



STATE OF DELAWARE
EXECUTIVE DEPARTMENT
OFFICE OF STATE PLANNING COORDINATION

October 26, 2016

Mr. Jeff Madden
ESE Consultants, Inc.
250 Gibraltar Road, Suite 2E
Horsham, PA 19044

RE: PLUS review 2016-09-04; Delaware National

Dear Jeff,

Thank you for meeting with State agency planners on September 28, 2016 to discuss the proposed plans for the Delaware National project. According to the information received, you are seeking review of a 262 unit subdivision on 205.27 acres in New Castle County.

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 New Castle County is the governing authority over this land, the developers will need to comply with any and all regulations/restrictions set forth by the County.**

Strategies for State Policies and Spending

- This project is located in Investment Levels 2 and 3 according to the *Strategies for State Policies and Spending*. Investment Level 2 reflects areas where growth is anticipated by local, county, and state plans in the near term future. State investments will support growth in these areas. Investment Level 3 reflects areas where growth is anticipated by local, county, and state plans in the longer term future, or areas that may have environmental or other constraints to development. State investments may support future growth in these areas, but please be advised that the State has other priorities for the near future. We encourage you to design the site with respect for the environmental features which are present.

Code Requirements/Agency Permitting Requirements

Department of Transportation – Contact Bill Brockenbrough 760-2109

- The subdivision streets and the site access 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>.
- Pursuant to Section P.3 of the Manual, a Pre-Submittal Meeting is required before plans are submitted for review. This meeting was held on July 26, 2016.
- Per Section 2.2.2.1 of the 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. A previous developer submitted a TIS dated October 6, 2010, for substantially the subject plan. DelDOT reviewed that study and on December 6, 2013, sent comments to the engineer who prepared it. Those comments included a set of off-site improvements, which we recommended that New Castle County require of the developer as conditions for plan approval. Despite the passage of time and changes to the TIS regulations in the Manual, we have continued to abide by our December 6, 2013, letter because the plan has not changed.

Recently, we have heard from the County that the developer seeks to re-examine the need for some of the off-site improvements identified in that letter. While we are amenable to their re-examining the need for those improvements, we would want them to do it in the context of a new TIS based on our current regulations. Doing so could mean that additional improvements would be needed at additional intersections. If the applicant wants to do that, they should have their traffic engineer contact Mr. Claudy Joinville of this office to obtain a scope of work for the new TIS. Mr. Joinville can be reached at (302) 760-2124.

- In accordance with Section 3.4 of the Manual, the developer's engineer should make an Initial Stage submission to the Delaware Department of Transportation, which should include the following items:
 - Record/Site Plan Gatekeeping checklist found on our Doing Business website: http://www.deldot.gov/information/business/subdivisions/Subdivision_Gate-Keeping_Checklist_Site-Entrance-Const_Plan.xls;
 - Initial Stage Fee and Form, to be completed through DelDOT's PDCA Application found here: <http://pdca.deldot.gov>;
 - Checklist for Subdivision Record Plan Approval, found on DelDOT's Doing Business website at: http://www.deldot.gov/information/business/subdivisions/Record-Plan_DCM_Checklist.xlsm?042016; and
 - Turning template for an SU-30 type vehicle for all entrances.

- Before making the Initial Stage submission mentioned above, the developer's engineer should make the following plan changes:
 - Lancaster Pike (Delaware Route 48, New Castle Road 27) is classified as a Principal Arterial roadway and, per Section 3.2.5 and Figure 3.2.5-a of the Manual, requires a minimum 30 feet of right-of-way from the outermost edge of the through lane. The existing right-of-way is not dimensioned on the plan but appears to be less than 30 feet. Therefore, the right-of-way should be dimensioned and, as necessary, a dedication will be required. The dedication should be called out as follows: *"A X-foot wide strip of right-of-way is hereby dedicated to the State of Delaware as per this plat."*
 - Centerville Road (New Castle Road 272) is classified as a Major Collector roadway and, per Section 3.2.5 and Figure 3.2.5-a of the Manual, requires a minimum 40 feet of right-of-way from the centerline. The existing right-of-way is not dimensioned on the plan but appears to be less than 40 feet from the centerline. Therefore, the right-of-way should be dimensioned and, as necessary, a dedication will be required. The dedication should be called out as follows: *"A X-foot wide strip of right-of-way is hereby dedicated to the State of Delaware as per this plat."*
 - Hercules Road (New Castle Road 282) is classified as a Major Collector roadway and, per Section 3.2.5 and Figure 3.2.5-a of the Manual, requires a minimum 40 feet of right-of-way from the centerline. The existing right-of-way is not dimensioned on the plan but appears to be less than 40 feet from the centerline. Therefore, the right-of-way should be dimensioned and, as necessary, a dedication will be required. The dedication should be called out as follows: *"A X-foot wide strip of right-of-way is hereby dedicated to the State of Delaware as per this plat."*
 - Red Clay Drive is classified as a Local Roadway and, per Section 3.2.5 and Figure 3.2.5-a of the Manual, requires a minimum 30 feet of right-of-way from the centerline. The existing right-of-way is not dimensioned on the plan but appears to be less than 30 feet from the centerline. Therefore, the right-of-way should be dimensioned and, as necessary, a dedication will be required. The dedication should be called out as follows: *"A X-foot wide strip of right-of-way is hereby dedicated to the State of Delaware as per this plat."*
 - Section 3.2.5.1.2 of the Manual, requires that a 15-foot permanent easement should be provided beyond each of the right-of-way dedications just mentioned. It should be called out as follows: *"A 15-foot permanent easement is hereby established for the State of Delaware as per this plat."*

- Provide a Traffic Generation Diagram on the plan. See Figure 3.4.2-a in the Manual for the required format and content. Additional guidance is provided in the Top Ten Errors document found here:
http://www.deldot.gov/information/business/subdivisions/top_ten_errors.pdf?05-22-2014

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 disturbing the sensitive habitat within the project parcel. However, there remain several opportunities to further conserve and protect that habitat, improve water quality, and reduce greenhouse gas emissions.

There are a number of source water protection concerns within this project parcel including Level 1 and 2 Source Water Protection Areas. The project falls entirely within the Red Clay Creek Drinking Water watershed, and portions of the parcel are within the floodplain. In addition, the project has areas of steep slopes.

There are also concerns regarding a federally protected species on the project site. There is a potential for bog turtle habitat to be within the parcel boundaries. Portions of the parcel are also within a State Natural Heritage Site, designated due to the multiple rare plant species located in the forested areas surrounding Red Clay Creek.

Additionally, DNREC has concerns with the existing hazardous waste material on the parcel. A Remedial Action Work Plan was approved by DNREC in January 2014, however no remedial action has been documented.

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 appreciate seeing that the applicant intends to maintain the existing multi-use path as a pedestrian recreational facility. 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. Contact information for specific offices are listed below or you can contact Michael Tholstrup at (302) 735-3352.

TMDLs.

- This project is located in the greater Piedmont drainage area, specifically within the greater Christina River Basin. Total Maximum Daily Loads (TMDLs) for nitrogen, phosphorus, and bacteria have been promulgated through regulation in most of the State of Delaware's water bodies. In the Christina River Basin, post-development nitrogen and phosphorus loading must be capped at the pre-development or baseline loading rate (or a 0 percent post-construction increase in Nitrogen & Phosphorous in Delaware's portion of the Christina River Basin) to meet the required TMDL for each nutrient. Moreover, reductions in bacteria that range from 29 to 95 percent (High Flow) is also required (depending upon location). 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. TMDLs are required by federal law (Section 303(d) of the 1972 Clean Water Act), and the states are charged with developing and implementing specific land use practices that support these goals. The specific required nutrient and bacterial requirements for the various stream segments in the Basin, and background information is outlined in the report entitled "*Christina River Basin High-Flow TMDL*" by the EPA, and can be retrieved here:
<http://www.dnrec.delaware.gov/swc/wa/Pages/WatershedAssessmentTMDLs.aspx>
- 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. This project's open space may exceed this 10-acre threshold. Please contact the Delaware Nutrient Management Program at (302) 739-4811 for further information concerning compliance requirements, or view additional information here: <http://dda.delaware.gov/nutrients/index.shtml>

Water Supply.

- The project information sheets state that water will be provided to the project by Artesian Water Company via a public water system. Our records indicate that the project is located within the public water service area granted to Artesian Water Company under Certificate of Public Convenience and Necessity 97-CPCN-14.
- 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. Since potential contamination sources exist in the area, any well permit applications will undergo a detailed review and may require site specific conditions/recommendations along with the standard technical review and advertising which may increase turnaround time. Please factor in the necessary time for processing well permit applications into the construction schedule.

In this case there is a Superfund site associated with the Hercules Research Center located within 1000 feet of the proposed project. Should you have any questions concerning these comments, please contact Rick Rios, at (302) 739-9944.

Source Water Protection.

- DNREC has determined that the parcel falls entirely within the Red Clay Creek Drinking Water watershed. This area is a Level 2 source water protection area for New Castle County (NCC). In addition, the project falls partially within areas of flood plains and steep slopes protected as Level 1 Source Water Protection Areas for NCC (see map).

Level 2 Source Water Protection Areas are the delineated watershed upstream from public drinking water supply intakes. Land use or land activity within these areas has the potential to influence water quality or quantity to the public drinking water system.

Level 1 Source Water Protection Areas are defined as steep slopes and flood plains. Land use or land activity within this area has the potential to influence water quality or quantity to the system.

DNREC recommends referring to NCC Unified Development Code for regulations regarding development in these water resource protection areas.

Federally Listed Species: Bog Turtle.

- A review of our database has revealed that there may be suitable habitat for the federally listed bog turtle (*Glyptemys muhlenbergii*) within the proposed project area. Bog turtles typically occur in freshwater wetlands with open canopies, mucky soils, and tussock vegetation. However, they can occur in more marginal habitats as well. Because the bog turtle is a federally listed species, protected under the Endangered Species Act, its presence can affect the scope of work. To ensure that the project will not impact bog turtles or their habitat, Phase I surveys for bog turtle habitat should be conducted.

Phase I surveys can be conducted any time of year when ice and/or snow cover is not present. If potential habitat is found, however, please note there is a time of year restriction during which Phase II surveys for bog turtles must be conducted. A Delaware approved bog turtle surveyor must be used to conduct the surveys. As discussed at the September 28th PLUS meeting, if a Phase I survey has been conducted on this site prior to

2012, please contact Holly Niederriter at (302) 735-8670 to discuss the status. She can also provide a list of contacts to conduct Phase I and, if necessary, Phase II surveys.

If potential bog turtle habitat is found during Phase I surveys, you are required to either:

- Completely avoid all direct and indirect project impacts to the wetland, in consultation with the U.S. Fish and Wildlife Service and Delaware Division of Fish and Wildlife;

OR

- Have Phase II surveys conducted to determine if bog turtles are present. In accordance with Delaware’s bog turtle site survey procedures, surveys must be conducted by a State-approved bog turtle surveyor between April 15 and June 15.

Sediment and Stormwater Program.

- 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 New Castle County Department of Land Use Engineering Section. Contact the Department of Land Use at (302) 395-5470 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.

	<ul style="list-style-type: none"> • 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>.

Hazardous Waste.

- If it is determined by the Department that there was a release of a hazardous substance on the property in question and the Department requires remediation pursuant to the Hazardous Substance Cleanup Act, the provisions of 7 Del.C., Chapter 91; Delaware Hazardous Substance Cleanup Act; and the Delaware *Regulations Governing Hazardous Substance Cleanup* shall be followed.
- The project property is located on a DNREC Site Investigation Restoration Section project site:
 - Hercules Road and Lancaster Pike Site (DE-1492) has been a country club since 1947. In 1967 the Golf course was redesigned into an eighteen-hole course.
 - The Site was enrolled in the Voluntary Cleanup Program in 2010 and Remedial Investigation was completed in October 2011.

- The Proposed Plan of Remedial Action was published in November 2011 followed by the Final Plan in March 2012.
- The Remedial Action Work Plan was approved in January 2014 and will continue to be evaluated when remediation commences.

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 Leaking Underground Storage Tank project is located within a quarter mile of the proposed project:
 - HERCULES RESEARCH CENTER ID: 3-000108, Project: N0105047, (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.

State Historic Preservation Office – Contact Terrence Burns 736-7404

- There was a known mid or late 19th-century agricultural complex (N10937), including a house and outbuildings on this parcel. There is also a known archaeological site (N-6699, 7NC-B-073) south of Lancaster Pike (Rt. 48) and west of Hercules Road, and more archaeological sites (N-6697, 7NC-B-072; N-6696, 7NC-B-071; N-6694, 7NC-B-070) east of the Baltimore Ohio Railroad. One of the archaeological sites is associated with the Thomas Springer Dairy Barn (N-6694, 7NC-B-070), which was modified. With this in mind, the developer should be aware of the Unmarked Burials and Human Skeletal Remains Law.
- 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 Unmarked Human Burials and Human Skeletal Remains Law (Del. Code: Title 7, Chapter 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 sites or areas. The developer should include sufficient landscaping or barrier between the house (K-3361) and development, in order to protect the house, from adverse noise and 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 John Rudd 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:**
 - Where a water distribution system is proposed for single family dwellings it shall be capable of delivering at least 500 gpm for 1-hour duration, at 20-psi residual pressure. Fire hydrants with 1000 feet spacing on centers are required in the area of the

Townhouses and can be reduced to 800 feet spacing on center for single family dwellings.

- The infrastructure for fire protection water shall be provided, including the size of water mains.

- **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 the main thoroughfare 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, or through, 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.

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

State-Rare Plants.

- A review of our database indicates that the following state rare plants occur within the project site:

Scientific Name	Common Name	Taxon	State Rank	State Status	Global Rank
<i>Arisaema dracontium</i>	green dragon	Plant	S2	-	G5
<i>Cardamine angustata</i>	slender toothwort	Plant	S2	-	G5
<i>Cystopteris protrusa</i>	lowland brittle fern	Plant	S2	-	G5
<i>Solidago ulmifolia var ulmifolia</i>	elm-leaf goldenrod	Plant	S1	-	G5

State Rank: S1- extremely rare within the state (typically 5 or fewer occurrences); S2- very rare within the state (6 to 20 occurrences);

State Status: E – endangered, i.e. designated by the Delaware Division of Fish and Wildlife as seriously threatened with extinction in the state;

Global Rank: G1 - imperiled globally because of extreme rarity (5 or fewer occurrences worldwide); G2 - imperiled globally because of great rarity (6 to 20 occurrences); G3 - either very rare and local throughout its range (21 to 100 occurrences) or found only locally in a restricted range; G4 - apparently secure globally but uncommon in parts of its range; G5 - secure on a global basis but may be uncommon locally; T_ - variety or subspecies rank; Q – questionable taxonomy;

The rare plants listed above occur within the forested areas of this site, primarily all of the existing forest along Red Clay Creek (including forest in the floodplain and at the edge of the fairways). If the areas where these plants occur are left undisturbed then these plants should not be impacted.

State Natural Heritage Site.

- Due to the rare plants described above, all of the existing forest along Red Clay Creek (including forest that occurs in the floodplain and at the edge of the fairways) is within a State Natural Heritage 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 Christina Basin. The web link for the Christina watershed PCS strategies is as follows:

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

In further 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:

- Maintain and preserve as much of the existing forest cover and open space as possible; we further suggest additional native tree, shrub and/or native herbaceous vegetation plantings wherever practicable.
- Conduct a United States Army Corps of Engineers (USACE) approved onsite wetlands delineation before commencing any construction activities. Based on the information presented in the PLUS application, a wetland delineation was conducted but it has neither been approved by the USACE nor submitted to DNREC for review.
- Maintain a vegetated buffer of at least 100 feet from the adjoining wetlands and waterbodies (e.g., Red Clay Creek). Based on a review of existing buffer research by Castelle et al. (Castelle, A. J., A. W. Johnson and C. Conolly. 1994. *Wetland and Stream Buffer Requirements – A Review*. J. Environ. Qual. 23: 878-882.), an adequately-sized buffer that effectively protects wetlands and streams, in most circumstances, is about 100 feet in width. In recognition of this research and the need to protect water quality, the Watershed Assessment Section recommends that the applicant maintain/establish a 100-foot buffer (planted in native vegetation) from all waterbodies, including ditches and ponds and all non-tidal and tidal wetlands.
- 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.
- Employ green-technology storm water management and a rain gardens (in lieu of open-water management structures) as BMPs to mitigate or reduce nutrient and

bacterial pollutant runoff. Please contact Lara Allison at (302) 739-9939 for further information about the possibility of installing rain gardens on this parcel.

- 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 new 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 help design and implement the most effective BMPs. Please contact John Martin or Jen Walls of the Division of Watershed Stewardship, at (302) 739-9939 for more information on the protocol.

Additional information on tank management.

- 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 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 at DNREC-TMS with further questions at (302) 395-2500.

Additional information on hazardous waste.

- Should a release or imminent threat of a release of hazardous substances be discovered during the course of development (e.g., contaminated water or soil), construction activities should be discontinued immediately and DNREC should be notified at the 24-hour emergency number (800) 662-8802. SIRS should also be contacted as soon as possible at (302) 395-2600 for further instructions.

Additional information on air quality.

- 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 Delaware National development may have on air quality.

Emissions Attributable to Delaware National (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	8.1	0.9	0.7	1.0	32.9
Power emissions	*	3.2	11.2	*	1,649.1
Mobile emissions	12.0	12.5	0.4	0.1	7,743.4
Total emissions	20.1	16.6	12.3	1.1	9,425.4

(*) Indicates data is not available.

Note that emissions associated with the actual construction, 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.

- DNREC encourages planners, developers and builders to consider all sustainable growth practices in future development. We further believe that all air quality impacts should be completely considered as new developments are considered in the county. New developments 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; New Castle County currently violates 2008 standards for ozone and is considered maintenance for the particulate matter (PM) standard.
 - The emission of greenhouse gases which are associated with climate change, and
 - The emission of air toxics.
- Air emissions generated from new development 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 – such as increased vehicular traffic.

Green Streetscape

- The implementation of a green streetscape is highly encouraged for the subdivision plan. Green streetscapes are key in reducing negative air quality impacts and beautifying existing conditions. Green infrastructure solves many environmental problems while providing a myriad of benefits for the community including cleaner air, proper management of storm water, safe multi-modal transportation options, beautifying neighborhoods and increasing property values.

Urban tree canopy

- Some green streetscape elements that the Delaware National subdivision could incorporate are street trees or urban trees. 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. As a general reminder, the best trees to plant are those that have a large leaf surface area at maturity, contain leaf characteristics that are amenable to particle collection from particulate matter (PM) such as those that have hairy or sticky leaves and have high transpiration rates which result in relatively high temperature reduction.

Energy Efficient Options

- Constructing with only energy efficient products can help your project immensely, not only in terms of environmental sustainability but financially. 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. Providing shade for parking areas can also be of added benefit to this project. Some 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 storm water. For more about energy efficient options, please see: <https://www.energystar.gov/> or <https://www.epa.gov/greeningepa/energy-efficiency-epa>.

Multi-modal travel

- A component of improving existing air quality levels is to maximize multi-modal travel through bike lanes, sidewalks and convenient access to transit opportunities. DNREC encourages the developer to improve its existing sidewalks and crosswalks and to add sharrows or bike lanes where needed to encourage multi-modal travel opportunities. (Sharrows and striping are the easiest and most cost effective option.) This includes attempting to address any gaps in the current bicycle and pedestrian network for increased connectivity. DNREC was pleased to see the inclusion of proposed sidewalks in the site plan as well as proximity to transit (DART Bus Route 20). Multi-modal travel 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 NOx are reduced each year. For more information on multimodal opportunities in your area, please refer to the Delaware Transit Corporation and DelDOT Gateway websites at www.dartfirststate.com and http://deldot.gov/information/community_programs_and_services/gate/. Also, for more information on the impacts of multimodal access on air quality please see the EPA's website at: <https://www3.epa.gov/otaq/>.

Facility Beautification

- Lastly, the developer is encouraged to beautify the development site with landscaping that would not only make the subdivision more attractive but also help to clean the air of any pollutants that could be emitted or transported by nearby sources, such as pollutants from the Ashland Research Center to the south of the development. This facility occupies approximately 45 acres, primarily consisting of laboratory buildings used for research and development of chemistry studies for Hercules' worldwide chemical operations. Appropriate landscaping could reduce air quality impacts on residents while also incorporating a context-sensitive design that blends well with the surrounding development and existing land uses.

Should the applicant have any questions or concerns, the DNREC Division of Air Quality point of contact is Lauren DeVore, and she may be reached at (302) 739-9437 or lauren.devore@state.de.us. The applicant is encouraged to contact DNREC DAQ to discuss any of the above measures that will be incorporated into the Delaware National subdivision project. We look forward to working together with you on this project to achieve our shared air quality goals!

Soils Assessment.

- Based on soils survey mapping, the primary soils on the subject parcel are Gaila (GaC; 8-15% slope), Glenelg-Wheaton Urban land complex (GhB; 0-8% slope), Glenville (GnB; 3-8% slope), and Hatboro-Codorus complex (Hw). We strongly advise the applicant avoid those areas (e.g., Gaila soil mapping unit) where slopes exceed 10 percent. We also advise the applicant avoid the Hatboro-Cadorus soil as this contains mostly wetland-associated hydric soils that have severe limitations for development (considered unsuitable; Figure 1).

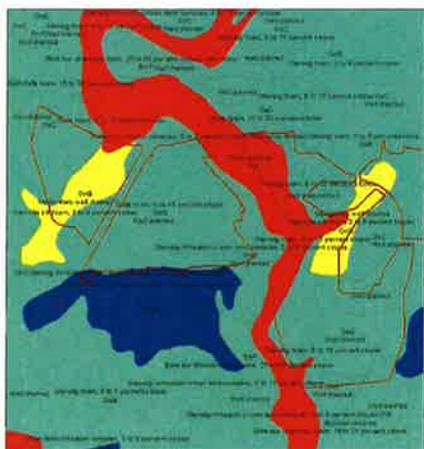


Figure 1. NRCS soil survey mapping in the immediate vicinity of the proposed construction



Delaware State Fire Marshall's Office – Contact John Rudd 739-4394

- Although not a requirement of the State Fire Prevention Regulations, the Office of the State Fire Marshal encourages home builders to consider the benefits of home sprinkler protection in dwellings. The Office of the State Fire Marshal also reminds home builders of the requirements of Subchapter III of Chapter 36 of Title 6 of the Delaware Code which can be found at the following website:
<http://delcode.delaware.gov/title6/c036/sc03/index.shtml>
- 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,



Constance C. Holland, AICP
Director, Office of State Planning Coordination

CC: New Castle County