



STATE OF DELAWARE
EXECUTIVE DEPARTMENT
OFFICE OF STATE PLANNING COORDINATION

August 30, 2016

Ashton McLaughlin, P.E.
Davis, Bowen & Friedel, Inc.
23 North Walnut Street
Milford, DE 19963

RE: PLUS review 2016-07-04, Harbourtowne

Dear Ashton,

Thank you for meeting with State agency planners on July 27, 2016 to discuss the Harbourtowne project. According to the information received, you are seeking a review of a 335 unit subdivision on 146.15 acres along Market St. in Frederica.

Please note that changes to the plan, other than those suggested in this letter, could result in additional comments from the State. Additionally, these comments reflect only issues that are the responsibility of the agencies represented at the meeting. **The developers will also need to comply with any Federal, State and local regulations regarding this property. We also note that as the Town of Frederica is the governing authority over this land, the developers will need to comply with any and all regulations/restrictions set forth by the Town as well as Kent County.**

Strategies for State Policies and Spending

- This project is located in Investment Level 1 according to the *Strategies for State Policies and Spending*. Investment Level 1 reflects areas that are already developed in an urban or suburban fashion, where infrastructure is existing or readily available, and where future redevelopment or infill projects are expected and encouraged by State policy. Thus, the Office of State Planning Coordination has no objections to this subdivision.

Code Requirements/Agency Permitting Requirements

Department of Transportation – Contact Bill Brockenbrough 760-2109

- The site access on Market Street must be designed in accordance with DelDOT's Development Coordination Manual (formerly the Standards and Regulations for Subdivision Streets and State Highway Access), which is available at

<http://www.deldot.gov/information/business/subdivisions/changes/index.shtml>. The subdivision streets should be designed in accordance with Town of Frederica standards.

- Pursuant to Section P.3 of the Manual, a Pre-Submittal Meeting is required before plans are submitted for review. The form needed to request the meeting and guidance on what will be covered there and how to prepare for it is located at http://www.deldot.gov/information/business/subdivisions/Meeting_Request_Form.pdf. This meeting was held on June 15, 2016.
- Referring to Sections P. 5 and also, respectively Sections 3.4.2 and 4.3 of the Development Coordination Manual, the Initial Stage review fee and the Construction Stage review fee shall be assessed to this project. DelDOT anticipates collecting the Initial Stage Fee when the record plan is submitted for review and the Construction Stage Fee when the entrance plan is submitted for review.
- Per Section 2.2.2.1 of the Development Coordination Manual, Traffic Impact Studies (TIS) are warranted for developments generating more than 500 vehicle trip ends per day or 50 vehicle trip ends per hour in any hour of the day. The 2,702 vehicle trip ends per day shown on the PLUS application suggests that the subject development would meet these warrants.
- In 2006, a TIS was completed for the subject development and on December 22, 2006, DelDOT sent the Town our comments on that study. At the June 15, 2016, Pre-Submittal Meeting, DelDOT, the developer and the developer's engineer reviewed those comments. Because the 2006 study found minimal congestion in Frederica at that time, several previously approved developments west of Frederica have since been sunset and DelDOT's grade separation projects along Delaware Route 1 have continued to advance, DelDOT determined that several improvements they had recommended in 2006 were no longer necessary and that a new TIS was not needed. Their revised recommendations are provided in the enclosed letter dated July 29, 2016.
- Section 3.2.4.2 of the Manual addresses the placement of right-of-way monuments (markers) along the roads on which a property fronts, in this case Market Street. Monuments sufficient to re-establish the permanent rights-of-way after the dedication discussed below should be shown on the plan and provided in the field in accordance with this section.
- As necessary, in accordance with Section 3.2.5 and Figure 3.2.5-a of the Development Coordination Manual, DelDOT will require dedication of right-of-way along the site's frontage on Market Street. By this regulation, this dedication is to provide a minimum of 30 feet of right-of-way from the physical centerline on Market Street. The following right-of-way dedication note is required, **"An additional X-foot width is hereby dedicated to the State of Delaware, as per this plat."**

- In accordance with Section 3.2.5.1.2 of the Development Coordination Manual, DelDOT will require the establishment of a 15-foot wide permanent easement across the property frontage on Market Street. The location of the easement shall be outside the limits of the ultimate right-of-way. The easement area can be used as part of the open space calculation for the site. The following note is required, “**A 15-foot wide permanent easement is hereby established to the State of Delaware, as per this plat.**”
- In accordance with Section 3.4 of the Development Coordination Manual, a record plan shall be prepared prior to issuing “Letter of No Objection”. The following information will be required for the “Letter of No Objection” review:
 - Initial Stage Fee Calculation Form
 - Initial Stage Review Fee
 - Gate-Keeping Checklist – Site Plan
 - Design Checklist - Record Plan
 - Sight Distance Spreadsheet
 - Owners and Engineers’ name and e-mail address
 - Record Plan
 - Conceptual Entrance Plan
 - Submission of the Area-Wide Study Fee (If applicable)
- Referring to Section 3.4.2.1 of the Development Coordination Manual, the following items, among other things, are required on the Record Plan:
 - A Traffic Generation Diagram. See Figure 3.4.2-a for the required format and content.
 - Depiction of all existing entrances on Market Street within 300 feet of the property lines.
 - Notes identifying the type of off-site improvements, agreements (signal, letter) contributions and when the off-site improvements are warranted.
- Section 3.5.4.2 of the Development Coordination Manual addresses requirements for shared-use paths and sidewalks. Projects located in Level 1 and 2 Investment Areas are required to install a shared-use path or sidewalk along the State-maintained road frontage. Where a physical impossibility exists, we will accept a fee in lieu. While further review will be necessary, an impossibility may exist south of the sewer lift station. Where the property frontage is interrupted by an outparcel, we will require the developer to make reasonable efforts to complete the sidewalk but will not require that it be completed if the owner of the intervening parcel will not cooperate in this regard.
- Referring to Section 4.3 of the Development Coordination Manual, an entrance plan shall be prepared prior to issuing entrance approval. The following information will be required for Entrance Plan review:
 - Construction Stage Fee Calculation Form

- Construction Review Fee
- Gate-Keeping Checklist – Entrance Plan
- Design Checklist - Entrance Plan
- Auxiliary Lane Spreadsheet
- Entrance Plan
- Pipe/Angle Spreadsheet (If applicable)
- SWM Report and Calculations (If applicable)
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- In accordance with Section 5.2.5.6 of the Development Coordination Manual, Turning Movement Diagrams shall be provided to verify vehicles can safely enter and exit the site entrance. As per Section 5.2.3 of the Manual, the entrance shall be designed for the largest vehicle using the entrance.
- In accordance with Section 5.2.9 of the Development Coordination Manual, the Auxiliary Lane Worksheet should be used to determine whether auxiliary lanes are warranted at the site entrance and how long those lanes should be. The worksheet can be found at http://www.deldot.gov/information/business/subdivisions/Auxiliary_Lane_Worksheet.xlsm?111215.
- In accordance with Section 5.4 of the Development Coordination Manual, sight distance triangles are required and shall be established in accordance with American Association of State Highway and Transportation Officials (AASHTO) standards. A spreadsheet has been developed to assist with this task. It can be found at <http://www.deldot.gov/information/business/subdivisions/Intersection-Sight-Distance.xls>.
- In accordance with Section 5.14 of the Development Coordination Manual, all existing utilities must be shown on the plan and a utility relocation plan will be required for any utilities that need to be relocated.
- Section 7.7.2 of the Manual addresses the need to provide 20-foot wide drainage easements for all storm drainage systems, open or closed, that fall outside the existing right-of-way or the drainage/utility easement. In accordance with this section, metes and bounds and total areas need to be shown for any drainage easements. The easements should be shown and noted on the record plan.

Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352

Executive Summary.

The Department recognizes and appreciates the efforts by the applicant/developer to avoid the sensitive habitat in the southern portion of the project parcel. However, there remain several opportunities to conserve and protect that habitat, improve water quality, and reduce greenhouse gas emissions.

A significant area of the northern portion of the project falls within an excellent groundwater recharge potential area for the Town of Frederica, with stormwater management facilities sited within it. There are a number of concerns with this scenario and DNREC recommends relocating them or pretreating the stormwater to remove the dissolved load of contaminants.

Parklands, Key Wildlife Habitat and rare species are among the concerns we have for this parcel. Both the Murderkill River Nature Preserve, which is Delaware State-owned Land, and the Hollager Tract of the Milford Neck Wildlife Area, a State Wildlife Area managed by the DNREC Division of Fish and Wildlife are either adjacent or within a close proximity to the project parcel. Furthermore, portions of the planned development parcel lie within an area that will be subject to direct and permanent inundation from sea level rise.

The State of Delaware is threatened by climate change and has a goal of reducing greenhouse gas emissions by 30 percent by 2030. Appropriate development and re-development that provides access to public transportation, opportunities to walk and bike to shopping and recreation, and that employs energy efficient building standards are among key strategies to meet these goals. We encourage the applicant to provide pedestrian recreational facilities (i.e. multi-use path) where practical. We also encourage the use of high performance building standards and consideration of alternative energy sources to promote clean sustainable energy and reduce greenhouse gas emissions. We further recommend an abundant use of native vegetation and shade trees throughout the landscape, as well as green infrastructure, where practicable, to absorb carbon dioxide, protect water quality and provide relief to residents on hot days.

The following pages provide information about applicable regulations and detailed recommendations associated with this project, from various DNREC Divisions. We would like to be a partner in creating appropriate development that protects and highlights the environment as a natural amenity of the landscape. The Department has resources and expertise that are available to help make this a reality, often at no expense to the landowner. Contact information for specific offices are listed below or you can contact Michael Tholstrup at (302) 735-3352.

TMDLs.

- The project is located in the greater Delaware River and Bay drainage area, specifically within the Murderkill River watershed. In this watershed, the State of Delaware has developed specific Total Maximum Daily Load (TMDL) pollutant reduction targets for nitrogen, phosphorus, and bacteria (under the auspices of Section 303(d) of the Clean Water Act). The TMDL for the Murderkill River watershed calls for a 30 percent reduction in nitrogen and a 50 percent reduction in phosphorus from baseline conditions. The TMDL also calls for a 32 percent reduction in bacteria from baseline conditions (65% reduction in marine waters). A TMDL is the maximum level of pollution allowed for a given pollutant below which a “water quality limited waterbody” can assimilate and still meet State water quality standards (e.g., dissolved oxygen, nutrients, and bacteria; State of Delaware Surface Water Quality Standards, as amended July 11, 2004) to the extent necessary to support use goals such as, swimming, fishing, drinking water and shell fish harvesting.

- A nutrient management plan is required under the *Delaware Nutrient Management Law* (3 Del.C., Chapter 22) for all persons or entities who apply nutrients to lands or areas of open space in excess of 10 acres. Please contact the Delaware Nutrient Management Program at (302) 739-4811 for further information concerning compliance requirements, or view additional information online: <http://dda.delaware.gov/nutrients/index.shtml>

Flood Management.

- The Concept Plan – Title Sheet dated 6/30/16, references the four 2003 FEMA Flood Insurance Rate Map (FIRM) panels that this parcel is located on. All four of these panels have been updated by FEMA. The current effective FIRMs, dated 7/7/2014, may be viewed and the DFIRM data downloaded at www.msc.fema.gov. Both Kent County and the Town of Frederica have floodplain ordinances that reference these maps.

The boundary hasn't changed drastically, but the concept plans should be revised to depict the current, effective FEMA floodplain boundary. Any parcel located in the floodplain will be required by a mortgage company to purchase flood insurance. This is typically the case even if a small portion of the parcel is in the floodplain, but the structure is not.

Water Supply.

- The project information sheets state that water will be provided to the project by the Town of Frederica via a public water system. Our records indicate that the project is located within the public water service area granted to the annexation and the Town of Frederica under Certificate of Public Convenience and Necessity 93-CPCN-06.
- Should dewatering points be needed during any phase of construction, a dewatering well construction permit must be obtained from the Water Supply Section prior to construction of the well points. In addition, a water allocation permit will be needed if the pumping rate will exceed 50,000 gallons per day at any time during operation.

All well permit applications must be prepared and signed by licensed water well contractors, and only licensed well drillers may construct the wells. Please factor in the necessary time for processing the well permit applications into the construction schedule. Dewatering well permit applications typically take approximately four weeks to process, which allows the necessary time for technical review and advertising. Should you have any questions concerning these comments, please contact Rick Rios, at (302) 739-9944.

Sediment and Erosion Control/Stormwater Management.

- A detailed sediment and stormwater plan will be required prior to any land disturbing activity taking place on the site. Contact the reviewing agency to schedule a pre-application meeting to discuss the sediment and erosion control and stormwater management components of the plan. The site topography, soils mapping, pre- and post-

development runoff, and proposed method(s) and location(s) of stormwater management should be brought to the meeting for discussion. The plan review and approval as well as construction inspection will be coordinated through the Kent Conservation District. Contact Jared Adkins, Program Manager, at (302) 741-2600, ext. 3, for details regarding submittal requirements and fees.

Air Quality.

- The applicant shall comply with all applicable Delaware air quality regulations. Please note that the following regulations in Table 1 – Potential Regulatory Requirements may apply to your project:

Table 1: Potential Regulatory Requirements	
Regulation	Requirements
7 DE Admin. Code 1106 - Particulate Emissions from Construction and Materials Handling	<ul style="list-style-type: none"> • Use dust suppressants and measures to prevent transport of dust off-site from material stockpile, material movement and use of unpaved roads. • Use covers on trucks that transport material to and from site to prevent visible emissions.
7 DE Admin. Code 1113 – Open Burning	<ul style="list-style-type: none"> • Prohibit open burns statewide during the Ozone Season from May 1-Sept. 30 each year. • Prohibit the burning of land clearing debris. • Prohibit the burning of trash or building materials/debris.
7 DE Admin. Code 1135 – Conformity of General Federal Actions to the State Implementation Plan	<ul style="list-style-type: none"> • Require, for any “federal action,” a conformity determination for each pollutant where the total of direct and indirect emissions would equal or exceed any of the de minimus levels (See Section 3.2.1)
7 DE Admin. Code 1141 – Limiting Emissions of Volatile Organic Compounds from Consumer and Commercial Products	<ul style="list-style-type: none"> • Use structural/ paint coatings that are low in Volatile Organic Compounds. • Use covers on paint containers when paint containers are not in use.
7 DE Admin. Code 1144 – Control of Stationary Generator Emissions	<ul style="list-style-type: none"> • Ensure that emissions of nitrogen oxides (NO_x), non-methane hydrocarbons (NMHC), particulate matter (PM), sulfur dioxide (SO₂), carbon monoxide (CO), and carbon dioxide (CO₂) from emergency generators meet the emissions limits established. (See section 3.2). • Maintain recordkeeping and reporting requirements.
7 DE Admin. Code 1145 – Excessive Idling of Heavy Duty Vehicles	<ul style="list-style-type: none"> • Restrict idling time for trucks and buses having a gross vehicle weight of over 8,500 pounds to no more than three minutes.

For a complete listing of all Delaware applicable regulations, please look at our website:
<http://www.awm.delaware.gov/AQM/Pages/AirRegulations.aspx>.

Tank Management.

- If a release of a Regulated Substance occurs at the proposed project site, compliance with 7 Del.C., Chapter 60; 7 Del.C., Chapter 74; and DE Admin. Code 1351, State of Delaware *Regulations Governing Underground Storage Tank Systems* (the UST Regulations) is required.

The following (LUST) projects are located within a quarter mile from the proposed project area:

- Federica Pumping Station ID: 1-000664, Project: K9902042, (Inactive)
- Former Robbins Hardware Facility ID: 1-000593, Project: K0004047, (Inactive)

Per the UST Regulations: Part E, § 1. Reporting Requirements: Any indication of a Release of a Regulated Substance that is discovered by any Person, including but not limited to environmental consultants, contractors, utility companies, financial institutions, real estate transfer companies, UST Owners or Operators, or Responsible Parties shall be reported within 24 hours to:

- The Department's 24-hour Release Hot Line by calling (800) 662-8802; and
- The DNREC Tank Management Section by calling (302) 395-2500.

When contamination is encountered, PVC pipe materials should be replaced with ductile steel and nitrile rubber gaskets in the contaminated areas. If any aboveground storage tanks (ASTs) less than 12,500 gallons are installed, they must be registered with the DNREC Tank Management Section. If any ASTs greater than 12,500 gallons are installed, they are also subject to installation approval by the TMS. For more information, please visit online: <http://www.dnrec.delaware.gov/tanks/Pages/default.aspx> or contact Ross D. Elliott further questions at (302) 395-2500.

State Historic Preservation Office – Contact Terrence Burns 736-7404

- There are known archaeological sites (K-636, K-766, & K-767) on this parcel and it is adjacent to the Frederica Historic District (K-322) which is listed in the National Register of Historic Places. With this in mind, the developer should be aware of the Unmarked Human Burials and Skeletal Remains Law, in Title 7, Chapter 54, of the Delaware Code.

Abandoned or unmarked family cemeteries are very common in the State of Delaware. They are usually in rural or open space areas, and sometimes near or within the boundary of an historic farm site. Even a marked cemetery can frequently have unmarked graves or burials outside of the known boundary line or limit. Disturbing unmarked graves or burials triggers the Delaware's Unmarked Human Burials and Human Skeletal Remains Law (7 Del. C. Ch. 54), and such remains or discoveries can result in substantial delays

while the procedures required under this law are carried out. If there is a discovery of any unmarked graves, burials or a cemetery, it is very costly to have them archaeologically excavated and the burials moved. The Division of Historical & Cultural Affairs recommends that owners and/or developers have a qualified archaeological consultant investigate their project area, to the full extent, to see if there is any unmarked cemetery, graves, or burial sites. In the event of such a discovery, the Division of Historical & Cultural Affairs also recommends that the plans be re-drawn to leave the full extent of the cemeteries or any burials on its own parcel or in the open space area of the development, with the responsibility for its maintenance lying with the landowner association or development. If you would like to know more information pertaining to unmarked human remains or cemeteries, please go to the following websites for additional information: www.history.delaware.gov/preservation/umhr.shtml and www.history.delaware.gov/preservation/cemeteries.shtml.

Therefore, prior to any demolition or ground-disturbing activities, the developer should hire an archaeological consultant, to examine the parcel for archaeological resources and plan to avoid those areas, or to recover data from sites that cannot be avoided. The developer should also include sufficient landscaping around this parcel, such as a buffer to protect the Frederica Historic District (K-322) from adverse noise or visual effects. If there is any federal involvement with the project, in the form of licenses, permits, or funds, the federal agency through its client, is responsible for complying with Section 106 of the National Historic Preservation Act (36 CFR 800) and must consider their project's effects on any known or potential cultural or historic resources. Owners and developers who may plan to apply for an Army Corps of Engineers permit or for federal funding, such as HUD or USDA grants, should be aware of the National Historic Preservation Act of 1966 (as amended). Regulations promulgated for Section 106 of this Act stipulate that no ground-disturbing or demolition activities should take place before the Corps or other involved federal agency determines the area of potential effect of the project undertaking. These stipulations are in place to allow for comment from the public, the Delaware State Historic Preservation Office, and the Advisory Council for Historic Preservation about the project's effects on historic properties. Furthermore, any preconstruction activities without adherence to these stipulations may jeopardize the issuance of any permit or funds. If you need further information or additional details pertaining to the Section 106 process and the Advisory Council's role, please review the Advisory Council's website at www.achp.gov.

Delaware State Fire Marshall's Office – Contact Duane Fox 739-4394

At the time of formal submittal, the applicant shall provide; completed application, fee, and three sets of plans depicting the following in accordance with the Delaware State Fire Prevention Regulation:

- **Fire Protection Water Requirements:**
 - For the area where Townhouses will be constructed, water distribution system capable of delivering at least 1000 gpm for 1-hour duration, at 20-psi residual

pressure is required and fire hydrants with 800 feet spacing on centers. Where the hydrants only serve single family dwellings, they are permitted to be extended to 1000 feet on center.

- Where a water distribution system is proposed for townhouse type dwelling sites, details of the infrastructure for fire protection water shall be provided, including the size of water mains.

- **Fire Protection Features:**

- For townhouse buildings, provide a section / detail and the UL design number of the 2-hour fire rated separation wall on the Site plan

- **Accessibility:**

- All premises, which the fire department may be called upon to protect in case of fire, and which are not readily accessible from public roads, shall be provided with suitable gates and access roads, and fire lanes so that all buildings on the premises are accessible to fire apparatus. This means that the access road to the subdivision from Market Street must be constructed so fire department apparatus may negotiate it. If a “center island” is placed at an entrance into the subdivision, it shall be arranged in such a manner that it will not adversely affect quick and unimpeded travel of fire apparatus into the subdivision.
- Fire department access shall be provided in such a manner so that fire apparatus will be able to locate within 100 ft. of the front door.
- Any dead end road more than 300 feet in length shall be provided with a turn-around or cul-de-sac arranged such that fire apparatus will be able to turn around by making not more than one backing maneuver. The minimum paved radius of the cul-de-sac shall be 38 feet. The dimensions of the cul-de-sac or turn-around shall be shown on the final plans. Also, please be advised that parking is prohibited in the cul-de-sac or turn around.
- The use of speed bumps or other methods of traffic speed reduction must be in accordance with Department of Transportation requirements.
- The local Fire Chief, prior to any submission to our Agency, shall approve in writing the use of gates that limit fire department access into and out of the development or property.

- **Gas Piping and System Information:**

- Provide type of fuel proposed, and show locations of bulk containers on plan.

- **Required Notes:**

- Provide a note on the final plans submitted for review to read “ All fire lanes, fire hydrants, and fire department connections shall be marked in accordance with the Delaware State Fire Prevention Regulations”
- Proposed Use
- Square footage of each structure (Total of all Floors)
- National Fire Protection Association (NFPA) Construction Type

- Maximum Height of Buildings (including number of stories)
- Name of Water Provider
- Letter from Water Provider approving the system layout
- Townhouse 2-hr separation wall details shall be shown on site plans
- Provide Road Names, even for County Roads

Recommendations/Additional Information

This section includes a list of site specific suggestions that are intended to enhance the project. These suggestions have been generated by the State Agencies based on their expertise and subject area knowledge. **These suggestions do not represent State code requirements.** They are offered here in order to provide proactive ideas to help the applicant enhance the site design, and it is hoped (**but in no way required**) that the applicant will open a dialogue with the relevant agencies to discuss how these suggestions can benefit the project.

Department of Transportation – Contact Bill Brockenbrough 760-2109

- Section 3.5 of the Manual provides connectivity requirements for development projects having access to state roads or proposing DelDOT maintained public roads for subdivisions. Private or municipal streets, as proposed for this project, should follow the local land use agency's requirements for connectivity. That said, DelDOT supports the proposed connection to Jackson Avenue because it will help to integrate the proposed development with the rest of the community and provide for shorter trips between adjoining neighborhoods. The developer should work with the Town to improve the existing street as needed to accommodate the traffic this development will add to it.
- As discussed at the Pre-Submittal Meeting on June 15, 2016, the developer is eligible contribute to the Traffic Signal Revolving Fund (TSRF) in lieu of entering a traditional signal agreement for the intersection of Delaware Route 15 and Carpenters Bridge Road. See Section 2.5.4 of the Manual for DelDOT's regulations in this regard. If the developer chooses to contribute to the TSRF, turning movement counts will be needed to calculate their contribution. These counts should be done from 4:00 p.m. to 6:00 p.m. on a weekday, in a manner consistent with Section 2.2.8.5 of the Manual.
- As discussed at the Pre-Submittal Meeting on June 15, 2016, as part of their entrance construction the developer should mill and overlay Market Street from northern limit of the site frontage to meet the Murderkill River Bridge (about 675 feet south).
- Be advised that DelDOT utilizes two new checklists, one for Record Plans and one for Entrance/ Construction Plans, which are now required to be submitted with the project through the Planning and Development Coordination Application (PDCA). These checklists are a condensed version of the major requirements laid out in the Manual for each plan type respectively. The checklists offer the major topics, however they are not conclusive for all requirements in the Manual. Accurate and thorough completion of the checklist should reduce the number of iterations of review that a project will need to go through. To find the checklists and more information about them, please visit

<http://www.deldot.gov/information/business/subdivisions/>.

- Be advised that as of August 1, 2015, all new plan submittals and re-submittals, including major, minor and commercial plans, shall now be uploaded via the PDCA (Planning Development Coordination Application) with any review fee paid online via credit card or electronic check. Guidance on how to do this is available on our website at <http://www.deldot.gov/information/business/subdivisions/>
- Be advised that the Standard General Notes have been updated and posted to the DelDOT website. Please begin using the new versions and look for the revision date of January 28, 2016. The notes can be found at http://www.deldot.gov/information/business/subdivisions/Sheet_Notes.doc?012816.

Department of Natural Resources and Environmental Control – Contact Michael Tholstrup 735-3352

Flooding and Sea Level Rise:

- The southern and eastern portion of the proposed development lie within an area that will be subject to direct and permanent inundation from sea level rise. Easy to use maps depicting potential inundation from future sea level rise are available online: <http://de.gov/slrmap>. It should also be noted that portions of Market Street and Frederica Road, the primary access routes for the proposed development, are also within areas subject to permanent inundation from sea level rise.

Sea levels in Delaware have risen by about a foot over the past century (NOAA, 2014). This rate of sea level rise is likely to accelerate in the coming decades as a result of global climate change and local subsidence. Accelerated sea level rise will result in permanent flooding of low-lying coastal areas and increased risk of flood damage during storms (DNREC, 2012).

DNREC sea level rise maps depicting future inundation risk indicate that approximately 50.12 acres of this site out of 146.38 acres or 34 percent could be inundated by sea level rise of 1.5 meters. In the short-term, sea level rise on and around this parcel, combined with periodic coastal flooding events, may result in repetitive flood damage to roads and significant difficulties maintaining storm water, drainage and other infrastructure. In the long-term, this increased flood and inundation risk could result in costly public and private flood abatement and drainage projects.

- Lots within flood prone areas should be eliminated.
- Filling lots to elevate them to above base flood elevation is discouraged.
- Access roads should be designed to be flood resilient for the entirety of your project's design life span. This includes ensuring that the roadway functions for the 1 percent chance flood plus anticipated future sea level rise.

The developer and town should consider providing residents of this proposed neighborhood with information about flooding and safe driving techniques to prevent accidents and increase public safety during storm events.

References:

NOAA (National Oceanic and Atmospheric Administration). (2014). Mean Sea Level Trend, Lewes, DE. Retrieved from http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stnid=8557380.

DNREC Delaware Coastal Programs. (2012). Preparing for Tomorrow's High Tide: Sea Level Rise Vulnerability Assessment for the State of Delaware. Dover, DE: Department of Natural Resources and Environmental Control. Retrieved from <http://de.gov/slrva>.

Soils Assessment.

- Based on soils survey mapping update, Longmarsh (LO), Lenape (Lk), and Transquaking and Mispillion (TP) are the soils mapping units that have the most limitations for development in the immediate vicinity of the proposed project. These soil mapping units are very poorly-drained wetland associated (hydric) soils that have severe limitations for development (soil mapping unit considered unsuitable because it is in very poorly-drained drainage and is denoted by dark red color in soils map in; Figure 1) and should be avoided.

We strongly discourage building on hydric soils because they are functionally important source of water storage (functions as a “natural sponge”); the loss of water storage through excavation, filling, or grading of intact native hydric soils increases the probability for more frequent and destructive flooding events (Figure 1). The probability for flooding is further compounded by increases in surface imperviousness as building density in the area increases over time. Moreover, destruction of hydric soils increases the amount of pollutant runoff (i.e., hydric soils sequester pollutants) which contributes to lower observed water quality in regional waterbodies and wetlands.

We strongly recommend the applicant contact a licensed (Delaware Class D) soil scientist to make a site specific assessment (i.e., soil survey mapping) of the soils on this site to ensure that the hydric soils in this site are not disturbed or impacted. A list of licensed soil scientists can be obtained from the Ground Water Discharges Branch, at (302) 739-9947.

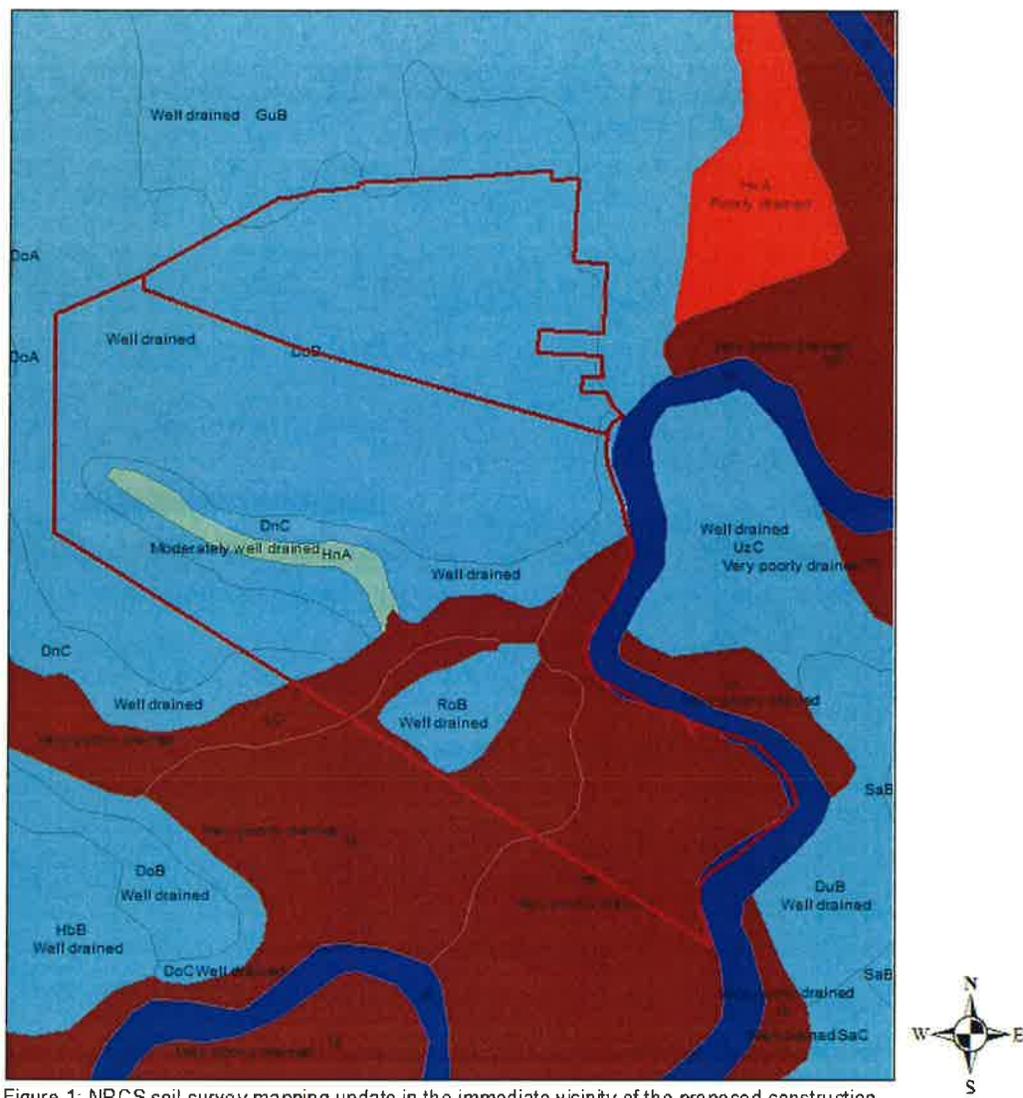


Figure 1: NRCS soil survey mapping update in the immediate vicinity of the proposed construction

Legend

Drainage Class

<all other values>

DrainClass

- <Null>
- Excessively drained
- Moderately well drained
- Poorly drained
- Somewhat excessively drained
- Somewhat poorly drained
- Very poorly drained
- Well drained

0 390 780 1,560 Feet

Delaware State-Owned Land.

- The applicant lists “the 2 parcels to the west and south of the site” as locations where this project physically could be connected to existing or future development on adjacent lands and indicate their willingness to discuss making these connections. However, there are only two parcels that border the project parcel to the west and south, and one of them is Murderkill River Nature Preserve, which is Delaware State Park Land. As such, there do not appear to be two parcels to the west and south of this project parcel that could be developed and connected to this parcel.
- The proposed project is in close proximity to the boundary of the Hollager Tract of the Milford Neck Wildlife Area, a State Wildlife Area managed by the DNREC Division of Fish and Wildlife. The Department asks for the developer to consult with the Regional Wildlife Biologist, Bill Jones (William.Jones@state.de.us, (302) 242-2701) to minimize potential impacts. Additionally, the developer should be aware that future residents using the property in question could be subject to the effects of legal hunting activities in the Wildlife Area, such as firearm noise or barking dogs pursuing game.

Key Wildlife Habitat.

- The forest and wetlands on the project parcel are mapped as Key Wildlife Habitat in the Delaware Wildlife Action Plan because they are part of large complexes/blocks that can support an array of plant and animal species. Much of the wetlands are also freshwater tidal forested and scrub-shrub wetlands, which are considered a Habitat of Conservation Concern because it is rare in the state and has the potential to harbor a high diversity of Species of Greatest Conservation Need.

Rare Species.

- Our records indicate that the Bronze Copper (*Lycaena Hyllus*), a state-rare butterfly, occurs within the vicinity of the project area. It is unknown if this species occurs within the project parcel, however, this species’ habitat is characterized by wet meadows and marshlands. As such, project activities should avoid disturbance to wetlands and wet meadows.

The wetlands in this system have high ecological value. In the area which disturbs a portion of the forested wetland buffer, the applicant may consider creating an upland buffer between the agricultural field and the wetlands. Our program botanist, Bill McAvoy (William.McAvoy@state.de.us, (302) 735-8668), would be happy to provide guidance regarding appropriate native species for this site.

Additional information on TMDLs and water quality.

- A Pollution Control Strategy (PCS) to achieve the required TMDL nutrient and bacterial load reduction requirements has been established for the Murderkill River watershed. Additional information about the PCS can be retrieved here:

<http://www.dnrec.delaware.gov/swc/wa/Pages/WatershedManagementPlans.aspx>.

In support of the PCS, the applicant is strongly urged to reduce nutrient and bacterial pollutants through voluntary commitment to the implementation of the following recommended BMPs:

- Conduct a field-based delineation of the hydric soils and/or wetlands on this site. According to the PLUS application, a wetlands delineation was conducted and approved by the United States Army Corps of Engineers (USACE); however, DNREC has not reviewed this wetland delineation. Also note that the State Wide Wetland Project maps (SWMP) are in no way considered a substitute for an onsite delineation of non-tidal wetlands. Moreover, this site may contain or impact tidal wetlands which are regulated by the State.
- Based on a review of existing buffer research, an adequately-sized buffer that effectively protects wetlands and streams, in most circumstances, is about 100 feet in width. The proposed development plans indicate that a 50' wetlands buffer and 50' conservation easement will be provided from the tidal wetlands. The Watershed Assessment Section recommends that the applicant maintains/establishes this 100-foot buffer width, with native vegetation, from all waterbodies (including stormwater ponds, ditches, rivers and streams) and all wetlands (non-tidal and tidal wetlands). The buffer width should commence from the upland edge of all non-tidal (based on USACE approved field based wetlands delineation) and tidal wetlands (State-regulated wetlands as determined by DNREC personnel).
- Calculate post-construction surface imperviousness with all forms of created (or constructed) surface imperviousness (e.g., rooftops, driveways, parking lots, sidewalks, open-water storm water management structures, ponds, and roads) included in the calculation. Omission of any of the above-stated forms of surface imperviousness will result in an underestimate of the actual post-development surface imperviousness and the associated environmental impacts.
- Use pervious paving materials instead of conventional paving materials (e.g., asphalt or concrete) to help reduce the amount of water and pollutant runoff draining to adjoining streams and wetlands, where it is practicable and is not in conflict with local ordinances such as source water protection, fire marshal codes, and/or sediment and stormwater regulations. Pervious pavers are especially recommended for areas designated for parking.
- Consider the installation of a rain gardens and green-technology stormwater management structures (in lieu of open-water management structures) as BMPs to

mitigate or reduce nutrient and bacterial pollutant runoff impacts via runoff or discharge from impervious surfaces. Please contact Lara Allison for information about the possibility for siting a rain garden(s) in this parcel. Lara can be contacted by phone at (302) 739-9922.

- Assess nutrient and bacterial pollutant loading at the preliminary project design phase. To this end, the Watershed Assessment Section has developed a methodology known as the “Nutrient Load Assessment protocol.” The protocol is a tool used to assess changes in nutrient loading (e.g., nitrogen and phosphorus) resulting from the conversion of individual or combined land parcels to a changed land use; thus providing applicants and governmental entities with quantitative information about the project’s impact(s) on baseline water quality. We strongly encourage the applicant/developer use this protocol to design and implement the most effective BMPs. Please contact John Martin or Jen Walls in the Division of Watershed Stewardship, at (302) 739-9939, for more information on the protocol.

Additional information on air quality.

- DNREC is pleased to see that there is an opportunity to connect to a larger bicycle/pedestrian or transit network and the inclusion of sidewalks in the development plan. Therefore, it is recommended that both DelDOT and the applicants pursue the opportunity to connect gaps in the existing bicycle/pedestrian and sidewalk network in the near future in order to promote alternative travel methods in the area that reduce dependency on vehicular travel and encourage multi-modal transportation efforts.

DNREC encourages developers and builders to consider all sustainable growth practices in their design, and we believe that the air quality impacts associated with the project should be completely considered. New homes and businesses may emit, or cause to be emitted, additional air contaminants into Delaware’s air, which will negatively impact public health, safety and welfare. These negative impacts are attributable to:

- Emissions that form ozone and fine particulate matter;
- The emission of greenhouse gases which are associated with climate change, and
- The emission of air toxics.

Air emissions generated from new homes and businesses include emissions from the following activities:

- Area sources such as painting, maintenance equipment and the use of consumer products like roof coatings and roof primers.
- The generation of electricity, and
- All transportation activity.

Based on the information provided, the three air emissions components (i.e., area, electric power generation, and mobile sources) were quantified. Table 2 – Projected Air Quality Emissions

represents the actual impact the Residential Subdivision of Harbourtowne may have on air quality.

Table 2: Projected Air Quality Emissions for Harbourtowne

Emissions Attributable to Peninsula Square (Tons per Year)	Volatile Organic Compounds (VOC)	Nitrogen Oxides (NOx)	Sulfur Dioxide (SO ₂)	Fine Particulate Matter (PM _{2.5})	Carbon Dioxide (CO ₂)
Area source emissions	11.9	1.3	1.1	1.4	48.3
Power emissions	*	4.7	16.4	*	2,423.2
Mobile emissions	17.6	18.4	0.5	0.2	11,378.7
Total emissions	29.5	24.4	18.0	1.6	13,850.2

(*) Indicates data is not available.

Note that emissions associated with the actual construction of the apartment community, including automobile and truck traffic from working in, or delivering products to the site, as well as site preparation, earth moving activities, road paving and other miscellaneous air emissions, are not reflected in the table above.

Recommendations:

DNREC encourages sustainable growth practices that:

- Control sprawl;
- Preserve rural and forested areas;
- Identify conflicting land use priorities;
- Encourage growth on previously developed sites and denser communities while at the same time protect our diminishing land base;
- Coordinate transportation, housing, environment, and climate protection plans with land use plans; and
- Demonstrate that communities can achieve the qualities of privacy, community, and contact with nature without degrading the natural environment or generating additional environmental costs in terms of congestion, use of natural resources, or pollution.

Additional measures may be taken to substantially reduce the air emissions identified above. These measures include:

- **Constructing with only energy efficient products.** Energy Star qualified products are up to 30 percent more energy efficient. Savings come from building envelope upgrades, high performance windows, controlled air infiltration, upgraded heating and air conditioning systems, tight duct systems and upgraded

water-heating equipment. Every percentage of energy efficiency translates into a percent reduction in pollution. The Energy Star Program is an excellent way to save on energy costs and reduce air pollution.

- **Offering geothermal and/or photo voltaic energy options.** These systems can significantly reduce emissions from electrical generation and from the use of oil or gas heating equipment.
- **Constructing with high albedo, high solar reflectance materials.** This includes roofing and hardscape. These materials help to reduce heat island impacts and, by extension, help to minimize the potential for localized ground-level ozone formation. These materials also help reduce demands on air conditioning systems and save on energy costs.
- **Providing shade for parking areas.** Approaches may include architectural devices, vegetation, or solar panels. Providing shade for parking areas helps to reduce heat island impacts, and, by extension, helps to minimize the potential for localized ground-level ozone formation. Such measures can also have the additional benefit of channeling or infiltrating stormwater.
- **Providing charging stations for plug-in electric vehicles.** This measure helps to reduce localized air pollution by supporting the use of non-gasoline powered vehicles. Please refer to the US Department of Energy's website for electric vehicle readiness information:
http://www1.eere.energy.gov/cleancities/electric_vehicle_projects.html. Several charging stations exist nearby in Millsboro, Lewes, and Rehoboth Beach.
- **Encouraging the use of safe multimodal transportation.** This measure can significantly reduce mobile source emissions. For every vehicle trip that is replaced by the use of a sidewalk or bike path, 7 pounds of VOC and 11.5 pounds of NO_x are reduced each year.
- **Using retrofitted diesel engines during construction.** This includes equipment that is on-site as well as equipment used to transport materials to and from site.
- **Using pre-painted/pre-coated flooring, cabinets, fencing, etc.** These measures can significantly reduce the emission of VOCs from typical architectural coating operations.
- **Planting trees in vegetative buffer areas.** Native trees reduce emissions by trapping dust particles and replenishing oxygen. Trees also reduce energy emissions by cooling during the summer and by providing wind breaks in the winter, whereby reducing air conditioning needs by up to 30 percent and saving 20 to 50 percent on fuel costs

This is a partial list, and there are additional things that can be done to reduce the impact of the development. The applicant can contact the DNREC Division of Air Quality (DAQ) to discuss the specific emission mitigation measures that will be incorporated into the Harbortowne project. The DAQ point of contact is Lauren DeVore, and she may be reached at (302) 739-9437 or lauren.devore@state.de.us.

Source Water Protection.

- The DNREC has determined that a significant portion of the project falls within an excellent groundwater recharge potential area for the Town of Frederica. The Source Water Protection Program (SWPP) acknowledges that the Town has developed and adopted new source water protection ordinances.

Excellent Ground-Water Recharge Areas are those areas mapped by the Delaware Geological Survey where the first 20 feet of subsurface soils and geologic materials are exceptionally sandy. These soils are able to transmit water very quickly from the land surface to the water table. This map category (excellent) is an indicator of how fast contaminants will move and how much water may become contaminated (Andres, 2004). Land use activities or impervious cover on areas of excellent ground-water recharge potential may adversely affect ground water in these areas.

The site plan shows stormwater management facilities within the excellent groundwater recharge potential area (see map below). While these systems address the particulate and nutrient components of stormwater runoff, they do not address pathogens, petroleum hydrocarbons, pesticides, other organic compounds, and other inorganic compounds associated with residential land use (DNREC, 1999). Because this is an area of excellent recharge potential, there exists the potential for these constituents to enter the aquifer and compromise water quality.

The construction phase of stormwater management facilities requires excavation, hauling, and grading. The heavy equipment used in this phase has the capacity to compact and degrade the structure of the strata that defines the area as an excellent groundwater recharge area (Schueler, 2000a). Changes to the structural soil properties may cause significant reduction in recharge capacity. Installing stormwater management facilities in excellent groundwater recharge areas has the potential to contaminate the ground water beneath it and infiltrate into the aquifer (Schueler, 2000b).

Recommendations:

- Relocate the stormwater management facilities outside the excellent groundwater recharge area
Or
- Pretreat the stormwater prior to entering the management facilities to remove the dissolved load of contaminants

In addition, because the excellent ground water recharge area can readily affect the underlying aquifer if contaminants are spilled or discharged across the area, the storage of hazardous substances or wastes should not be allowed within the area unless specific approval is obtained from the relevant state, federal, or local program.

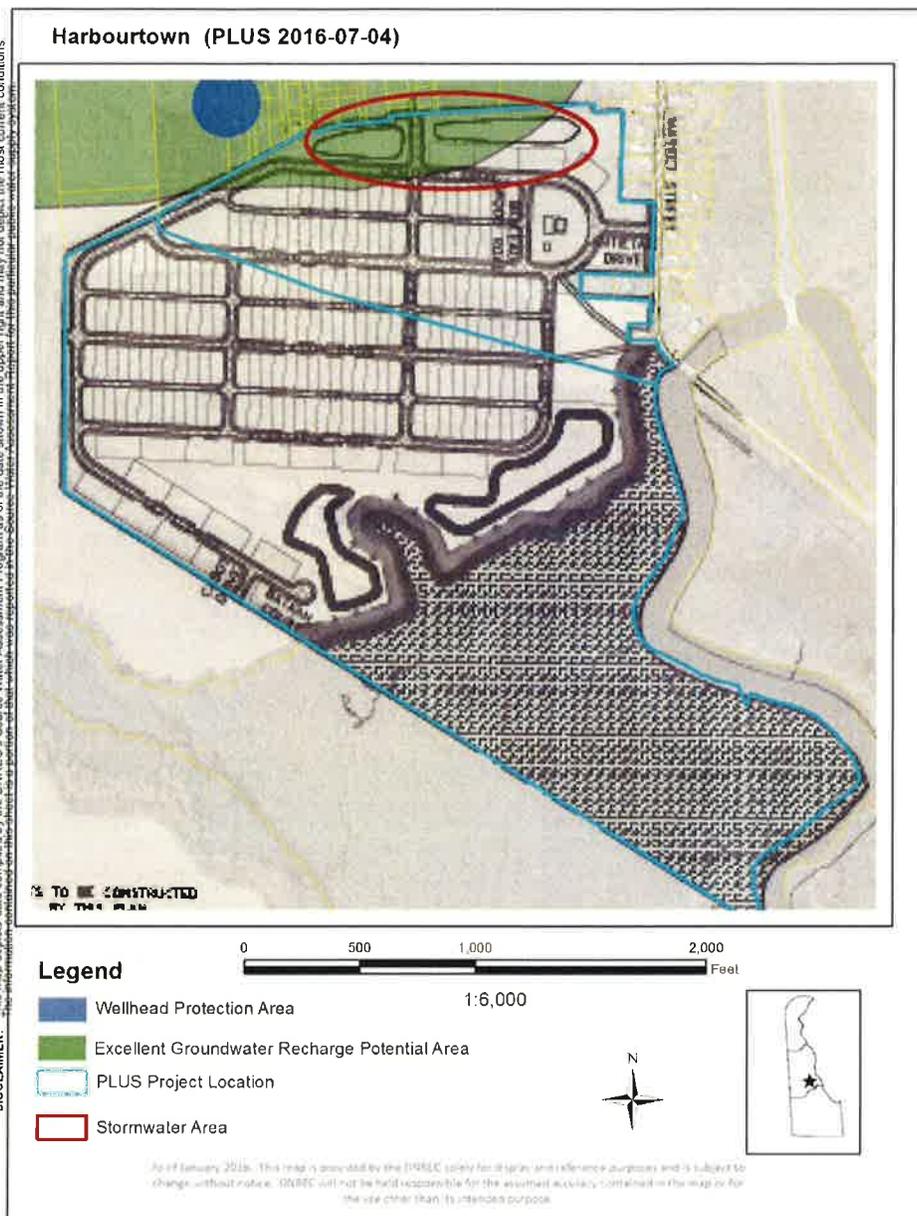
References:

Andres, A. Scott, 2004, Ground-Water Recharge Potential Mapping in Kent and Sussex Counties, Delaware: Delaware Geological Survey Report of Investigations No. 66, p. 14. <http://www.udel.edu/dgs/Publications/pubform.html#investigations>

Delaware Department of Natural Resources and Environmental Control, 1999, The State of Delaware Source Water Assessment Plan: Dover, DE, p. 301.

Schueler, T. R., 2000a, The Compaction of Urban Soils, *in* Schueler, T.R., and Holland, H.K., eds., The Practice of Watershed Protection: Ellicott City, MD, Center for Watershed Protection, p. 210 - 218.

Schueler, T. R., 2000b, Pollutant Dynamics of Pond Muck, *in* Schueler, T.R., and Holland, H.K., eds., The Practice of Watershed Protection: Ellicott City, MD, Center for Watershed Protection, p. 453 - 460.



Delaware State Fire Marshall's Office – Contact Duane Fox 739-4394

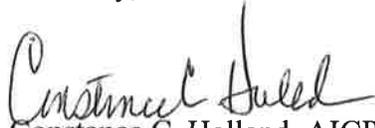
- Preliminary meetings with fire protection specialists are encouraged prior to formal submittal. Please call for appointment. Applications and brochures can be downloaded from our website: www.statefiremarshal.delaware.gov, technical services link, plan review, applications or brochures.

Following receipt of this letter and upon filing of an application with the local jurisdiction, the applicant shall provide to the local jurisdiction and the Office of State Planning

Coordination a written response to comments received as a result of the pre-application process, noting whether comments were incorporated into the project design or not and the reason therefore.

Thank you for the opportunity to review this project. If you have any questions, please contact me at 302-739-3090.

Sincerely,

A handwritten signature in cursive script, appearing to read "Constance C. Holland".

Constance C. Holland, AICP

Director, Office of State Planning Coordination

CC: Kent County

Town of Frederica