerns raised from the public hearing.*

*Our comments are listed below:*

**General Conditions:**

1. First Paragraph: The document refers to a total area of the project as 898 acres and states that 583 acres of open space will be provided. Paragraph A states that development will be in accordance with Exhibits A thru F. Exhibit F "Open Space Plan" indicates

| | |
|---|---|
| Open Space | = 633 acres |
| Developed Areas | = 315 acres |
| | --- |
| Total Area | = 948 acres |

   *Comment: This discrepancy in acreage needs to be resolved.*

2. In Paragraph B states: "The Developer shall provide the County with a surety bond in a form approved by the County and in an amount as determined below for each phase of the development prior to construction of that phase. The bond amount shall be based on the actual costs for the infrastructure improvements that are being proposed for that phase."

   *Comment: "Actual costs" and the method of determining those costs needs to be determined. In the calculation of those costs, will an escalation factor be included?*

3. In Paragraph C the timeline for completion of the Bluff Point PUD is defined.

   *Comment: What are the consequences if the project stops during the process? For instance, if the project stops after Phase I what happens with the temporary wells and temporary septic system? The water treatment plant and the wastewater treatment plant are included in Phase Two. Will this phase of construction have capacity for the subsequent Phases 3, 4 and 5? If not, how will the work for the future phases be bonded.*

4. Paragraph E states: "The Developer shall place a minimum of 583 acres into one or more protective easements to preserve such space in perpetuity as open space prior to completion of the Bluff Point PUD."

   *Comment: The total of 583 acres is consistent with the opening paragraph of Chapter 5-Master Plan of the submittal, however, the total Open Space specified in Exhibit F "Open Space Plan" is 633 acres. This discrepancy must be resolved.*

5. Paragraph E states: "The easement shall be recorded in the land records of the County prior to the time of completion of that phase in which the open space is located and before all of the building permits are issued for that particular phase."

   *Comment: The recording of the easement should <u>not</u> be delayed until the completion of the phase. The easement should be recorded upon plan approval by the County.*

**<u>Specific Conditions:</u>**

1. Paragraph A.3. states: "The Developer will have no obligation to maintain or improve the recreational amenities, open space or common areas after conveyance to an Association."

   *Comment: It must be made very clear that the County of Northumberland is not responsible for maintenance either.*

2. Paragraph B.1.b. states: "Membership in the Association or nonprofit corporation shall be mandatory for all property owners within the Bluff Point PUD governed by such entity."

   *Comment: The wording should be revised to clearly indicate that both residential and commercial property owners shall be members of the Association.*

3. Paragraph B.1.d. states: "The applicable Association or nonprofit corporation shall: (i) manage all common area, recreational and open space and recreational facilities that are within the lands that are subject to the jurisdiction of such Association or nonprofit corporation; (ii) provide for the maintenance, administration and operation of such portions of the Bluff Point PUD and any other lands located within the Bluff Point PUD that it owns; and (iii) secure adequate liability insurance governing such areas owned or operated by such Association or nonprofit corporation.

   *Comment: Since the costs for the maintenance and operation of all facilities owned by the Association will be funded by HOA fees, careful consideration must be given to the total amount of the monthly assessment and the timing of the assessment relative to the Phases of the PUD.*

4. Paragraph C.2. states: "All County permits for stormwater facilities shall be obtained by the Developer prior to Final Development Plan approval. The Developer shall obtain an operating permit for all such stormwater facilities prior to transferring such facility to any homeowners'/property owners' organization."

   *Comment: The condition should clearly state that the operating permit shall be obtained in compliance with current Ordinances and Regulations in effect at the time the permit is issued.*

5. Paragraph E. states: "Off-Street Parking & Loading: Residential development within the Bluff Point PUD shall be subject to the applicable off-street parking and loading required fo such use, pursuant to Article VIV, Section 148-114 of the County Zoning Ordinance.

   *Comment: The reference to the applicable Ordinance Section need to be corrected to read: Article XV, Section 148-126.*

6. Paragraph F. Signage

   *Comment: The maximum height of the permitted sign should be specified.*

7. Paragraph H.4. states: "The marina facility will participate in the Virginia Clean Marina Program. Maintenance of boats permitted at the marina will only be minor maintenance on site (i.e., fluid changes engine tune ups, and similar activity). Bottom painting, structural repairs or renovations and major engine work will not be permitted at the marina.

   *Comment: Since this paragraph deals with the marina, language should be added to address the future maintenance dredging of the basin and the channel. It should be clearly stated that the County is not responsible for any future dredging to maintain the channel depth.*

8. Paragraph H.5. states: "Private docks along the tidal waters are prohibited."

   *Comment: This condition should be revised to include commercially-owned private docks.*

9. Paragraph I.1. states: "All wetlands within the Bluff Point PUD shall be protected with undisturbed buffers of native vegetation approved by the County. Such buffer shall be located between any developed area and such wetlands. Such buffers shall have an average width of fifty (50) feet and a minimum width of twenty five (25) feet. Pedestrian access ways of no more than twenty (20) feet wide may be provided through the wetland buffer."

   *Comment: Non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow are considered a RPA feature per*

*Article III Section 54-8 of the County Ordinance. As such, these wetlands would require a 100-foot vegetated buffer area located adjacent to and landward of the wetlands.*

10. Paragraph I.3. states: "A 200-foot Resource Protection Area along the shoreline will be provided on the property along the Chesapeake Bay except for the approximately 315 linear feet shoreline in front of the proposed Bay Club."

    *Comment: Wording should be added after By Club: "in no case shall the Resource Protection Area be less than 100 feet."*

11. Paragraph K Alternations:

    *Comment: Need to include marina, inland channel and dredged Barnes Creek channel.*

12. Paragraph L. 1. a.

    *Comment: Need to include water treatment plant, wastewater treatment plant, marina, inland channel and dredged Barnes Creek channel.*

13. Paragraph P Water and Wastewater:

    *Comment: Since this project will be constructed in Phases, language should be added to address bonding requirements for the water treatment plant and the wastewater treatment plant starting with the initial phase of the project through the final phase.*

Additional Conditions to be considered:

1. Since the Marina is such an important component of the PUD, a condition of approval of the special exception should be that the applicant submit a Marina Feasibility & Concept Design study.
2. The applicant should hold a pre-application meeting with USACE, VMRC, and DEQ to gain agency concurrence regarding the proposed Marina facility
3. Apply CBPA RPA buffers to all necessary on-site resources in accordance with current DCR standards and secure County and DCR approval.
4. A condition of approval of the Master Plan should include approval by the appropriate agencies of the proposed marina and shoreline stabilization.

# Tab 2

Kerr Environmental
Services Corp.
*Sustainable Ecological Restoration and Environmental Consulting*

August 31, 2011

Mr. Donald G. James, P.E.
AES Consulting Engineers
6421 Canyon Way
Gloucester, Virginia 23061

**Re: Environmental Analysis of Bluff Point Development (±898 acres)**
**Northumberland County, Virginia**

Dear Mr. James,

Kerr Environmental Services Corp. (KES) has completed the analysis of environmental materials provided for the proposed Bluff Point Development in Northumberland County, Virginia. The analysis performed by KES was completed through a review of the information made available by the County regarding the project. This includes the Bluff Point Development Comparison performed by Williamsburg Environmental Group, Inc. (WEG) and dated January 14, 2011; the Bluff Point Evaluation Study performed by Bluff Point Holdings, LLC and dated March 14, 2011; the Ecological Design for Bluff Point prepared by Audubon Environmental and dated November 2009; the Shoreline Protection Feasibility Study conducted by Applied Technology & Management, Inc (ATM) and dated November 2009; the Flushing and Water Quality Analysis performed by ATM and dated November 2009; the Conceptual Dredged Material Management Plan prepared by WEG and dated November 2009; the Bluff Point Shoreline Stabilization Living Shoreline Approach conducted by WEG and dated November 2009; a Bald Eagle Nest Survey conducted by Vanasse Hangen Brustlin, Inc. (VHB) and dated October 28, 2009; and a Northeastern Beach Tiger Beetle Survey conducted by C. Barry Knisley dated August 12, 2009. Other information reviewed in addition to these documents includes wetland delineations and U.S. Army Corps of Engineers (USACE) jurisdictional determinations as well as a Department of Environmental Quality (DEQ) permit for an entrance road to the southern portion of the site. The environmental issues analyzed are discussed as follows:

**Wetland Delineations and Non-tidal Wetland and Water Permits**

Information regarding wetlands and wetland impacts is located in Appendix 9. The following is a summary of that information:

- 287.44 Acres Bay Parcel – USACE Jurisdictional Determination (JD) number NAO#02-L0009 dated May 8, 2002 by WEG for the southern portion of the Bluff Point site at the confluence of Barnes Creek and the Chesapeake Bay identifies tidal and non-tidal wetlands. This JD is expired. Appendix 9 table of contents states there is a renewal dated April 3, 2007, however a copy of this document is not included in the materials provided for review. Please note there is an acreage discrepancy between the USACE JD (225 Acres) and the USACE referenced exhibit by WEG (287.44 Acres).

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- 3.5 Acres Bay Parcel – USACE JD number NAO-06D0023 dated August 2006 by Bury and Partners Virginia, Inc. for 3.5 acres which parallels and bounds the intertidal shoreline. There is a reference to the map titled Bluff Point Wetland Delineation dated May 31, 2006 however, it is not included in the materials provided for review. This JD is expired.

- Central Area and Jarvis Creek Area – USACE JD number NAO-2009-02304 dated October 30, 2009 by WEG for 598 acres bound by VSH 669 and VSH 671 and bisected by VSH 608. The USACE referenced exhibit by WEG identified 318 acres of wetlands, waters, and man-made ditches. The JD is valid until October 30, 2014.

- USACE JD number NAO-2009-02305 is identified as an addendum to JD number NAO-2009-02304, but was performed by VHB. This JD is referenced in the table of contents of Appendix 9 however, no JD or exhibit are provided. A well study was conducted by VHB in 2009. There is no letter from the USACE confirming this determination nor is there an exhibit provided for review.

- Wetland Mitigation and Impacts – Bay Parcel – Department of Environmental Quality VWP Permit WP1-04-2006 issued January 20, 2005 on a 260 acre parcel south of State Route 608 and east of Route 669 bound by the Chesapeake Bay. Permit authorizes impacts to 0.46 ac palustrine forested wetland and 0.03 acres palustrine scrub-shrub wetlands. The permit activity description is the construction of the Bluff Point subdivision with supporting road and utility infrastructure. Compensation for impacts is determined to be a contribution of $53,557.50 to the Virginia Aquatic Resources Trust Fund. There is no record of the mitigation payment or completion of the work in the materials provided. It is unknown whether these wetland impacts were taken and the permit was terminated. This permit expired on January 19, 2008.

- Section 5 of the Bluff Point Evaluation Study estimates environmental impacts to tidal wetlands are 0.41 acre and impacts to non-tidal wetlands are estimated to be 1.54 acres. The study indicates that 0.82 acre of tidal wetlands and 3.08 acres of non-tidal wetlands will be mitigated for on site.

We recommend the applicant provide a master exhibit of the wetland delineations on the property confirmed by the USACE, which identifies the JD numbers and current expiration dates. New wetland delineations will need to be conducted and confirmed by the USACE for the areas with expired JD's. Permits will need to be acquired for any impacts to wetlands on the subject property.

**Beach Replenishment & Stabilization**

The Shoreline Protection Feasibility Study conducted by ATM located in Appendix 8 evaluates five alternatives in order to determine the most feasible and beneficial shoreline stabilization for the area. Detached breakwaters and beach fill (Alternative 1) appear to be the most beneficial and feasible alternative.

Permits for the construction and equipment access will be required from federal state and local agencies to proceed with the beach stabilization, which will require a Joint Permit Application. According to the Shoreline Protection Feasibility Study by ATM, initial consultation and discussions with local and regional regulatory and management personnel from government were held in meetings on January 25, 2008 and November 14-15, 2009. The meetings resulted in a consensus that all proposed shoreline protection alternatives were feasible. The Conceptual Dredged Material Management Plan by WEG states that the sand for beach replenishment will come from dredging the channel for the harbor of the Marina facility which is described below.

**Marina Facility**

The Marina Facility is discussed in Appendix 8. Section 8.1.1 is listed in the table of contents as "Marina Feasibility & Concept Design" however within section 8.1.1 is a copy of the previously discussed Shoreline Protection Feasibility Study. The applicant needs to provide the Marina Study for review.

Section 8.1.2 is a Flushing and Water Quality Analysis prepared by ATM and dated November 2009. This analysis was performed to assist with the permitting process for the Marina facility. Water quality modeling, dissolved oxygen modeling and sediment quality testing were all completed during this study.

The dredging of waters and wetlands of the U.S. and Commonwealth of Virginia will require water quality permits from the federal, state, and local regulatory agencies. The applicant should be asked to advise on whether dredging will cross oyster leases and/or oyster beds or known SAV beds. Historically the Norfolk District of the USACE has been opposed to the dredging of inland waterways. Additionally, permit approvals from the USACE may require the preparation of an Environmental Assessment (EA) by the applicant. Given the complications surrounding inland waterway construction, the rezoning should not be approved until the applicant holds a pre-application meeting with USACE, VMRC, and DEQ at a minimum to verify whether these agencies will view favorably such a facility. If this was a part of meetings with agencies regarding the beach nourishments, the applicant should be asked to prepare a letter summarizing the agencies general opinions/information needs for this facility and whether an EA is necessary. Without interagency consensus the Marina/inland waterway could not be constructed. It is recommended that a condition of the rezoning is included for beach nourishment as well as inland waterway permitting success prior to construction of infrastructure and/or housing. At risk to the County is an approved Master Plan for an inland Marina that cannot be built without interagency approvals. Should the application for the Marina not be approved by the agencies, the applicant should be required to return to the County for an amendment to the Master Plan prior to construction of housing or infrastructure. This is because the Harbor Village commercial development as well as the Marina, two key amenities of the Master Plan, would be undevelopable.

Oyster grounds in any of the dredging areas will need to be inventoried and a Submerged Aquatic Vegetation (SAV) Survey will need to be conducted prior to or during the permitting process.

**Chesapeake Bay Preservation Act (CBPA) Compliance**

Pursuant to the Virginia Department of Conservation and Recreation (DCR) Guidance on the Chesapeake Bay Preservation Area Designation and Management Regulations, dated December 10, 2007, non-tidal wetlands contiguous to tidal wetlands or water bodies with perennial flow require a 100' RPA buffer. No interpretation of resources that will require 100' RPA buffers in accordance with the current CBPA procedures was addressed in any of the materials provided. Therefore, it appears necessary to evaluate the connectivity of all wetlands on the site and apply all necessary 100' RPA buffers pursuant to the 2007 DCR Guidance.

Information regarding aquatic buffer zones is located in the Ecological Design for Bluff Point written by Audubon Environmental and dated November 2009 (located in Appendix 6 of materials provided). The proposed Bluff Point Development intends to participate and qualify for the Audubon International Gold Signature Program. This program promotes sustainable resource management and development practices. Various criteria have to be met and utilized in order to attain the Gold Signature certification, including aquatic buffer zones. A summary of the buffers proposed on site is as follows:

- 200 foot buffer along most uplands fronting the Chesapeake Bay
- 100 foot buffers along most uplands fronting tidal creeks except for water dependent uses
- 50 foot buffers along each side of most intermittent streams
- 50 foot buffers surrounding most non-tidal wetlands and created ponds

The proposed buffers will have to be modified to include a minimum of 100' buffers on all necessary RPA resources in accordance with the current DCR guidance and verified by County or DCR staff.

**Non-Point Source Pollution (relating to inland development)**

A stormwater management plan is incorporated into the Audubon International Gold Signature Program. Sections 4 and 6 of the Ecological Design for Bluff Point provide a detailed description of the stormwater management plan as well as pre and post construction water quality monitoring procedures.

The applicant has proposed that multiple natural areas will be preserved or created on the property. Low Impact Design (LID) methods will be implemented. The Ecological Design for Bluff Point by Audubon Environmental states that the proposed use of the Special Management Zones, Natural Systems Engineering, and Best Management Practices (BMPs) and establishing a water quality monitoring program will help with water quality on the site.

**Protected Species**

The Bald Eagle is protected by the Golden and Bald Eagle Protection Act and is identified as a Federal Species of Concern, a State Threatened species. A Bald Eagle Nest Survey was conducted in 2009 by VHB in coordination with the Center for Conservation and Biology (CCB). Site visits were conducted between May 8 and October 9, 2009 to search for any

evidence of nests or activity on the site. In the report dated November 2009, it was determined that there are no active or abandoned Bald Eagle nests on the site. Bald Eagle surveys are generally valid to reviewing agencies for two years. There is no correspondence from VDGIF in the materials provided for review. Further coordination with VDGIF and USFWS will be necessary concurrently with wetland permitting preparation.

The Northeastern Tiger Beetle is listed as a Federally Threatened Species and was identified on the VDGIF database as having potential to be on the site. A Northeastern Beach Tiger Beetle Survey was conducted by Mr. C. Barry Knisley on July 17, 2009 along the 3,500 foot shoreline on site. No adult beetles were found on the project site. Some small populations of adult beetles were found off-site to the north and south. According to the report, beach stabilization through off-shore breakwaters and beach nourishment would have the potential to increase habitat quality and help reestablish the population. There is no correspondence from USFWS in the materials provided for review. Northeastern Tiger Beetle surveys are generally valid to reviewing agencies for two years. Further coordination with USFWS will be necessary. Time of year restrictions may apply and should be addressed during permitting.

**Historic Resources**

No information regarding Historic Resources has been provided for review. Consultation with the Virginia Department of Historic Resources (VDHR) is recommended.

**Action Items**

- We recommend the applicant provide a master exhibit that includes all wetland delineations on the property confirmed by the USACE, which identifies the JD numbers and current expiration dates.
- Applicant provide the Marina Feasibility & Concept Design study
- Applicant holds a pre-application meeting with USACE, VMRC, and DEQ to gain agency concurrence regarding the proposed Marina facility.
- Apply CBPA RPA buffers to all necessary on-site resources in accordance with current DCR standards and secure County or DCR approval
- Condition the Master Plan pending agency approval of the proposed Marina and Shoreline Stabilization

Sincerely,
**Kerr Environmental Services Corp.**

Robert P. Kerr, VCPWD, PWS, REP
President

Abigail S. Brassfield
Environmental Scientist

# Tab 3

DRW Consultants, LLC
Traffic Impact Studies
Development Access
Condemnation Damages

MEMORANDUM

TO: Don James, AES
FROM: Dexter R.Williams
SUBJECT: Bluff Point Traffic Review Findings To Date
Build Out Of Proposed Bluff Point
DATE: June 1, 2011

I have completed a forecast for build out of the proposed Bluff Point Special Exception consistent with the uses presented in the December 15, 2009 traffic study by VETTRA. Following are my conclusions on the various elements of this build out traffic forecast and related issues:

1. OVERALL BACKGROUND TRAFFIC GROWTH. Peak hour counts were done in 2009. The forecast years are 2019 and 2025 and 2% per year traffic growth without Bluff Point is used in both studies (VETTRA and DRW vary only by round off differences). VDOT daily counts from 2005 to 2009 also show approximately 2% per year traffic growth on a 2009 basis. Correspondence shows VDOT accepts this growth factor approach to background traffic forecast and did not identify any other development with traffic significant enough to add to this background traffic forecast.

2. BLUFF POINT DEVELOPMENT TRIP GENERATION. Peak hour trip generation by VETTRA followed conventional protocols for the identified uses with specific ITE land uses and used reasonable judgment in estimating trip generation for uses for which ITE does not have specific uses. DRW trip generation for the total site is the same as VETTRA.
Off site trip generation for DRW was slightly less than VETTRA because of some difference(s) in internal trip capture: DRW internal trip capture higher that VETTRA. Detailed documentation of VETTRA internal trip capture was not apparent in documents provided.
The key issue with trip generation is the actual nature what appears to be a recreation/vacation based land use: Full suburban-based ITE values are used, whereas the development appears to provide second homes around a water-based recreational environment. The full ITE values probably produce inflated values for weekdays and winter weather weekends.

3. BLUFF POINT TRIP DISTRIBUTION. This component of the traffic forecast has the greatest variation between VETTRA and DRW. Most of this difference involves the assignment of traffic for the Bay and Harbor Area.

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Almost all off site traffic for Bluff Point is assigned to the Rt. 200/Rt. 608 Bluff Point Road intersection by VETTRA and DRW. For the VETTRA distribution of Bay and Harbor Area Traffic, most traffic (80%) is assigned via the Main Entry Road through the Central Area to Bluff Point Road. For the DRW distribution of Bay and Harbor Area Traffic, most traffic (80%) is assigned via Jarvis Point Road to Bluff Point Road.

The Jarvis Point Road route is about 1.2 miles vs. 1.6 miles for the Main Road route, or 0.4 miles and 25% shorter. The Main Entry Road will meander as noted in the streetscape sections narrative, whereas the Jarvis Point Road route to Rt. 200 is relatively straight. Jarvis Point Road pavement is 18 feet wide (9 foot lanes) which is relatively narrow compared to ideal lane width of 12 feet. However, proposed Bluff Point roads aren't much wider with a pavement width of 20 feet shown for Main Entry Road and Rural Roads.

In summary, there is no reason to that the majority of Bay and Harbor Area traffic will use the longer, meandering Main Entry Road route as in the VETTRA study.

4. TRAFFIC LEVELS OF SERVICE (LOS).

The intersection and road link LOS was not much different between DRW and VETTRA. The variation between the Jarvis Point Road route versus the Main Entry Road route had the most effect of changing LOS C to LOS B and LOS B to LOS C as a result of the DRW vs. VETTRA routes.

The only location where LOS results are in excess of capacity is on the Bluff Point Road stop sign-controlled approach to Rt. 200. As cited in the VETTRA study, these results can be improved with signalization at the Rt. 200/Rt. 608 Bluff Point Road intersection. However, the addition of the traffic signal as proposed without additional turn lanes still has lane group volume/capacity (v/c) ratios around 1.0 indicating the limits of capacity.

5. TRAFFIC SIGNAL WARRANTS

The traffic forecast at the Rt. 200/Rt. 608 Bluff Point Road intersection meets traffic signal warrants for full build out of proposed Bluff Point. Correspondence from VDOT indicates a more restrained interpretation of signal warrants that presented in the VETTRA study and concurred by DRW.

6. TURN LANE WARRANTS

VETTRA did not include turn lane warrants for any locations. The DRW forecast (slightly less off site traffic than VETTRA with 80% Bay and Harbor Area routed via Jordan Point Road) warrants the following turn lanes:

1. Northbound Right Turn Lane On Rt. 200 at Rt. 608 Bluff Point Road: Taper warranted for 2009 counts. Full width turn lane warranted by 2025 background forecast as well as Bluff Point build out.
2. Southbound Left Turn Lane On Rt. 200 at Rt. 608 Bluff Point Road: Turn lane warranted by Bluff Point build out.

3. Southbound Left Turn Lane On Rt. 608 Bluff Point Road at Rt. 608 Jordan Point Road: Turn lane warranted by Bluff Point build out.
4. Eastbound Left Turn Lane On Rt. 608 Jordan Point Road At Jarvis Creek Area: Turn lane warranted by Bluff Point build out.

7. QUEUING

Without signalization at the Rt. 200/Rt. 608 Bluff Point Road intersection, DRW Synchro analysis shows westbound, stop sign-controlled queues on Rt. 608 around 1,000 feet or more. With signalization, the westbound queues are reduced to less than 400 feet but queues are created on Rt. 200 in excess of 400 feet.

8. VDOT COMMENTS

The most recent VDOT comments dated May 4, 2011 have been reviewed. At the Rt. 200/Rt. 608 Bluff Point Road intersection, the addition of the northbound right turn lane improves LOS and reduces queues. The addition of the southbound left turn would further improve LOS and reduce queues.

VDOT comments that acceptable two lane LOS does not prove safety are correct. Of more concern than 20 foot wide pavement on Bluff Point Road is the 18 foot pavement width on Jordan Point Road and gravel condition of Monarch Shores Lane.

9. PRIVATE ROADS

A review of private road practices in four more-developed jurisdictions indicate only one would permit the extent of private roads proposed for Bluff Point, and that jurisdiction would require certification that VDOT pavement design standards are met. The width of pavement proposed for private roads is far below VDOT criteria.

10. CONDITIONS PROPOSED BY STAFF

Staff conditions did not include VDOT's specific recommendation for an eastbound (southbound) left turn lane on Rt. 608 Bluff Point Road turning onto Rt. 608 Jarvis Point Road or a northbound right turn lane on Rt. 200 at Rt. 608 Bluff Point Road. Staff conditions also did not include any reference to general improvements to road pavement width and shoulders in the area as generally recommended by VDOT.

11. SUMMARY AND CONCLUSIONS

I find two areas of disagreement with the VETTRA traffic study for the proposed Bluff Point Special Exception:

1. The majority of Bay and Harbor Area traffic will use the shorter, higher speed Jordan Point Road route vs. the longer, meandering Main Entry Road route.
2. Acceptable LOS results do not preclude the need for intersection turn lanes or widening of roads to accommodate increasing traffic.

The greatest area of uncertainty about the traffic impacts of the Bluff Point Special Exception is the likelihood that traffic will not be as high as that assumed in the VETTRA studies and approved by VDOT. VETTRA used conventional, suburban single family trip generation, and Bluff Point's location, Special Exception or not, make it a likely market for recreational, second homes. Documented studies are limited, but recreational homes tend to have much lower weekday trip generation with peak trip generation on a seasonal and weekend basis.

Weekday traffic in particular may be lower, and quite possibly not meet the warrants for a signal at Rt. 200/Rt. 608. This could result in enough traffic for a problem but not enough traffic for a traffic signal solution. The nature of this intersection with its heavy left turns from the side street make it a candidate for a roundabout.

The remaining budget is now allocated for a comparable analysis of the by right development of Bluff Point. If the by right trip generation is comparable in trip generation to the Special Exception, it may be more worthwhile to evaluate a 50% trip generation scenario to clarify what road needs are important for a reduced scale of traffic generation. Even by right development may include significant recreational, second homes.

DRW Consultants, LLC
Traffic Impact Studies
Development Access
Condemnation Damages

MEMORANDUM

TO: Don James, AES
FROM: Dexter R.Williams
SUBJECT: Bluff Point Traffic Review
Comparison Of Proposed And By Right Traffic
DATE: September 1, 2011

## 1. TRIP GENERATION.

The following table compares total trip generation by DRW Consultants, LLC for Bluff Point proposed and by right trip generation:

TABLE ONE: BLUFF POINT TOTAL TRIP GENERATION

| | WEEKDAY | | | SATURDAY | |
|---|---|---|---|---|---|
| | AM Peak | PM Peak | Daily | Peak Hour | Daily |
| PROPOSED | 527 | 690 | 7669 | 801 | 8468 |
| BY RIGHT | 550 | 642 | 6519 | 662 | 7205 |

Total trip generation for by right development is less than the proposed development plan for all periods except the weekday AM peak hour.

The following table compares primary trip generation (total traffic minus internal capture traffic) by DRW Consultants, LLC for Bluff Point proposed and by right trip generation:

TABLE TWO: BLUFF POINT PRIMARY TRIP GENERATION

| | WEEKDAY | | | SATURDAY | |
|---|---|---|---|---|---|
| | AM Peak | PM Peak | Daily | Peak Hour | Daily |
| PROPOSED | 447 | 573 | 6566 | 686 | 7158 |
| BY RIGHT | 454 | 561 | 5568 | 576 | 6315 |

Primary trip generation for by right development is approximately 15% than the proposed development plan for all periods except the weekday AM peak hour. The difference in AM and PM peak hour primary trips is only about 2%.

## 2. TRIP ASSIGNMENTS, TRAFFIC FORECASTS AND TWO LANE ROAD NEEDS.

The following tables compare weekday PM peak hour traffic and Saturday peak hour traffic on

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different sections of roads for proposed and by right development:

TABLE THREE: TWO WAY TRAFFIC - PM PEAK HOUR
VEHICLE PER HOUR (VPH)

| Road Section | 2009 Counts | 2025 W/O Site | Proposed Site (Total) | By Right Site (Total) |
|---|---|---|---|---|
| Rt. 608 Bluff Point Road East Of Rt. 200 | 135 | 185 | 551 (736) | 540 (725) |
| Rt. 608 Bluff Point Road North Of Rt. 669 | 83 | 115 | 551 (666) | 540 (655) |
| Rt. 669 Bluff Point Road South Of Jarvis Pt. Rd. | 76 | 95 | 109 (214) | 199 (304) |
| Rt. 608 Jarvis Point Road East Of Bluff Pt. Rd. | 7 | 10 | 454 (464) | 357 (367) |
| Rt. 608 Jarvis Pt. Rd. East Of Jarvis Creek Area | Same | Same | 288 (298) | 22 (32) |
| Rt. 608 Jarvis Pt. Rd. & Monarch Shores Lane | Same | Same | 379 (389) | 25 (35) |

TABLE FOUR: TWO WAY TRAFFIC - SATURDAY PEAK HOUR

| Road Section | 2009 Counts | 2025 W/O Site | Proposed Site (Total) | By Right Site (Total) |
|---|---|---|---|---|
| Rt. 608 Bluff Point Road East Of Rt. 200 | 137 | 190 | 651 (841) | 548 (738) |
| Rt. 608 Bluff Point Road North Of Rt. 669 | 109 | 151 | 651 (802) | 548 (699) |
| Rt. 669 Bluff Point Road South Of Jarvis Pt. Rd. | 102 | 141 | 130 (271) | 217 (358) |
| Rt. 608 Jarvis Point Road East Of Bluff Pt. Rd. | 7 | 10 | 535 (545) | 351 (361) |
| Rt. 608 Jarvis Pt. Rd. East Of Jarvis Creek Area | Same | Same | 385 (395) | 10 (18) |
| Rt. 608 Jarvis Pt. Rd. & Monarch Shores Lane | Same | Same | 511 (521) | 21 (31) |

Without Bluff Point, traffic on Bluff Point Road is under 200 vph, or roughly 2,000 vehicles per day. VDOT criteria (Road Design Manual, Rural Local Road) require 22 feet of pavement for this range of traffic versus the 20 foot width of Bluff Point Road.

Without Bluff Point, traffic on Jordan Point Road 10 vph, or roughly 100 vehicles per day. VDOT criteria (Road Design Manual, Rural Local Road) require 18 feet of pavement for this range of traffic versus the 18 foot width of Bluff Point Road.

With Bluff Point by right development, traffic on most roads is 304 to 738 vph to 738, or roughly than 3,000 vehicles to 7,000 vehicle per day. VDOT criteria (Road Design Manual, Rural Local Road) require 24 feet of pavement for this range of traffic versus the 18 and 20 foot widths of existing roads. East of the Jarvis Creek Area, Jordan Point Road and Monarch Shores Lane have 35 vph hour or less, or roughly 350 vehicles per day. VDOT criteria (Road Design Manual, Rural Local Road) require 18 feet of pavement for this range of traffic.

With Bluff Point proposed development, the greatest effect over by right development is east of the Jarvis Creek Area. Jordan Point Road and Monarch Shores Lane have 298 to 521 vph.

VDOT criteria (Road Design Manual, Rural Local Road) require 24 feet of pavement for this range of traffic. All remaining roads require 24 feet of pavement like by right conditions. VDOT cited these two lane road design criteria problems with Bluff Point proposed development.

In summary, either development scenario requires overall road upgrades under VDOT criteria. The VETTRA report conclusion that adequate two lane LOS negates the need for road improvements ignores fundamental issues of adequate pavement width for vehicle clearance. In particular, the 18 foot width of Jordan Point Road is the most deficient. The proposed development plan creates new two lane road needs over by right development for Jarvis Point Road east of Jarvis Creek Area and Monarch Shores Lane.

## 3. UNSIGNALIZED INTERSECTION LEVEL OF SERVICE (LOS)

The following table shows unsignalized intersection LOS for the stop controlled westbound movements at Rt. 200/Rt. 608 and Rt. 608/Rt. 669:

TABLE FIVE: UNSIGNALIZED LOS –
STOP CONTROLLED WESTBOUND MOVEMENTS –

| Intersection Approach | | 2009 | 2025 | Proposed | By Right |
|---|---|---|---|---|---|
| WB Rt. 608 Bluff Point Road At Rt. 200 | AM | C 15 | C 24 | F 567 | F 588 |
| WB Rt. 608 Jarvis Point Road At Bluff Pt. Rd. | | A 9 | A 9 | C 23 | C 20 |
| WB Rt. 608 Bluff Point Road At Rt. 200 | PM | B14 | C 18 | F 271 | F 262 |
| WB Rt. 608 Jarvis Point Road At Bluff Pt. Rd. | | A 9 | A 9 | B 14 | B 13 |
| WB Rt. 608 Bluff Point Road At Rt. 200 | SAT | B 13 | C 18 | F 554 | F 381 |
| WB Rt. 608 Jarvis Point Road At Bluff Pt. Rd. | | A 9 | A 9 | C 16 | C 17 |

Notes: Numeric values in seconds delay, with increasing value for decreasing LOS.

Without Bluff Point Development, LOS is in acceptable range (LOS A through D). With proposed or by right Bluff Point development, the Rt. 608 Bluff Point Road westbound approach to Rt. 200 has LOS F with over four to nearly 10 minute delay, an obvious problem. The Rt. 608 Jarvis Point Road approach to Bluff Point Road has LOS C or better for both Bluff Point Scenarios.

## 4. INTERSECTION TURN LANE WARRANTS

The VETTA report did not include any turn lane warrant analysis and it is unclear why turn lane warrant analysis was not required by VDOT to be included in the study. VDOT comments did include mention turn lane requirements.

The following two tables present northbound right turn lane and southbound left turn lane warrants on Rt. 288 at Rt. 608 Bluff Point Road:

FIGURE 1: NORTHBOUND RT. 200 AT RT. 608 BLUFF POINT ROAD
RIGHT TURN LANE WARRANTS - 2025 BY RIGHT

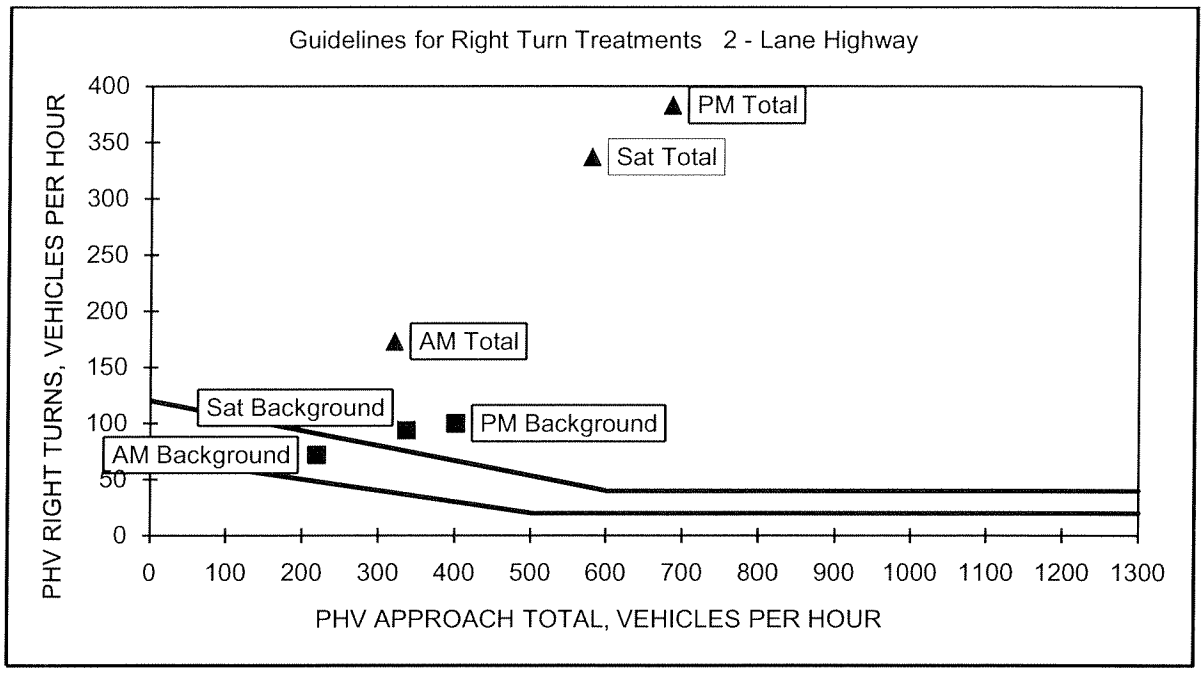
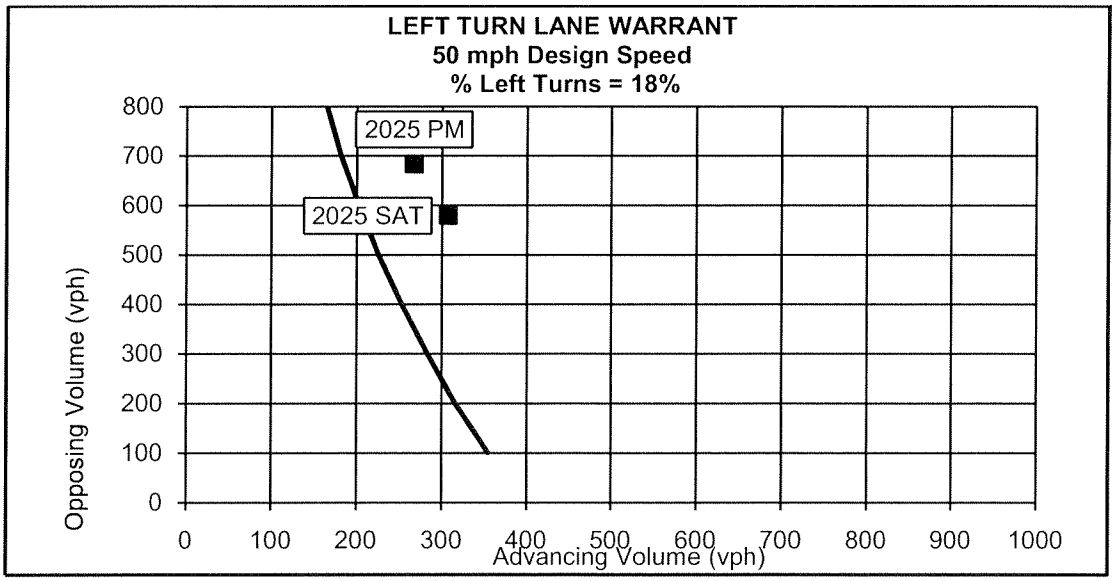



FIGURE 2: SOUTHBOUND RT. 200 AT RT. 608 BLUFF POINT ROAD
LEFT TURN LANE WARRANTS - BY RIGHT




Only by right warrants are shown because proposed development warrants only increase gap above threshold.

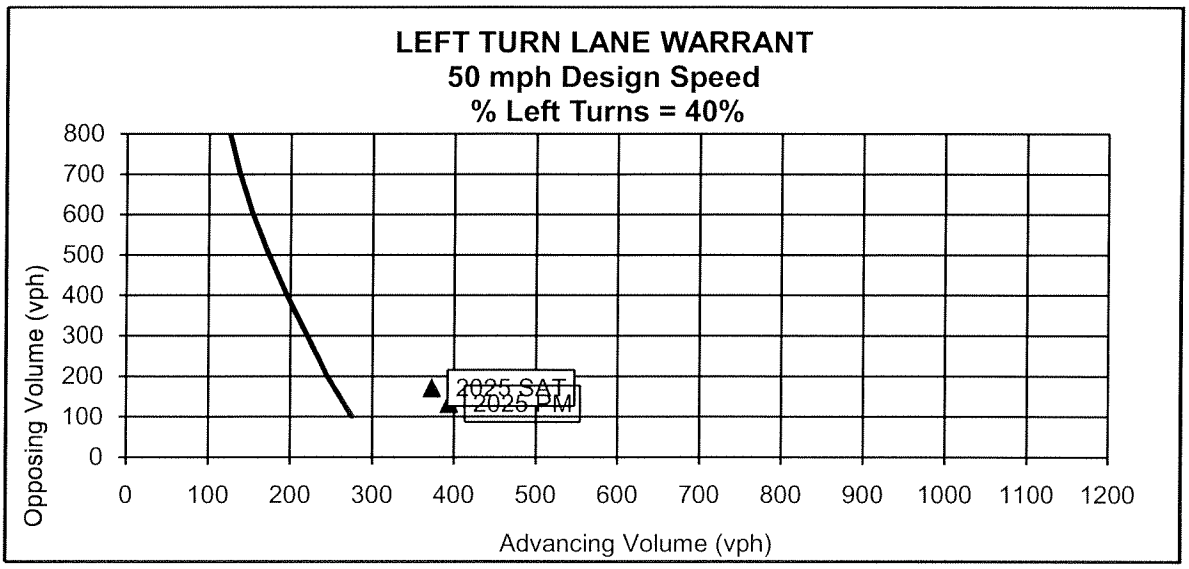
Figure One shows that the northbound right turn lane is warranted for 2025 traffic for PM and Saturday background traffic (without Bluff Point). With Bluff Point development (TOTAL), traffic is over three times the threshold for a northbound right turn lane warrant.

Figure Two shows that the southbound left turn lane is warranted with Bluff Point development. The southbound left turn lane is not warranted without Bluff Point development.

There are no turn lane warrants for stop controlled approaches such as westbound Rt. 608Bluff Point Road at Rt. 200. With Bluff Point development, an additional approach lane is an obvious improvement.

The following figure shows the left turn lane warrant for southbound Bluff Point Road at Jarvis Point Road:

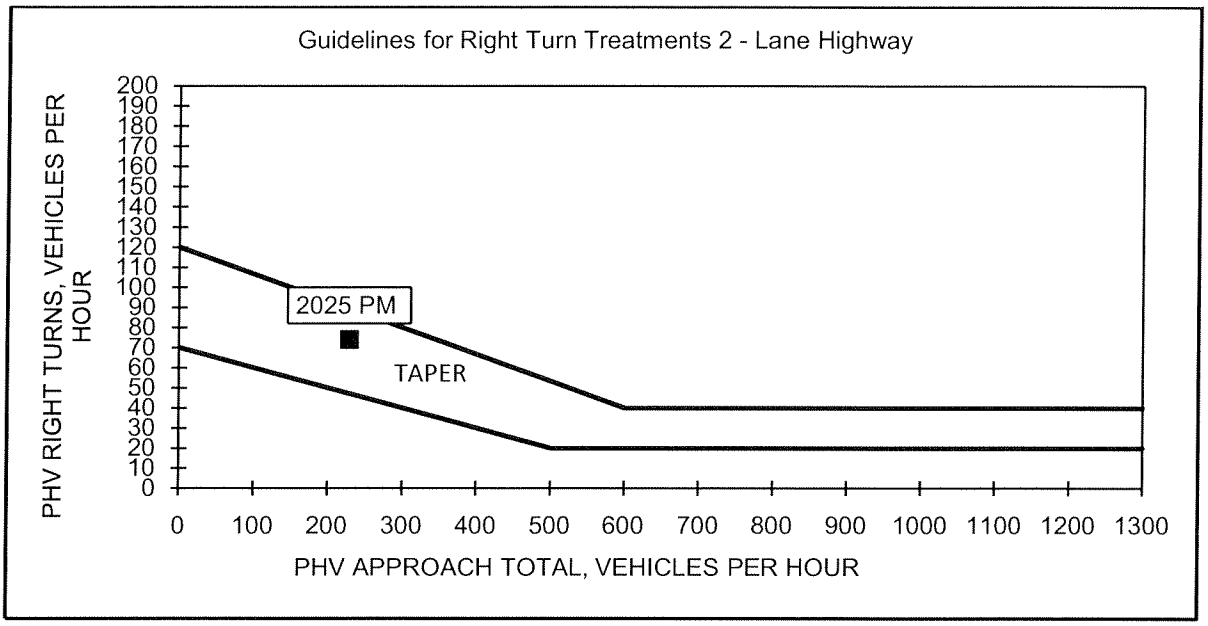
FIGURE 3: SOUTHBOUND RT. 608 BLUFF POINT ROAD AT JARVIS POINT ROAD
LEFT TURN LANE WARRANTS - BY RIGHT




By right development is shown because proposed development exceeds the by right values. A left turn lane is warranted on southbound Bluff Point Road at Jarvis Point Road.

The following table shows right turn lane warrants for eastbound Jarvis Point Road at the Bluff Point Central Area under by right development:

FIGURE 4: EASTBOUND JARVIS POINT ROAD AT CENTRAL AREA
RIGHT TURN LANE WARRANTS - BY RIGHT




A right turn taper is warranted on eastbound Jarvis Point Road at the Central Area for by right development. Only a right turn radius is warranted for proposed development.

## 5. RT. 200/RT. 608 SIGNALIZED LOS, QUEUING AND TURN LANE OPTIONS

VETTRA presented a signal warrant analysis for Bluff Point proposed development that concluded full development of Bluff Point would warrant a traffic signal at Rt. 200/Rt. 608. VDOT concurred with this conclusion. VETTRA also concluded that no additional turn lanes were justified because LOS results were acceptable. VDOT concurred with no additional southbound left turn lane, but cited the need for a northbound right turn lane.

The following table shows signalized intersection LOS without any additional turn lanes and resulting queues in feet:

TABLE SIX: SIGNALIZED INTERSECTION LOS AND 95TH PERCENTILE QUEUES
RT. 200/RT. 608 BLUFF POINT ROAD - EXISTING LANE CONFIGURATION

| | LOS | | Westbound Q | | Northbound Q | | Southbound Q | |
|---|---|---|---|---|---|---|---|---|
| | Prop. | By Right | Prop. | By Right | Prop. | By Right | Prop. | By Right |
| WEEK DAY AM | D 47 | D 50 | 277 | 281 | 225 | 227 | 354 | 364 |
| WEEK DAY PM | C 27 | C 26 | 261 | 261 | 485 | 475 | 139 | 137 |
| SATURDAY | D 53 | D 37 | 383 | 288 | 440 | 391 | 354 | 320 |

Notes: LOS numeric values in seconds delay, with increasing value for decreasing LOS. Queues in feet.

While overall LOS is in the acceptable range, the maximum queues on all approaches range from 364 to 485 feet. As noted previously, northbound and southbound left turn lanes are warranted on Rt. 200. There is no definitive turn lane warrant for the westbound Rt. 208 approach.

The following table presents the effects of adding the northbound right turn lane and the southbound left turn lane for the Saturday peak hour:

TABLE SEVEN: SIGNALIZED INTERSECTION LOS AND 95TH PERCENTILE QUEUES
RT. 200/RT. 608 BLUFF POINT ROAD
NORTHBOUND RIGHT TURN LANE
AND SOUTHBOUND LEFT TURN LANE

| | LOS | | Westbound Q | | Northbound Q | | Southbound Q | |
|---|---|---|---|---|---|---|---|---|
| | NB RT Only | NB RT & SB LT | NB RT Only | NB RT & SB LT | NB RT Only | NB RT & SB LT | NB RT Only | NB RT & SB LT |
| SATURDAY | C 23 | B 20 | 278 | 228 | 151 | 155 | 220 | 162 |

Notes: LOS numeric values in seconds delay, with increasing value for decreasing LOS. Queues in feet.

Additional turn lanes improve LOS and shorten queues by hundreds of feet.

## 6. CONCLUSIONS AND COMMENTARY

**A. CERTAINTY OF FORECAST.** The trip generation factors used in this report are derived from suburban conditions and are reliable for use in typical suburbs. Northumberland County is not a suburban county and Bluff Point, proposed or by right, may have a substantial number of vacation homes. Saturday trip generation in this report may occur for warm weather vacation periods, but weekday traffic may be appreciably less than the forecast.

**B. RIGHT OF WAY NEEDS.** All of the identified road needs in this report appear to require right of way. For right of way outside of Bluff Point Frontage, reasonable offers can be made but condemnation is probably necessary for turn lanes and VDOT standard two lane roads. Pavement widening to 20 or 22 feet without appreciable shoulders may be achieved within 30 foot prescriptive easements.

**C. DEVELOPMENT RESPONSIBLITIES.** Under by right development, very little can be required for right of way dedication or contribution to offsite improvements. For rezoning of proposed development, proffer negotiations are open.

**D. PROPOSED VS. BY RIGHT IMPACTS.** Road needs from Rt. 200 to the first access points to Bluff Point under either plan are the same. The proposed development plan creates road needs on the eastern end of Jarvis Point Road and Monarch Shores Lane that the by right development does not. Improving these road sections to VDOT standards is a need directly resulting from the proposed development plan.

**E. RT. 200/RT. 608 INTERSECTION.** The traffic signal solution at this intersection was warranted only for build out, and may never be warranted if weekday trip generation is less

than suburban standards. The result could be too much traffic for stop sign control but not enough for a traffic signal. Turn lanes are likely to be warranted in the future even without all of Bluff Point.

A traffic signal is not warranted today or in the near future. The County and VDOT should consider a roundabout for this location. This two lane road intersection configuration is a good candidate for a roundabout. It could also be implemented to address existing traffic complaints without waiting for substantial increases in traffic to warrant a signal.

**F. PRIVATE STREETS.** The private street network in the proposed development plan would not be permitted in four counties surveyed: Chesterfield, Henrico, Hanover and James City County. Citizen complaints about poorly maintained private road typically continue until public funds are spent to take roads under public maintenance.