

Comments by division and program follow.

Fish and Wildlife

Rare Species. Our field scientists have not surveyed this project area; therefore, we are unable to provide information pertaining to the existence of state-rare or federally listed plants, animals or natural communities at this project site. In the absence of site-specific information, we offer the following comments:

Bog Turtle

A review of our database has revealed that there may be suitable habitat for the federally listed bog turtle (*Glyptemys muhlenbergii*) associated with wetlands along the tributary to Sandy Branch. It is impossible to discern based on the site plan submitted where wetlands occur in relation to the proposed disturbance. It is standard procedure to require Phase I surveys for bog turtle habitat if project activities are within 300 feet of potential habitat or if changes to hydrology are expected (according to the application, a 'wooded ravine' along Sandy Branch is the intended stormwater outlet).

To ensure that the project will not impact bog turtles or their habitat, Phase I surveys should be completed on any wetlands within 300 feet of project boundaries. The applicant for PLUS 2007-10-10 Spring Arbor II, was informed of the need to conduct Phase I surveys for proposed development of these parcels. According to our records, we have not received a copy of a Phase I report. If surveys have already been completed, please forward a copy of the report to Holly Niederriter, Natural Heritage and Endangered Species Program, 4876 Hay Point Landing Rd, Smyrna, DE 19977.

If surveys have not been completed, please note that a Delaware-approved bog turtle surveyor must be used to conduct the surveys. Phase I surveys can be conducted any time of year when 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.

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

- 1) 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
- 2) 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.

Nuisance Waterfowl. Wet ponds created for stormwater management purposes may attract resident Canada geese and mute swans that will create a nuisance for community residents. High concentrations of waterfowl in ponds create water-quality problems, leave droppings on lawn and paved areas and can become aggressive during the nesting season. Short manicured lawns

around ponds provide an attractive habitat for these species. We recommend native plantings, including tall grasses, wildflowers, shrubs, and trees at the edge and within an adequate buffer (15-30 feet in width) around the ponds, to be planted in accordance with the Sediment and Stormwater Plan approval agency requirements. When the view of the surrounding area from the pond is blocked, geese can't scan for predators and are less likely to reside and nest in the area of the pond.

At this time, we do not recommend using monofilament grids due to the potential for birds and other wildlife to become entangled if the grids are not properly installed and maintained. In addition, the on-going maintenance (removing entangled trash, etc.) may become a burden to the homeowners association or land manager.

The Division of Fish and Wildlife does not provide goose control services, and if problems arise, residents or the home-owners association will have to accept the burden of dealing with these species (e.g., permit applications, costs, securing services of certified wildlife professionals). Solutions can be costly and labor intensive; however, with a reduction in the number of ponds, proper landscaping, monitoring, and other techniques, geese problems can be minimized. *Edna Stetzar* - (302) 653-2880, Edna.Stetzar@state.de.us

Soil and Water

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 as soon as practicable. 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 Town of Middletown. Contact the Town of Middletown at (302) 378-9120 for details regarding submittal requirements and fees.

Prior applications for this parcel have received the comment to consider a regional stormwater management approach for this and the surrounding parcels. Stormwater green technology best management practices should be utilized in conjunction with regional stormwater management to reduce the pollutant load to Sandy Branch.

Drainage Program. The Drainage Program is not aware of any problems with drainage of this site.

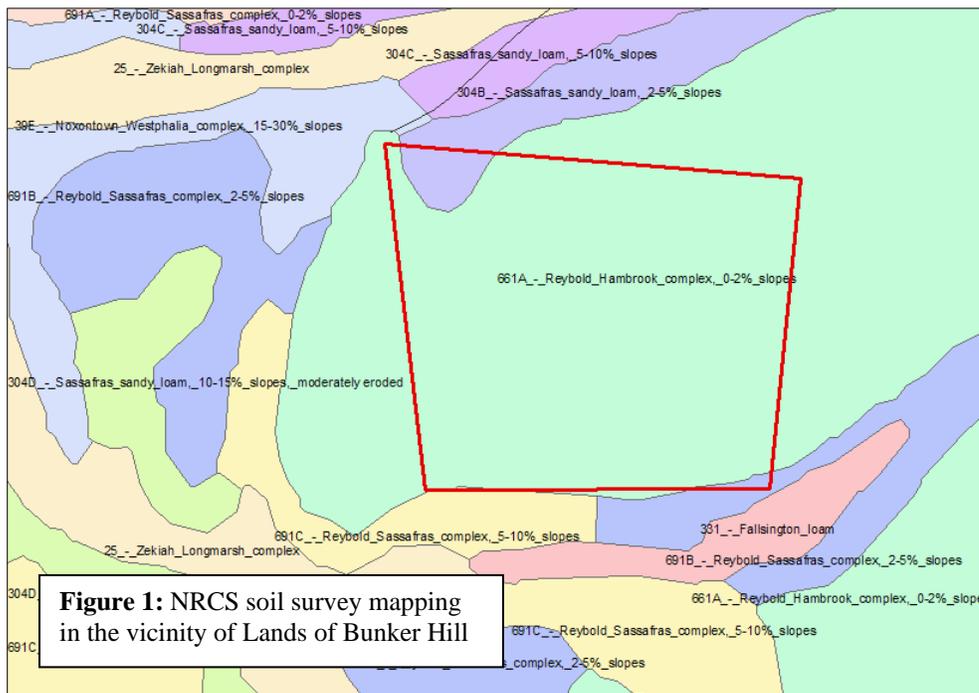
Sediment/Stormwater and Drainage comments provided by James Sullivan - (302) 739-9921, James.Sullivan@state.de.us

Flood Management. This subdivision proposal is not located in a Special Flood Hazard Area, as indicated on FEMA FIRM panel 10003C300J and 305J. However, the Northeast portion of 2009-05-09 is located in a Zone A floodplain for Sandy Branch, for which no base flood

elevation has been established. It is not clear if further development will occur NE of the tentative 301 corridor. *Gregory Williams* - (302) 739-9921, Gregory.Williams@state.de.us

Water Resources

Soils Assessment. Based on the New Castle County soil survey update, Reybold-Hambrook complex and Sassafras were mapped on subject parcel. Reybold-Hambrook complex and Sassafras are well-drained upland soils that, generally, have few limitations for development (Figure 1).



Wetlands. According to the Statewide Wetland Mapping Project (SWMP) mapping, no wetlands were mapped on subject parcel (Figure 2).

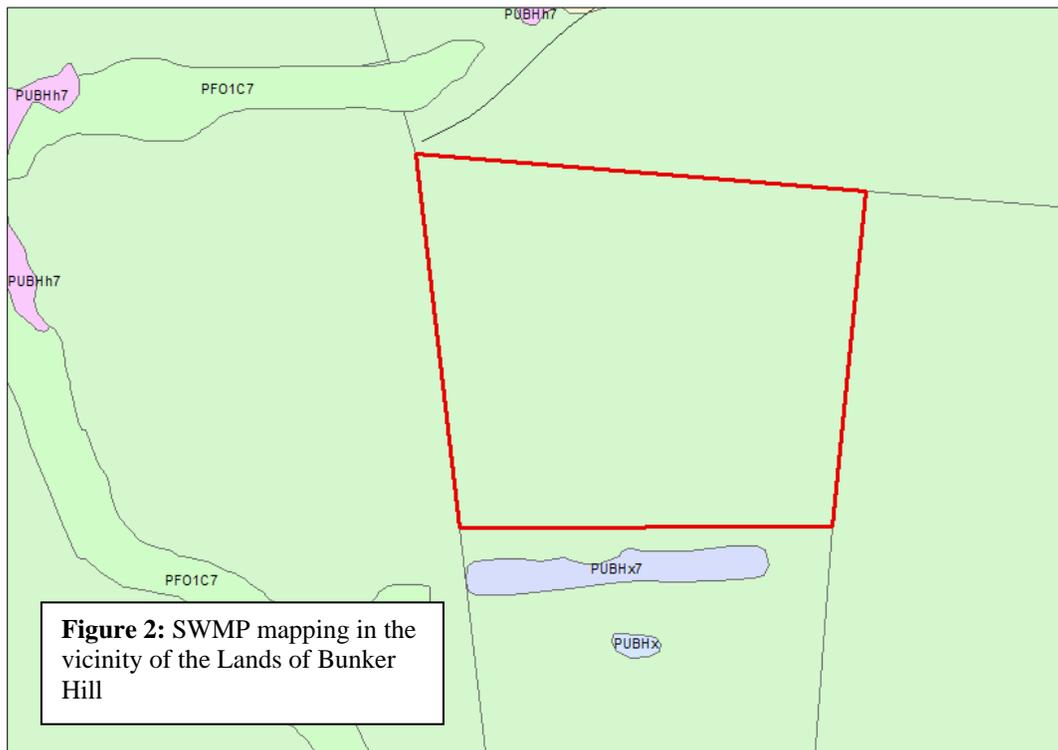


Figure 2: SWMP mapping in the vicinity of the Lands of Bunker Hill

Impervious Surfaces and Best Management Practices. Based on information provided by the applicant in the PLUS application form, this project's post-development surface imperviousness is estimated to reach about 45%. According to the TR-55 methodology for determining impervious cover, residential developments of 1/8 acre or less average lot size (typically, townhouses; this project involves multi-family units) average 65 percent impervious area. When calculating surface imperviousness it is important to include all forms of constructed surface imperviousness (i.e., rooftops, parking lots, sidewalks, stormwater management structures, and roads) in the calculation for surface imperviousness; this will ensure a realistic assessment of this project's likely post-construction environmental impacts.

Studies have shown a strong relationship between increases in impervious cover to decreases in a watershed's overall water quality. It is strongly recommended that the applicant implement best management practices (BMPs) that reduce or mitigate some of its most likely adverse impacts. Reducing the amount of surface imperviousness through the use of pervious paving materials ("pervious pavers") in lieu of asphalt or concrete in conjunction with an increase in forest cover preservation or additional tree plantings are some examples of practical BMPs that could easily be implemented to help reduce surface imperviousness.

TMDLs. The Elk River watershed does not currently have total maximum daily load (TMDL) reduction requirements for nutrients or other pollutants. However, the applicant should still strive to implement best management practices (BMPs) that reduce surface imperviousness (e.g., use of pervious paving materials where practicable). The applicant should also strive to increase

the amount of passive wooded open space and employ green-technology stormwater management treatment trains instead of open-water stormwater management structures. *Soils, wetlands, subaqueous lands and TMDL comments provided by John Martin, Watershed Assessment Section, (302) 739-9939, John.Martin@state.de.us*

Water Supply. The information provided indicates that the Town of Middletown/Artesian Water Company will provide water to the proposed projects through a public water system. Our files reflect that the Town of Middletown/Artesian Water Company does not currently hold a Certificate of Public Convenience and Necessity (CPCN) to provide public water in these areas. They will need to file an application for a CPCN with the Public Service Commission, if they have not done so already. Information on CPCN requirements and applications can be obtained by contacting the Public Service Commission at 302-736-7547. Should an on-site public well be needed, a minimum isolation distance of 150 feet is required between the well and any potential source of contamination, such as a septic tank and sewage disposal area, and at least 150 feet from the outermost boundaries of the project. The Division of Water Resources will consider applications for the construction of on-site wells provided the wells can be constructed and located in compliance with all requirements of the Regulations Governing the Construction and Use of Wells. A well construction permit must be obtained prior to constructing any wells.

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. *Ricardo Rios - (302) 739-9944, Ricardo.Rios@state.de.us*

Water Resource Protection Areas. The DNREC Water Supply Section Ground-Water Protection Branch (GPB) has determined that a significant portion falls within an excellent ground-water recharge area for the Town of Middletown (see attached map).

GPB acknowledges that the Town of Middletown has adopted a source water protection ordinance. The Town's Ordinance Section 1104 (C), requires the volume and quality of groundwater recharge shall be maintained at predevelopment levels. The proposed development would change the impervious over from 0% to approximately 45%. The developer on the PLUS application provided these numbers. It appears that the amount of impervious cover in the portion of the parcel within the excellent ground-water recharge area exceeds 45%. We applaud the Town's requirement to maintain recharge as if impervious cover did not exist. We are unsure how this will be achieved since there does not appear to enough open space to assure recharge of the volume of runoff this site will generate.

In addition, because the excellent ground water recharge area can quickly 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. *Anne Mundel - (302) 739-9945, Anne.Mundel@state.de.us*



Air and Waste

Air Quality. Housing developments may unnecessarily emit, or cause to be emitted, significant amounts of 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; two pollutants relative to which Delaware currently violates federal health-based air quality standards,
- The emission of greenhouse gases which are associated with climate change, and
- The emission of air toxics.

Air emissions generated from housing developments include emissions from:

- Area sources like painting, lawn and garden equipment and the use of consumer products like roof coatings and roof primers.
- The generation of electricity needed to support the homes in your development, and
- Car and truck activity associated with the homes in your new development.

These three air emissions components (i.e., area, electric power generation, and mobile sources) are quantified below, based on a per household/residential unit emission factor that was developed using 2002 Delaware data. These emissions in the table represent the actual impact the Bunker Hill development may have.

Emissions Attributable to Bunker Hill Subdivision (Tons per Year)

| | Volatile Organic Compounds (VOC) | Nitrogen Oxides (NOx) | Sulfur Dioxide (SO ₂) | Fine Particulate Matter (PM _{2.5}) | Carbon Dioxide (CO ₂) |
|-----------------------------|----------------------------------|-----------------------|-----------------------------------|--|-----------------------------------|
| Direct Residential | 11.9 | 1.3 | 1.1 | 1.4 | 48.3 |
| Electrical Power Generation | ND* | 4.7 | 16.4 | ND* | 2,423.2 |
| Mobile | 17.6 | 18.4 | 0.5 | 0.2 | 11,378.7 |
| Total | 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 subdivision, 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:

The applicant shall comply with all applicable Delaware air quality regulations. These regulations include:

| | |
|---|--|
| Regulation 6 - Particulate Emissions from Construction and Materials Handling | <ul style="list-style-type: none"> • Using dust suppressants and measures to prevent transport of dust off-site from material stockpile, material movement and use of unpaved roads. • Using covers on trucks that transport material to and from site to prevent visible emissions. |
| Regulation 1113 – Open Burning | <ul style="list-style-type: none"> • Prohibiting open burns statewide during the Ozone Season from May 1-Sept. 30 each year. • Prohibiting the burning of land clearing debris. • Prohibiting the burning of trash or building materials/debris. |
| Regulation 1145 – Excessive Idling of Heavy Duty Vehicles | <ul style="list-style-type: none"> • Restricting idling time for trucks and buses having a gross vehicle weight of over 8,500 pounds to no more than three minutes. |

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

- **Constructing only energy efficient homes.** Energy Star qualified homes are up to 30% more energy efficient than typical homes. These 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 increased energy efficiency translates into a percent reduction in pollution. The Energy Star Program is 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.
- **Providing tie-ins to the nearest bike paths and links to any nearby mass transport system.** These measures can significantly reduce mobile source emissions.
- **Funding a lawnmower exchange program.** New lawn and garden equipment emits significantly less than equipment as little as 7 years old, and may significantly reduce emissions from this new development. The builder could fund such a program for the new occupants.

Additionally, the following measures will reduce emissions associated with the actual construction phase of the development:

- **Using retrofitted diesel engines during construction.** This includes equipment that are 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 at residential units and in vegetative buffer areas.** Trees reduce emissions by trapping dust particles and by 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 on air quality. The applicant should submit a plan to the DNREC Air Quality Management Section which address the above listed measures, and that details all of the specific emission mitigation measures that will be incorporated into the Bunker Hill development. Air Quality Management Section points of contact are Phil Wheeler and Deanna Morozowich, and they may be reached at (302) 739-9402. *Deanna Morozowich - (302) 739-9402,* Deanna.Morozowich@state.de.us

Hazardous Waste Sites. DNREC's Site Investigation and Restoration Branch (SIRB) has reviewed the proposed project. No SIRB sites or salvage yards were found within a ½-mile radius of the proposed development. However, based on the previous agricultural use of the proposed project site, which may have involved the use of pesticides and herbicides, SIRB recommends that a Phase I Environmental Site Assessment be performed prior to development. In addition, 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). SIRB should also be contacted as soon as possible at 302-395-2600 for further instructions. *Krystal Stanley* - (302) 395-2644, Krystal.Stanley@state.de.us

Tank Management Branch. The Delaware Department of Natural Resources and Environmental Control-Tank Management Branch (TMB) appreciates the opportunity to comment on the proposed development. The parcel ID provided within the PLUS system could not be matched to a polygon with DNREC's GIS system; therefore, the project was based on the closest match, Parcel ID: 1302100013. There is one inactive LUST site located near the proposed project.

Name: 301 Truck Plaza Inc.
Facility ID: 3-000280
Project: N9709136

No environmental impact is expected from the above inactive LUST sites. However, should any underground storage tanks or petroleum contaminated soil be discovered by any person during construction, the DNREC-TMB at (302) 395-2500 and the DNREC Emergency Response Hotline at (800) 662-8802 must be notified within 24 hours.

Should any unanticipated contamination be encountered, PVC pipe materials would have to be replaced with ductile steel and nitrile rubber gaskets in the contaminated areas.

Also, please note that if any aboveground storage tanks (ASTs) less than 12,500 gallons are installed, they must be registered with the TMB. If any ASTs greater than 12,500 gallons are installed, they are also subject to installation approval by the TMB. *Elizabeth Wolff* - (302) 395-2500, Elizabeth.Wolff@state.de.us