



**STATE OF DELAWARE
EXECUTIVE DEPARTMENT
OFFICE OF MANAGEMENT AND BUDGET
STATE PLANNING COORDINATION**

November 23, 2007

Alan Thompson
Thompson Mapping Systems, Inc.
P.O. Box 151
Dover, DE 19903

RE: PLUS review – PLUS 2007-10-14; Fox Meadow Estates

Dear Mr. Thompson:

Thank you for meeting with State agency planners on October 24, 2007 regarding the proposed plans for the Fox Meadow Estates project to be located on Raughley Hill Road, north of Delaware Avenue.

According to the information received, you are seeking subdivision plan approval for 190 residential units on 72.4 acres. The parcel is currently located in Kent County, however we understand that it is the owner's intention to annex the parcel into the City of Harrington. The parcel is identified as an annexation area in Harrington's certified comprehensive plan. Our office has reviewed and accepted a Plan of Services for this annexation via a letter from David Edgell to Mayor Price dated September 17, 2007 (attached). Our office has not been informed by the Town of Harrington that the parcel has been legally annexed, so as of this time we understand that the parcel is still in Kent County's jurisdiction.

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.

Executive Summary

The following section includes some site specific highlights from the agency comments found in this letter. This summary is provided for your convenience and reference. The full text of this letter represents the official state response to this project. ***Our office notes that the applicants are responsible for reading and responding to this letter and all comments contained within it in their entirety.***

State Strategies/Project Location

- This project is located in Investment Level 2 according to the *Strategies for State Policies and Spending*. This site is also located in the Kent County Growth Zone, and is in the annexation area of the City of Harrington's certified comprehensive plan. 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.
- The proposal for a low density single family residential subdivision is inconsistent with Harrington's certified and adopted comprehensive plan.
- It is recommended that the developer consult with legal counsel and the City of Harrington before proceeding.
- A comprehensive plan amendment will be required if all parties desire to proceed with the plan as presented at the PLUS meeting.

Street Design and Transportation

- Raughley Hill Road (Kent Road 405) is classified as a local road. DelDOT's policy is to require dedication of sufficient land to provide a minimum right-of-way width of 30 feet from the centerline on local roads. Therefore DelDOT will require right-of-way dedication along the frontage to provide any additional width needed from this project.
- DelDOT will also require the developer to provide a 15-foot wide permanent easement along the property frontage for a future shared use path.
- DelDOT recommends that a second connection be provided, in the area of Lots 20 and 21, to the Gateway Farm, LLC parcel (Tax Parcel MN-09-170.00-02-13.02).

- While the proposed subdivision streets would necessarily be built for Town of Harrington maintenance, the medians shown near Lots 2 and 76 do not meet State standards. For this reason, it is recommended that they be removed.
- DelDOT recommends that lots 76 through 85 be reconfigured to eliminate the need for driveways on the first block entering the development.
- DelDOT recommends that sidewalks be provided on both sides of the subdivision streets to encourage walking.

Natural and Cultural Resources

- It appears that a stormwater pond and at least lot #s 50-55 are within 100 feet of adjacent forested wetlands. These lots and infrastructure should be omitted, downsized or relocated. DNREC strongly recommends that the applicant maintain a minimum 100-foot upland buffer from the wetlands and water bodies. Buffer widths less than 100-foot have been found to be insufficient to mitigate impacts to water quality; upland buffers around wetlands also provide critical habitat for wetland dependent species during a portion of their life cycle.
- The proposed entrance on Raughley Hill Road is a dual-lane boulevard separated by an island with two fifteen-foot shoulders. It is in the excellent recharge potential area. The applicant states that the development would generate 1,900 vehicle trips on an average weekday. This land use produces petroleum hydrocarbons, other organics, metals, and other inorganics (DNREC, 1999). The contaminants associated with this land use could easily infiltrate the unconfined aquifer and compromise shallow residential wells down gradient of the entry. The Ground Water Protection Branch recommends the use of Green Technology Better Management Practices to handle the stormwater runoff from this roadway.
- The applicant has identified stormwater ponds as the proposed method to treat stormwater. Because of the parcel's location in an impaired watershed and the amount of impervious surface, the applicants should incorporate more green technology best management practices and low impact development practices to reduce stormwater flow and meet water quality goals for the Murderkill watershed.
- This project is located within the Browns Branch Tax Ditch, which has existing tax ditch rights-of-way. Proposed lots 19-42, along with the proposed stormwater pond, are within existing tax ditch rights-of-way. Any modification of the tax ditch or tax ditch right-of-way will require approval of the Tax Ditch Association

and a court order change to the tax ditch. Please contact the Drainage Program in Georgetown at (302) 855-1930 as soon as possible to request a review of the tax ditch rights-of-way and to discuss the releasing of stormwater into the tax ditch.

- Lot #s 41-50 appear to be in close proximity to the pond with little room for a much needed vegetative buffer. Initially it may be desirable to be in close proximity to and have a clear vista of the water, but eventually the water quality could become very undesirable and the lawn areas covered with goose droppings. We recommend that consideration be made for either downsizing the pond (if deemed feasible by the entity that certifies the stormwater plan) or downsizing the lots to accommodate a buffer area around the pond.

The following are a complete list of comments received by State agencies:

Office of State Planning Coordination – Contact: David Edgell 739-3090

This project is located in Investment Level 2 according to the *Strategies for State Policies and Spending*. This site is also located in the Kent County Growth Zone, and is in the annexation area of the City of Harrington’s certified and adopted comprehensive plan. 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.

It has been noted that the property owner intends to annex this project into Harrington, and develop the project under Harrington’s plan and associated ordinances. Harrington’s comprehensive plan identifies the future land use of this area as “Mix Density and Service Commercial.” It is our interpretation that this land use category would result in a mixture of residential housing units of various types and densities, as well as some component of commercial use. Our office supports this future land use, as it is consistent with the goals of Livable Delaware and the Strategies for State Policies and Spending to support compact, mixed use development in municipalities where infrastructure and services are available.

The proposed subdivision plan does not comply with the City’s certified and adopted comprehensive land use plan. We must point out that according to Title 22, Section 702 of the Delaware Code: “After a comprehensive plan or portion thereof has been adopted by the municipality in accordance to this chapter, the comprehensive plan shall have the force of law and no development shall be permitted except as consistent with the plan.”

Our office recommends that you contact the City of Harrington to discuss the consistency of this proposal with the City’s comprehensive plan. In addition, it is recommended that you consult your attorney and Harrington’s City Solicitor before proceeding with this

project. If it is the desire of all parties to proceed with this project as a low density single family subdivision a comprehensive plan amendment will be required.

Division of Historical and Cultural Affairs – Contact: Terrance Burns 739-5685

In reference to this particular parcel (property/project area), the historic resources at State Historic Preservation Office of the Division of Historic & Cultural Affairs did show and indicate the following:

- There was no indication of a known Archaeological site, or National Register listed property on or within parcel/property (project area), but there is a dwelling (K-4508) nearby, and it is located Westside of Road 405, south of Road 289. This dwelling is not a National Register listed property, but it was some type of 20-century (1900s) bungalow.
- This parcel is also in a vicinity where it is a possibility that there could be a potential archaeological site (historic or prehistoric-period) on this parcel, or nearby it.
- The developer should be aware of Delaware’s Unmarked Human Remains Act of 1987, which governs the discovery and disposition of such remains. The unexpected discovery of unmarked human remains during construction can result in significant delays while the process is carried out.
- Prior to any demolition or ground-disturbing activities, or before any type of construction proceeds the developer may want to hire an archaeological consultant to check or examine this parcel/property (project area) for the possibility of a cemetery here, or to see if there are any archaeological sites on it.

The State Historic Preservation Office of the Division of Historic & Cultural Affairs recommends and do hope that the developer will take these comments in to consideration. Also, if the developer would like to discuss this in further detail, contact Mr. Terence Burns, Information Resource Specialist, at the State Historic Preservation Office of the Division of Historic & Cultural Affairs at (302) 736-7400.

Department of Transportation – Contact: Bill Brockenbrough 760-2109

- 1) Raughley Hill Road (Kent Road 405) is classified as a local road. DelDOT’s policy is to require dedication of sufficient land to provide a minimum right-of-way width of 30 feet from the centerline on local roads. Therefore DelDOT will

- require right-of-way dedication along the frontage to provide any additional width needed from this project.
- 2) DelDOT will also require the developer to provide a 15-foot wide permanent easement along the property frontage for a future shared use path.
 - 3) The proposed development does not meet DelDOT's current warrants for a traffic impact study (TIS). However, under new standards that they expect to adopt this calendar year, a TIS would be warranted for this site, so they will revisit the need for a study as part of the site plan approval process.
 - 4) Regardless of whether DelDOT requires a TIS, the developer should anticipate a requirement that they improve Raughley Hill Road to meet DelDOT's local road standards, that is 11-foot lanes and 5-foot shoulders from the site's northerly property line to the road's intersection with Delaware Avenue. An overlay of the existing roadway may be required.
 - 5) DelDOT appreciates the proposed connection to the developer's other lands (Tax Parcel MN-09-170.00-02-13.00). They recommend that a second connection be provided, in the area of Lots 20 and 21, to the Gateway Farm, LLC parcel (Tax Parcel MN-09-170.00-02-13.02).
 - 6) While the proposed subdivision streets would necessarily be built for Town of Harrington maintenance, the medians shown near Lots 2 and 76 do not meet State standards. For this reason, it is recommended that they be removed.
 - 7) DelDOT recommends that lots 76 through 85 be reconfigured to eliminate the need for driveways on the first block entering the development.
 - 8) DelDOT recommends that sidewalks be provided on both sides of the subdivision streets to encourage walking.
 - 9) If the rezoning is approved, the developer's site engineer should contact the project manager for Kent County, Mr. Brad Herb, regarding specific requirements for access and off-site improvements. Mr. Herb may be reached at (302) 266-9600.

**The Department of Natural Resources and Environmental Control – Contact:
Kevin Coyle 739-9071**

Soils

According to the Sussex County soil survey, Rosedale, Glassboro, Hurlock, and Corsica were mapped in the immediate vicinity of the proposed construction. Rosedale is a well-drained upland soil that, generally, has few limitations for development. Glassboro is a somewhat poorly-drained transitional soil that has moderate to severe limitations for development. Hurlock and Corsica are poorly to very poorly-drained wetland associated (hydric) soils that have severe limitations for development, and should be avoided.

Wetlands

According to the Statewide Wetland Mapping Project (SWMP) mapping, palustrine forested headwater riparian headwater wetlands were mapped in the southwestern portion of the parcel. Wetlands provide water quality benefits, attenuate flooding and provide important habitat for plants and wildlife. PLUS application materials indicate that wetlands were delineated. This delineation should be verified by the U.S. Army Corps of Engineers (USACE, or “the Corps”) through the Jurisdictional Determination process.

Impacts to Palustrine wetlands are regulated by the Corps through Section 404 of the Clean Water Act. In addition, individual 404 permits and certain Nationwide Permits from the Corps also require 401 Water Quality Certification from the DNREC Wetland and Subaqueous Land Section and Coastal Zone Federal Consistency Certification from the DNREC Division of Soil and Water Conservation, Delaware Coastal Management Program (DCMP) Section. Each of these certifications represents a separate permitting process.

Please be advised that nationwide permits have been suspended in Delaware and are pending further coordination with the Corps. Therefore, contrary to past practices, Coastal Zone Management approval can no longer be assumed. Individual certifications must be granted from the DCMP office for each project intending to utilize a Nationwide Permit. For more information on the Federal Consistency process, please contact the DCMP office at 302.739.9283. To find out more about permitting requirements, the applicant is encouraged to attend a Joint Permit Process Meeting. These meetings are held monthly and are attended by federal and state resource agencies responsible for wetland permitting. Contact Denise Rawding at 302.739.9943 to schedule a meeting.

As noted previously, palustrine headwater water riparian wetlands bound the southwestern boundary of subject parcel. Headwater riparian wetlands serve to protect water quality which helps maintain the ecological integrity and functions throughout the length of the stream, including the floodplain system and/or water bodies further downstream. Since headwater riparian wetlands serve as natural buffers that protect the water and habitat quality of streams from sediment and nutrient-laden runoff, their protection deserves the highest priority.

It appears that a stormwater pond and at least lot #s 50-55 are within 100 feet of adjacent forested wetlands. These lots and infrastructure should be omitted, downsized or relocated. DNREC strongly recommends that the applicant maintain a minimum 100-foot upland buffer from the wetlands and water bodies. Buffer widths less than 100-foot have been found to be insufficient to mitigate impacts to water quality; upland buffers around wetlands also provide critical habitat for wetland dependent species during a portion of their life cycle.

Impervious Cover

Based on a review of the PLUS application form, post-construction surface imperviousness was projected to reach 20 percent. However, given the projected scope and density of this project this estimate appears to understate post-construction surface imperviousness. When calculating surface imperviousness, it is important to consider all created forms of constructed surface imperviousness (i.e., rooftops, sidewalks, roads, and stormwater management ponds) in the calculation for surface imperviousness; otherwise, an inaccurate assessment of this project's environmental impacts will result. Surface imperviousness should be recalculated with all of the above-mentioned forms of constructed surface imperviousness included.

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

Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Murderkill River watershed. A TMDL is the

maximum level of pollution allowed for a given pollutant below which a “water quality limited water body” can assimilate and still meet water quality standards to the extent necessary to support use goals such as, swimming, fishing, drinking water and shell fish harvesting. Although TMDLs are required by federal law, states are charged with developing and implementing standards to support these desired use goals. In the Murderkill River watershed, “target-rate-nutrient reductions” of 30 and 50 percent will be required for nitrogen and phosphorus, respectively. Additionally, “target-rate-reductions” of 32 percent will be required for bacteria.

TMDL Compliance through the PCS

As indicated above, Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been proposed for the Murderkill watershed. The TMDL calls for a 30 and 50 percent reduction in nitrogen and phosphorus from baseline conditions. The TMDL also calls for a 32 percent reduction in bacteria. A Pollution Control Strategy (PCS) will be used as a regulatory framework to ensure that these nutrient reduction targets are attained. The Department has developed an assessment tool to evaluate how your proposed development may reduce nutrients to meet the TMDL requirements. Additional nutrient reductions may be possible through the implementation of Best Management Practices such as wider vegetated buffers along watercourses, increasing passive, wooded open space, and the use of green-technology stormwater management treatment trains. Contact Lyle Jones at 302-739-9939 for more information on the assessment tool.

Water Resource Protection Areas

The Water Supply Section, Ground Water Protection Branch (GWPB) has determined that a significant portion falls within an excellent ground-water recharge area for the Town of Harrington (see following map and attached map).

The Town of Harrington has yet to develop source water protection ordinances. Their 2004 Comprehensive Land Use Plan expresses the intent to protect excellent-recharge areas by limiting impervious cover and additional open space requirements.

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 Water Supply Section recommends that the portion of the new development within the excellent ground-water recharge area not exceed 20% impervious cover. Some allowance for augmenting ground-water recharge should be considered if the impervious cover exceeds 20% but is less than 50% of that portion of the parcel within this area. However, the development should not exceed 50% regardless. A water balance calculation (environmental assessment) will be necessary to determine the quantity of clean water to be recharged via a recharge basin (Thornthwaite, 1957). The purpose of an impervious cover threshold is to minimize loss of recharge (and associated increases in storm water) and protect the quality and quantity of ground water and surface water supplies.

The proposed development would change the impervious cover from 0% to “less than 20%”. The developer on the PLUS application provided these numbers.

GWPB recommends:

- Limit the impervious cover to less than the 20% as proposed.

The proposed entrance on Raughley Hill Road is a dual-lane boulevard separated by an island with two fifteen-foot shoulders (see map). It is in the excellent recharge potential area. The applicant states that the development would generate 1,900 vehicle trips on an average weekday. This land use produces petroleum hydrocarbons, other organics, metals, and other inorganics (DNREC, 1999). The contaminants associated with this land use could easily infiltrate the unconfined aquifer and compromise shallow residential wells down gradient of the entry.

GWPB recommends:

- Use Green Technology Better Management Practices to handle the stormwater runoff from this roadway.

In addition, because the excellent ground water recharge area can so 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.

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#nvestigations>

Delaware Department of Natural Resources and Environmental Control (2005): *Source Water Protection Guidance Manual for the Local Governments of Delaware*: Dover, DE. 144 p.

http://www.wr.udel.edu/publications/SWAPP/swapp_manual_final/swapp_guidance_manual_final.pdf

Kauffman, G.J., Wozniak, S.L., and Vonck, K.J., 2005, *Delaware Ground-Water Recharge Design Manual*: Newark, DE, Water Resources Agency, University of Delaware, p. 31.

<http://www.wr.udel.edu/swaphome/Publications/SWPguidancemanual.html>

Thorntwaite, C. W., and Mather, J. R., 1957, *Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance*, Volume x, Drexel Institute of Technology, Laboratory of Climatology.

Fox Meadows (PLUS 2007-10-14) Excellent ground-water recharge potential area is highlighted in green. The site plan overlies the parcels under review.



Water Supply

The information provided indicates that the City of Harrington will provide water to the already annexed project(s) through a central public water system. DNREC files reflect that the City of Harrington does not currently hold a Certificate of Public Convenience and Necessity (CPCN) to provide public water in this (these) areas. According to §203C, Subchapter II, Chapter 1, Title 26, Delaware Code, the municipality is required to give notice to the Public Service Commission when the annexation is complete. Information on CPCN requirements and applications can be obtained by contacting the Public Service Commission at (302)739-4247. Should an on-site public/miscellaneous 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. The Division of Water Resources will consider applications for the construction of on-site wells provided the wells can be located and constructed 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.

Should you have any questions concerning these comments, please contact Rick Rios at 302-739-9944.

Sediment and Erosion Control/ Stormwater Management

This project is located in the Murderkill Watershed which has been degraded by nutrients and bacteria. A Total Maximum Daily Load (TMDL) has been established to reduce nutrients in this watershed. If you have any questions about the strategy to reduce nutrients please contact Lyle Jones at DNREC Watershed Assessment Section, 302.739.9939.

The DNREC Sediment and Stormwater Program ensure that sediment and erosion control plans and stormwater plans comply with local land use ordinances and policies, including

the siting of stormwater management facilities. However, DNREC does not support placement in resource protection areas or the removal of trees for the sole purpose of placement of a stormwater management facility/practice.

A detailed sediment and stormwater plan will be required prior to any land disturbing activity taking place on the site. Because the Sediment and Stormwater Program is in the process of revising its State regulations, it would be a good idea to 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 Kent Conservation District. Contact Jared Adkins at the Kent Conservation District at (302) 741.2600, ext. 3, for details regarding submittal requirements and fees.

The applicant has identified stormwater ponds as the proposed method to treat stormwater. Because of the parcel's location in an impaired watershed and the amount of impervious surface, the applicants should incorporate more green technology best management practices and low impact development practices to reduce stormwater flow and meet water quality goals for the Murderkill watershed. This site provides opportunity to use more creative design for stormwater management. The property owner/applicant may want to consider coordinating with the town and adjacent parcel(s) for a regional approach to stormwater management if development of adjacent parcel(s) is/are anticipated.

Drainage

This project is located within the Browns Branch Tax Ditch, which has existing tax ditch rights-of-way. Proposed lots 19-42, along with the proposed stormwater pond, are within existing tax ditch rights-of-way. Any modification of the tax ditch or tax ditch right-of-way will require approval of the Tax Ditch Association and a court order change to the tax ditch. Please contact the Drainage Program in Georgetown at (302) 855-1930 as soon as possible to request a review of the tax ditch rights-of-way and to discuss the releasing of stormwater into the tax ditch.

Existing tax ditch rights-of-way should be free from subdivision lots to allow for routine maintenance and periodic reconstruction. Routine maintenance primarily consists of mowing ditch bank vegetation and the removal of small blockages. Periodic tax ditch reconstruction involves the removal of sediment from the ditch bottom to reestablish the original design grade. The removed sediment, referred to as spoil, is typically disposed of

by spreading within the tax ditch right-of-way. To prevent spoil from being spread in residents' yards, the Drainage Program recommends open space along the tax ditch to be 50 feet wide as measured from the top of bank and running the length of the tax ditch on this property.

The Drainage Program requests that the engineer take precautions to ensure the project does not hinder any off site drainage upstream of the project or create any off site drainage problems downstream by the release of on site storm water. The Drainage Program requests that the engineer check existing downstream ditches and pipes for function and blockages prior to the construction. There are known problems with beaver in the area of this project. Notify downstream landowners of the change in volume of water released on them.

Given the future development potential to the north, south, and west of this project the Drainage Program recommends the developer work with the City of Harrington, the Kent Conservation District, and the Browns Branch Tax Ditch organization to explore a regional stormwater plan for this section of Harrington.

The Drainage Program encourages the elevation of rear yards to direct water towards the streets where storm drains are accessible for maintenance. However, the Drainage Program recognizes the need for catch basins in yards in certain cases. Therefore, catch basins placed in rear and side yards will need to be clear of obstructions and be accessible for maintenance. Decks, sheds, fences, pools, and kennels can hinder drainage patterns as well as future maintenance to the storm drain or catch basin. Deed restrictions, along with drainage easements recorded on deeds, should ensure adequate future maintenance access.

An increase of the side yard setback to 15 feet may be needed on all properties with a drainage easement on the side. The increase will allow room for equipment to utilize the entire easement and maneuver free of obstructions if the drainage conveyance requires periodic maintenance or future re-construction. The side yard setback would only increase on the side with the drainage easement.

All catch basins in rear or side yards should have a 10-foot drainage easement around them on all sides. Place restrictions on fences, sheds, and other structures within the easement to prevent obstructions from being placed next to the catch basin. Record the easement on the deed.

Have all drainage easements recorded on deeds and place restrictions on obstructions within the easements to ensure access for periodic maintenance or future re-construction. Future property owners may not be aware of a drainage easement on their property if the

easement is only on the record plan. However, by recording the drainage easement on the deed, the second owner, and any subsequent owner of the property, will be fully aware of the drainage easement on their property.

Preserve existing riparian buffers on this site to aid in the reduction of nutrients, sediment, and other pollutants entering the watershed. Please explore methods to filter excess nutrients in stormwater runoff from this site before releasing the stormwater into the watershed.

The Drainage Program does not support the removal of trees for the creation of stormwater management areas. However, the Drainage Program recognizes that tree removal is unavoidable in some cases. Where practical, plant native trees and shrubs to compensate for the loss of nutrient uptake and stormwater absorption the removed trees provided.

For questions or clarifications, please contact Jim Sullivan at (302) 739-9921.

Open Space

This parcel has an existing buffer on a tax ditch prong. To maximize the existing buffering capacity and wildlife habitat on site, it is recommended that lot lines and other infrastructure (such as storm water management ponds) be pulled out of the forest and that areas of community open space be designated along the forested/riparian areas. Doing so will accomplish two things: it will preserve the buffers and it will create recreational opportunities for residents by allowing them access to and views of the forest and stream.

The developer is strongly urged to consider alternatives to mowed grass within community open space areas, especially along wetland buffers/stormwater management facilities. Mowing and other maintenance costs from lawn areas can become a substantial burden for community maintenance associations. There may be areas within the development that are appropriate for warm or cool season grasses. The maintenance costs associated with meadow type grasses are much lower than those of lawn grasses, and provide food and habitat for birds and other wildlife and can help reduce non-point source pollution. The developer is encouraged to review "Community Spaces, Natural Places: A guide to restoration, management, and maintenance of community open space". This document provides a reference of practical and successful open space management techniques that emphasize natural landscape alternatives other than turf grass management. The guidebook is available online at:
<http://www.dnrec.state.de.us/dnrec2000/Divisions/Soil/dcmp/>.

Open space containing forest and/or wetlands should be placed into a permanent conservation easement or other permanent protection mechanism. Conservation areas should also be demarked to avoid infringement by homeowners.

Forest Preservation

According to the application, 7.93 acres of forest exist on site, but only 2 acres will be removed by this project. This is not obvious from the site plan. If the site plan is compared to aerial photographs of this parcel, trees will have to be cleared for numerous lots and portions of roadways that occur within the existing forested area. The trees drawn on the site plan are trees that will remain after development rather than what exists now. DNREC encourages the applicant to make the existing forested boundary more obvious on the site plan.

We also recommend that an effort be made to maintain the existing forested area, especially in the southern part of the plan as this portion of forest connects to a larger forest block. Forested connections are important for maintaining wildlife travel corridors. Forest fragmentation separates wildlife populations, increases road mortality, and increases “edge effects” that leave many forest dwelling species vulnerable to predation and allows the infiltration of invasive species.

Tree clearing should not occur April 1st to July 31st to reduce impacts to birds and other wildlife that utilize forests for breeding. This would only protect those species for one breeding season; once trees are cleared there is an overall loss of habitat.

Cumulative forest loss throughout the State is of utmost concern to the Division of Fish and Wildlife which is responsible for conserving and managing the State’s wildlife (see www.fw.delaware.gov and the Delaware State Code, Title 7). Because of an overall lack of forest protection, we have to rely on applicants and/or the entity that approves the project (i.e. counties and municipalities) to consider implementing measures that will aide in forest loss reduction.

Nuisance Waterfowl

The pond being proposed may attract large numbers of waterfowl, such as resident Canada Geese and Mute Swans. 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. Lot #s 41-50 appear to be in close proximity to the pond with little room for a much needed vegetative buffer. Initially it may be desirable to be in close proximity to and have a clear vista of the water, but eventually the water quality could

become very undesirable and the lawn areas covered with goose droppings. We recommend that consideration be made for either downsizing the pond (if deemed feasible by the entity that certifies the stormwater plan) or downsizing the lots to accommodate a buffer area around the pond. This buffer should be approximately 15-30 feet in width and be comprised of tall grasses, native wildflowers, shrubs, and trees. Waterfowl do not feel safe when they can not see the surrounding area for possible predators. These plantings should be completed as soon as possible as it is easier to deter geese when there are only a few than it is to remove them once they become plentiful. 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.

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 proper landscaping, monitoring, and other techniques, geese problems can be minimized.

Underground Storage Tanks

There is one inactive LUST site(s) located near the proposed project:

Wirick Schiff Milling, Facility # 1-000234, Project # K8705017

No environmental impact is expected from the above inactive/active LUST site(s). However, should any underground storage tank or petroleum contaminated soil be discovered during construction, the Tank Management Branch must be notified as soon as possible. It is not anticipated that any construction specifications would need to be changed due to petroleum contamination. However, should any unanticipated contamination be encountered and PVC pipe is being utilized, it will need to be changed to ductile steel with nitrile rubber gaskets in the contaminated areas.

Air Quality

Once complete, vehicle emissions associated with this project are estimated to be 14.6 tons (29,163.0 pounds) per year of VOC (volatile organic compounds), 12.1 tons (24,145.0 pounds) per year of NO_x (nitrogen oxides), 8.9 tons (17,814.6 pounds) per year of SO₂ (sulfur dioxide), 0.8 ton (1,585.8 pounds) per year of fine particulates and 1,219.7 tons (2,439,449.2 pounds) per year of CO₂ (carbon dioxide).

Emissions from area sources associated with this project are estimated to be 5.9 tons (11,762.8 pounds) per year of VOC (volatile organic compounds), 0.6 ton (1,294.3 pounds) per year of NOx (nitrogen oxides), 0.5 ton (1,074.1 pounds) per year of SO2 (sulfur dioxide), 0.7 ton (1,386.0 pounds) per year of fine particulates and 23.8 tons (47,683.6 pounds) per year of CO2 (carbon dioxide).

Emissions from electrical power generation associated with this project are estimated to be 2.3 tons (4,661.9 pounds) per year of NOx (nitrogen oxides), 8.1 tons (16,215.4 pounds) per year of SO2 (sulfur dioxide) and 1,195.9 tons (2,391,765.6 pounds) per year of CO2 (carbon dioxide).

	VOC	NOx	SO ₂	PM _{2.5}	CO ₂
Mobile	14.6	12.1	8.9	0.8	1219.7
Residential	5.9	0.6	0.5	0.7	23.8
Electrical Power		2.3	8.1		1195.9
TOTAL	20.5	15.0	17.5	1.5	2439.4

For this project the electrical usage via electric power plant generation alone totaled to produce an additional 2.3 tons of nitrogen oxides per year and 8.1 tons of sulfur dioxide per year.

A significant method to mitigate this impact would be to require the builder to construct Energy Star qualified homes. Every percentage of increased energy efficiency translates into a percent reduction in pollution. Quoting from their webpage, <http://www.energystar.gov/>:

“ENERGY STAR qualified homes are independently verified to be at least 30% more energy efficient than homes built to the 1993 national Model Energy Code or 15% more efficient than state energy code, whichever is more rigorous. These savings are based on heating, cooling, and hot water energy use and are typically achieved through a combination of:

- building envelope upgrades,
- high performance windows,
- controlled air infiltration,
- upgraded heating and air conditioning systems,
- tight duct systems and
- upgraded water-heating equipment.”

The DNREC Energy Office is in the process of training builders in making their structures more energy efficient. The Energy Star Program is excellent way to save on energy costs and reduce air pollution. They highly recommend this project development and other residential proposals increase the energy efficiency of their homes.

They also recommend that the home builders offer geothermal and photo voltaic energy options. Applicable vehicles should use retrofitted diesel engines during construction. The development should provide tie-ins to the nearest bike paths, links to mass transit, and fund a lawnmower exchange program for their new occupants.

State Fire Marshal's Office – Contact: Duane Fox 739-4394

These comments are intended for informational use only and do not constitute any type of approval from the Delaware State Fire Marshal's Office. 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 (DSFPR):

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

b. **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.
- 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.

c. **Gas Piping and System Information:**

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

d. **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”
- Name of Water Supplier
- Proposed Use
- National Fire Protection Association (NFPA) Construction Type
- Townhouse 2-hr separation wall details shall be shown on site plans
- Maximum Height of Buildings (including number of stories)
- Provide Road Names, even for County Roads

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.

Department of Agriculture - Contact: Scott Blaier 698-4500

The Delaware Department of Agriculture has no objections to the proposed project. The project is in the Town of Harrington, and the *Strategies for State Policies and Spending* encourages environmentally responsible development in Investment Level 2 areas.

A portion of the site is located within an area designated as having “excellent” ground-water recharge potential. DNREC has mapped all ground-water recharge-potential recharge areas for the state, and an “excellent” rating designates an area as having important groundwater recharge qualities.

Senate Bill 119, enacted by the 141st General Assembly in June of 2001, requires the counties and municipalities with over 2,000 people to adopt as part of the update and implementation of their 2007 comprehensive land use plans, areas delineating excellent ground-water recharge potential areas. Furthermore, the counties and municipalities are

required to adopt regulations by December 31, 2007 governing land uses within those areas to preserve ground-water quality and quantity.

Maintaining pervious cover in excellent and good recharge areas is crucial for the overall environmental health of our state and extremely important to efforts which ensure a safe drinking water supply for future generations. Retention of pervious cover to ensure an adequate future water supply is also important for the future viability of agriculture in the First State. The loss of every acre of land designated as “excellent” and “good” recharge areas adversely impacts the future prospects for agriculture in Delaware. The developer should make every effort to protect and maintain valuable ground-water recharge potential areas.

Right Tree for the Right Place

The Delaware Department of Agriculture Forest Service encourages the developer to use the “Right Tree for the Right Place” for any design considerations. This concept allows for the proper placement of trees to increase property values in upwards of 25% of appraised value and will reduce heating and cooling costs on average by 20 to 35 dollars per month. In addition, a landscape design that encompasses this approach will avoid future maintenance cost to the property owner and ensure a lasting forest resource. Please feel free to contact the Delaware Forest Service at (302) 698-4500 for more information.

Native Landscapes

The Delaware Department of Agriculture and the Delaware Forest Service encourages the developer to use native trees and shrubs to buffer the property from the adjacent land-use activities near this site. A properly designed forested buffer can create wildlife habitat corridors and improve air quality to the area by removing six to eight tons of carbon dioxide annually and will clean our rivers and creeks of storm-water run-off pollutants. To learn more about acceptable native trees and how to avoid plants considered invasive to our local landscapes, please contact the Delaware Department of Agriculture Plant Industry Section at (302) 698-4500.

Public Service Commission - Contact: Andrea Maucher 739-4247

Any expansion of natural gas or installation of a closed propane system must fall within Pipeline Safety guidelines. Contact: Malak Michael at (302) 739-4247.

Delaware State Housing Authority – Contact Vicki Powers 739-4263

This proposal is for a site plan review of 190 residential units on 72 acres, located on Raughley Hill Road near the intersection with Delaware Avenue in the City of Harrington. According to the State Strategies Map, the proposal is located in an Investment Level 2 area. As a general planning practice, DSHA encourages residential development in areas where residents will have proximity to services, markets, and employment opportunities such as Investment Level 1 and 2 areas outlined in the State Strategies Map. Furthermore, DSHA encourages residential development in Level 1 and 2 areas that are affordable to first time homebuyers. According to the most recent real estate data collected by DSHA, the average home price in Kent County is \$196,000. However, families earning respectively 100% of Kent County's median income only qualify for mortgages of \$181,441, thus creating an affordability gap of \$14,559. We encourage both the Town of Harrington and the developer to coordinate setting aside some of the units to be affordable to the low- and moderate-income households as part of the annexation process. In addition, coordination can be done with the Diamond State CLT to ensure the units stay affordable in perpetuity.

Department of Education – Contact: John Marinucci 735-4055

This proposed development is within the Lake Forest School District boundaries. DOE offers the following comments on behalf of the Lake Forest School District.

1. Using the DOE standard formula, this development will generate an estimated 95 students.
2. DOE records indicate that the Lake Forest School Districts' *elementary schools are at or beyond 100% of current capacity* based on September 30, 2006 elementary enrollment.
3. DOE records indicate that the Lake Forest School Districts' *secondary schools are very close to 100% of current capacity* based on September 30, 2006 secondary enrollment.
4. The Superintendent of Lake Forest School District has communicated to the DOE the district's lack of capacity given the number of planned and recorded residential sub divisions within district boundaries.
5. This development will create additional elementary and secondary student population growth which will further compound the existing shortage of space.
6. The developer is strongly encouraged to contact the Lake Forest School District Administration to address the issue of school over-crowding that this development will exacerbate.
7. DOE requests developer work with the Lake Forest School District transportation department to establish developer supplied bus stop shelter ROW and shelter

structures, interspersed throughout the development as determined and recommended by the local school district.

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 that reads "Constance C. Holland". The signature is written in black ink and is positioned above the typed name and title.

Constance C. Holland, AICP
Director

CC: Kent County
City of Harrington