STATE OF DELAWARE
EXECUTIVE DEPARTMENT
OFFICE OF MANAGEMENT AND BUDGET

July 27, 2006

Mr. George Schroeder
Morris & Ritchie Associates, Inc.
18 Boulden Circle
New Castle, DE 19720

RE: PLUS review – PLUS 2006-06-04; Shaw Property

Dear Mr. Schroeder:

Thank you for meeting with State agency planners on June 28, 2006 to discuss the proposed plans for the Shaw property project to be located northeast of Harrington, along he west side of Killens Pond Road, south of Carpenters Bridge Road.

According to the information received, you are seeking a site plan approval for 171 residential units on 171 acres. This proposal is located in Investment Level 4 according to the Strategies for State Policies and Spending, and is outside the Kent County Growth Zone. **The comments in this letter are technical, and are not intended to suggest that the State supports this development proposal. This letter does not in any way suggest or imply that you may receive or may be entitled to permits or other approvals necessary to construct the development you indicate or any subdivision thereof on these lands.**

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 Kent 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.

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

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

This project represents a major land development that will result in 171 residential units in an Investment Level 4 area according to the *2004 Strategies for State Policies and Spending*. This project is also located outside of Kent County's Growth Zone according to the County's certified comprehensive plan. Investment Level 4 indicates where State investments will support agricultural preservation, natural resource protection, and the continuation of the rural nature of these areas. New development activities and suburban development are not supported in Investment Level 4. These areas are comprised of prime agricultural lands and environmentally sensitive wetlands and wildlife habitats, which should be, and in many cases have been preserved.

From a fiscal responsibility perspective, development of this site is likewise inappropriate. The cost of providing services to development in rural areas is an inefficient and wasteful use of the State's fiscal resources. The project as proposed is likely to bring more than 420 new residents to an area where the State has no plans to invest in infrastructure upgrades or additional services. These residents will need access to such services and infrastructure as schools, police, and transportation. To provide some examples, the State government funds 100 percent of school transportation and paratransit services, up to 80% of school construction costs, and the cost of police protection in the unincorporated portion of Kent County where this development is proposed. Over the longer term, the unseen negative ramifications of this development will become even more evident as the community matures and the cost of maintaining infrastructure and providing services increases.

Because the development is inconsistent with the Strategies for State Policies and Spending, the State is opposed to this proposed subdivision.

Division of Historical and Cultural Affairs – Contact: Alice Guerrant 739-5685

The State Historical and Cultural Affairs Office is not in favor of this development in Level 4, because it will increase the loss of the historic agricultural landscape in this area, have an adverse visual effect on nearby historic properties, and lead to the loss of historic properties within the parcel.

An early-20th-century house (K-4533) is located on the road in this parcel. The developer noted that only the foundation is left. The parcel has areas of high potential for prehistoric-period archaeological sites. The USGS 15' topographic map for Harrington, 1918, shows a building in the middle of the large field that this parcel is part of. It

appears to be just cut out of the development parcel near the jog in the northern boundary. The developer showed me a copy of a 7.5' topographic map that notes a cemetery to the far side of this building, away from the development parcel. This means that there is little chance that there will be a cemetery on the Shaw Property. There are two historic properties, a frame dwelling (K-4717) and the J & D Marvel House (K-4787; Beers Atlas of 1868), to the north of this property.

The DHCA recommends that the developer include sufficient landscaping on the north side of this development to block the view of the development from the nearby historic houses. They would also appreciate the opportunity to examine this area for archaeological sites, to learn something about their nature and extent prior to any ground-disturbing activities.

Department of Transportation – Contact: Bill Brockenbrough 760-2109

Delaware Land Development, Inc., seeks to develop a 171-acre parcel (Tax Parcel MN-00-160.00-01-22.00) northeast of Harrington on the west side of Killens Pond Road (Kent Road 384) south of Carpenter Bridge Road (Kent Road 35) The development would consist of 171 single-family detached houses. The land is zoned AC (Agricultural Conservation) and the proposed development would be done by right.

Because the development is proposed for a Level 4 Area, outside of the County growth zone, it is inconsistent with the *Strategies for State Policies and Spending* and the County Comprehensive Plan. As part of our commitment to support the *Strategies,* DelDOT refrains from participating in the cost of any road improvements needed to support this development and is opposed to any road improvements that will substantially increase the transportation system capacity in this area. DelDOT will only support taking the steps necessary to preserve the existing transportation infrastructure and make whatever safety and drainage related improvements are deemed appropriate and necessary. The intent is to preserve the open space, agricultural lands, natural habitats and forestlands that are typically found in Level 4 Areas while avoiding the creation of isolated development areas that cannot be served effectively or efficiently by public transportation, emergency responders, and other public services.

DelDOT strongly supports new development in and around existing towns and municipalities and in areas designated as growth zones in approved Comprehensive Plans. They encourage the use of transfer of development rights where this growth management tool is available.

If this development proposal is approved, notwithstanding inconsistencies with the relevant plans and policies, DelDOT will provide technical review and comments.

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

Investment Level 4 Policy Statement

This project is proposed for an Investment Level 4 area as defined by the *Strategies for State Policies and Spending* and is also located outside of a designated growth area in the relevant municipal and county certified comprehensive plans. According to the *Strategies* this project is inappropriate in this location. In Investment Level 4 areas, the State's investments and policies, from DNREC's perspective, should retain the rural landscape and preserve open spaces and farmlands. Open space investments should emphasize the protection of critical natural habitat and wildlife to support a diversity of species, and the protection of present and future water supplies. Open space investments should also provide for recreational activities, while helping to define growth areas. Additional state investments in water and wastewater systems should be limited to existing or imminent public health, safety or environmental risks only, with little provision for additional capacity to accommodate further development.

With continued development in Investment Level 4 areas, the State will have a difficult, if not impossible, time attaining water quality (e.g., TMDLs) and air quality (e.g., non-attainment areas for ozone and fine particulates) goals. Present and future investments in green infrastructure, as defined in Governor Minner's Executive Order No. 61, will be threatened. DNREC strongly supports new development in and around existing towns and municipalities and in areas designated as growth zones in certified Comprehensive Plans. We encourage the use of transfer of development rights where this growth management tool is available.

This particular development certainly compromises the integrity of the State Strategies and the preservation goals inherent in many of DNREC's programs. Of particular concern are: potential impacts to all three layers of green infrastructure (natural resource and recreation priorities, cropland and working forestland), the loss/fragmentation of 26.5 out of 89 acres of forest, and the project's location in an excellent recharge area. While mitigating measures such as conservation design, central wastewater systems instead of individual on-site septic systems, and other best management practices may help mitigate impacts from this project, not doing the project at all is the best avenue for avoiding negative impacts. As such, this project will receive no financial, technical or other support of any kind from DNREC. Any required permits or other authorizations for this

project shall be considered in light of the project's conflict with our State growth strategies.

Green Infrastructure

Portions or all of the lands associated with this proposal are within the Livable Delaware Green Infrastructure area established under Governor Minner's Executive Order #61 that represents a network of ecologically important natural resource lands of special state conservation interest.

Green infrastructure is defined as Delaware's natural life support system of parks and preserves, woodlands and wildlife areas, wetlands and waterways, productive agricultural and forest land, greenways, cultural, historic and recreational sites and other natural areas all with conservation value. Preserving Delaware's Green Infrastructure network will support and enhance biodiversity and functional ecosystems, protect native plant and animal species, improve air and water quality, prevent flooding, lessen the disruption to natural landscapes, provide opportunities for profitable farming and forestry enterprises, limit invasive species, and foster ecotourism.

Voluntary stewardship by private landowners is essential to green infrastructure conservation in Delaware, since approximately 80 percent of the State's land base is in private hands. It is in that spirit of stewardship that the Department appeals to the landowner and development team to protect sensitive resources through an appropriate site design.

Soils

Based on the Kent County soil survey, Sassafras, Rumford, and Fallsington were mapped in the immediate vicinity of the proposed project. Sassafras and Rumford are well-drained upland soils that, generally, have few limitations for development. Fallsington is a poorly-drained wetland associated (hydric) soil that has severe limitations for development.

Wetlands

Statewide Wetland Mapping Project (SWMP) maps indicate the presence of palustrine wetlands on this parcel.

These wetlands provide water quality benefits, attenuate flooding and provide important habitat for plants and wildlife. The developer should maintain a 100-foot vegetated buffer from the edge of the wetland complex and Browns Branch. The developer should

note that both DNREC and the U.S. Army Corps of Engineers (USACE) discourage allowing lot lines to contain wetlands to minimize potential cumulative impacts resulting from unauthorized and/or illegal activities and disturbances that can be caused by homeowners.

This project is located directly adjacent to sensitive headwater or near headwater riparian wetlands associated with the Brown's Branch, greatly increasing the probability of harmful impacts to surface and groundwater quality of all waters within the greater Murderkill River watershed, and reducing the probability that the State will achieve the required TMDL nutrient reductions. Headwater streams and their associated wetlands are important for the protection of water quality and the maintenance/integrity of the ecological functions throughout the length of the stream, including the floodplain system downstream. In recognition of this concern, the Watershed Assessment Section strongly recommends the applicant consider preserving as much of the existing forested buffer as possible. Otherwise, a buffer width of at least 100-foot should be retained or enhanced to protect the water and habitat quality of this waterway and its wetlands.

Wetland Permitting Information

Because there is strong evidence that federally regulated wetlands exist on site, a field wetland delineation, in accordance with the methodology established by the Corps of Engineers Wetlands Delineation Manual, (Technical Report Y-87-1) should be conducted. Once complete, this delineation should be verified Corps of Engineers through the Jurisdictional Determination process.

Please note that impacts to palustrine wetlands are regulated by the Army Corps of Engineers through Section 404 of the Clean Water Act. In situations where the applicant believes that the delineated wetlands on their parcel are nonjurisdictional isolated wetlands, the Corps must be contacted to make the final jurisdictional assessment. They can be reached by phone at 736-9763.

In addition, individual 404 permits and certain Nationwide Permits from the Army Corps of Engineers 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 Programs Section. Each of these certifications represents a separate permitting process.

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.

Impervious Cover

Based on a review of the PLUS application, post-development surface imperviousness is estimated to be about 16.5 percent. However, given the scope and density of this project, said estimate is likely inaccurate. The applicant should recognize that all forms of constructed surface imperviousness (i.e., rooftops, sidewalks and roads) should be accounted for when calculating surface imperviousness; otherwise, an inaccurate assessment of this project's environmental impacts is inevitable. It is strongly advised that this figure be recalculated to accurately reflect these concerns.

Studies link increases in impervious cover to decreases in water and habitat quality. Studies have also firmly established that irreversible declines in water and habitat quality begin once aggregate watershed surface imperviousness exceeds 10 percent. Based on analyses of 2002 aerial photography by the University of Delaware, the Murderkill watershed had about 8.1 percent impervious cover. Although this data is about 4 years old and likely an underestimate, it underscores the importance of a proactive strategy to mitigate for predictable and likely cumulative environmental impacts. Since the amount of imperviousness generated by this project is likely to be much higher than the desirable watershed threshold of 10 percent, the applicant is strongly advised to pursue best management practices (BMPs) that mitigate or reduce some of the 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 examples of practical BMPs that could easily be implemented to reduce surface imperviousness.

TMDLs

Total Maximum Daily Loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Murderkill 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 watershed, a post-development TMDL reduction level of 50 and 30 percent will be required for nitrogen and phosphorus, respectively.

TMDL Compliance through the PCS

As stated above Total Maximum Daily loads (TMDLs) for nitrogen and phosphorus have been promulgated through regulation for the Murderkill Watershed. The TMDL calls for a 50% reduction for nitrogen and 30% for phosphorus from baseline conditions. The Department developed an assessment tool to evaluate how your proposed development may reduce nutrients to meet the TMDL requirements. Contact Lyle Jones at 302-739-9939 for more information on the assessment tool.

Some additional Best Management Practices that may help this proposed project meet TMDL reductions are wider vegetated buffers along watercourses, increasing passive open space, using enhanced nutrient removal wastewater technologies, and the use of stormwater management treatment trains.

Water Resource Protection Areas

The DNREC Water Supply Section has determined that a significant portion of the proposed development falls within an excellent ground-water recharge area (see following map and attached map).

Excellent recharge areas are near-surface areas within which precipitation infiltrates the land surface to the unconfined aquifer at a more rapid rate than other areas. Kent County has approximately 14 percent of its total area classified as “excellent” recharge. This proposed development shows storm-water management ponds and active open space within the excellent ground-water recharge area.

The construction phase of this type of pond requires excavation, hauling, and grading. The heavy equipment used in this phase has the capacity to compact and degrade the structure of the strata that defines the area as an excellent ground water recharge area. Changes to the structural soil properties may cause significant reduction in recharge capacity. Installing storm-water management ponds in excellent ground-water recharge areas has the potential to contaminate the ground water beneath it and infiltrate into the aquifer.

The proposed development would change the total impervious cover from 0% to approximately 16.5%. These numbers are based on the total area and are not specific to the excellent recharge area. The developer provided the numbers on the PLUS application.

DNREC Water Supply Section recommends that that portion of the new development within the excellent ground-water recharge area not exceed 20% impervious cover. 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.

Further, 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 these areas, provided the applicant submits an environmental assessment recommending a climatic water budget and facilities to augment recharge. The environmental assessment must document that post-development recharge will be no less than predevelopment recharge when computed on an annual basis. Commonly, the applicant offsets the loss of recharge due to impervious cover by constructing recharge basins that convey relatively pure rooftop runoff for infiltration to ground water.

Kent County Ordinances support these recommendations. The Kent County Code, Chapter 187, requires preservation of excellent ground-water recharge areas and wellhead protection areas by conserving open spaces during land development.

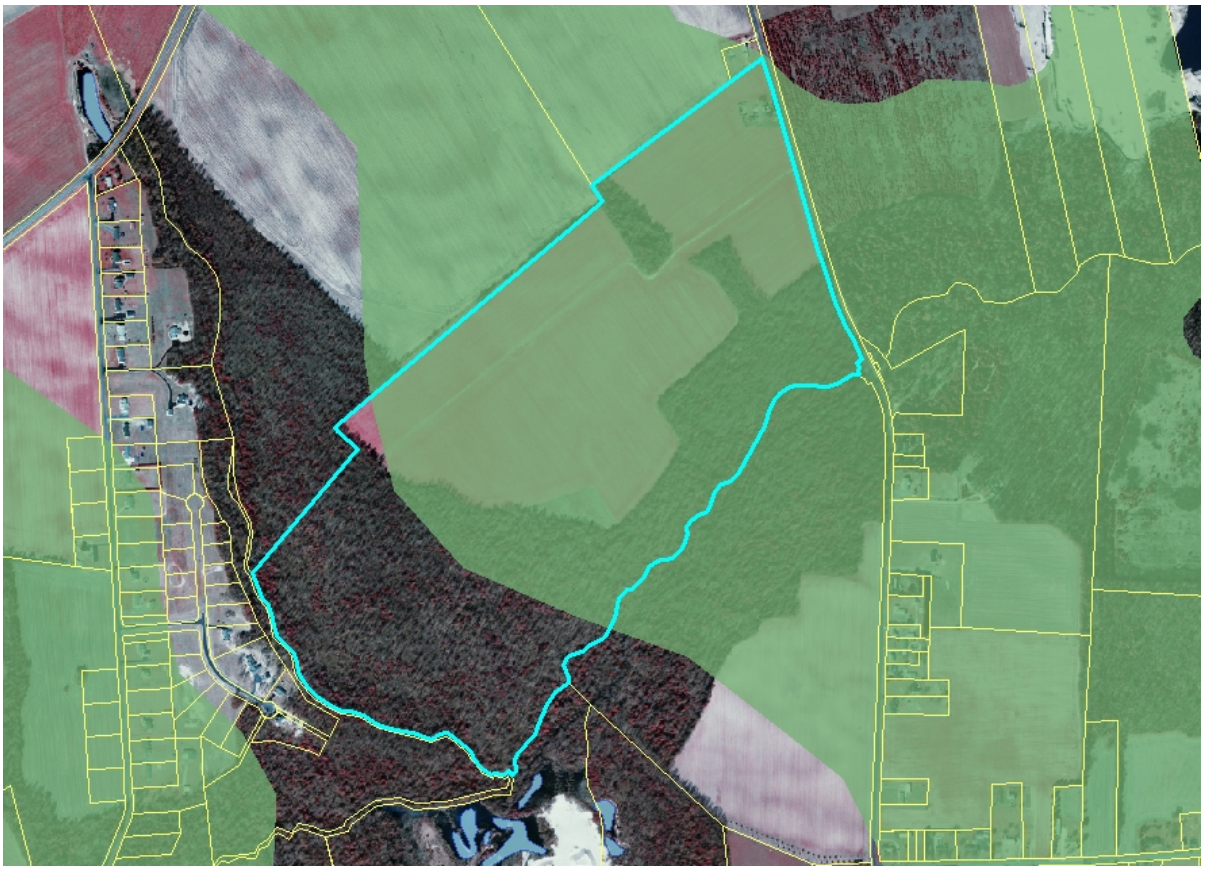
The review found no wellhead protection areas or CPCNs within the site. Artesian Water Company operates the neighboring CPCN. The PLUS applicant cites Tidewater Utilities as their source of water service provider. DNREC Water Supply Section will comment further on any public well(s), their associated wellhead protection area(s), any wastewater treatment plant, spray irrigation facility, and the associated wastewater spray fields during the permitting process.

For more information:

Source Water Protection Guidance Manual for the Local Governments of Delaware
http://www.wr.udel.edu/publications/SWAPP/swapp_manual_final/swapp_guidance_manual_final.pdf

Ground-Water Recharge Design Methodology
http://www.wr.udel.edu/publications/SWAPP/swapp_manual_final/swapp_guidance_manual_supp_1_final.pdf

Shaw Property (PLUS 2006-06-04) Map shows excellent recharge in green and proposed cite is outlined in bright blue.



Water Supply

The information provided indicates that Tidewater Utilities will provide water to the proposed projects through a central public water system. Our files reflect that Tidewater Utilities 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 302-739-4247. Should an on-site public well be needed, it must be located 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.

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

Wastewater Treatment and Disposal

At the PLUS meeting, the project engineer indicated that the Shaw Property would be sending their wastewater to the Winkler Property for treatment and disposal. Our records show that we have not received any information regarding wastewater treatment and disposal for either project. Submitting a Letter of Intent is the next step in the process. Please contact the Division of Water Resources, Groundwater Discharges Section, at 302-739-9948 for more information.

Sediment and Erosion Control/Stormwater Management

Requirements:

1. Land disturbing activities in excess of 5,000 square feet are regulated under the Delaware Sediment and Stormwater Regulations. A detailed sediment and stormwater management plan must be reviewed and approved by the Kent Conservation District prior
2. to any land disturbing activity (i.e. clearing, grubbing, filling, grading, etc.) taking place. The review fee and a completed Application for a Detailed Plan are due at the time of plan submittal to the Kent Conservation District. Construction inspection fees based on developed area and stormwater facility maintenance inspection fees based on the number of stormwater facilities are due prior to the start of construction. Please refer to the fee schedule for those amounts.

3. The following notes must appear on the record plan:

    - The Kent Conservation District reserves the right to enter private property for purposes of periodic site inspection.
    - The Kent Conservation District reserves the right to add, modify, or delete any erosion or sediment control measure, as it deems necessary.
    - A clear statement of defined maintenance responsibility for stormwater management facilities must be provided on the Record Plan.

4. Ease of maintenance must be considered as a site design component and a maintenance set aside area for disposal of sediments removed from the basins during the course of regular maintenance must be shown on the Record Plan for the subdivision.

5. All drainage ways and storm drains should be contained within drainage easements and clearly shown on the plan to be recorded by Kent County.

6. A soils investigation supporting the stormwater management facility design is required to determine impacts of the seasonal high groundwater level and soils for any basin design.

Comments:

1. The Kent Conservation District strongly objects to the amount of tree clearing being proposed on this site. The placement of the ponds in the woods is also an undesirable practice that is being objected to.

2. The designer is encouraged to consider the conservation design approach and limit the amount of tree clearing required for the development of the site including the stormwater management facilities shown in the wooded areas.

3. Access to the proposed stormwater facility must be provided for periodic maintenance. This access should be at least 12 feet wide to leading to the facility and around the facility's perimeter.

4. It is recommended that the stormwater management areas be incorporated into the overall landscape plan to enhance water quality and to make the stormwater facility an attractive community amenity.

5. A letter of no objection to re-recordation will be provided once the detailed Sediment and Stormwater Management plan has been re-approved.

6. Proper drainage of developed lots and active open space should be considered in the development of the grading plan for this subdivision.

7. Based on the site characteristics, a pre-application meeting is suggested to discuss stormwater management and drainage for this site.

Drainage

This project is within the Murderkill River Watershed, a designated critical area, with a promulgated Total Maximum Daily Load (TMDL). Existing riparian buffers should be preserved to aid in the reduction of nutrients, sediment, and other pollutants. For the further enhancement of water quality of the Murderkill River watershed, the Drainage Program encourages additional widths of vegetated buffers and other water quality measures on this project.

The Drainage Program does not have a clear understanding how stormwater will be conveyed to the stormwater management areas. Clearing of wooded areas for the creation of stormwater management areas is discouraged. The Drainage Program encourages the use of stormwater infiltration when possible on this site.

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 rear yards in certain cases. Therefore, catch basins placed in rear yards will need to be clear of obstructions and be accessible for maintenance. Decks, sheds, fences, kennels, and other structures placed along the storm drains, or within 10 feet of the catch basins, can hinder drainage patterns as well as future maintenance to the storm drains or catch basins. Deed restrictions, along with drainage easements recorded on deeds, should ensure adequate future maintenance access.

The Drainage Program requests that the routing of major stormwater pipes through yards be prohibited.

The Drainage Program requests a 15-foot side yard setback on all lots with a drainage easement on the side. A 15-foot side yard setback will allow room for equipment to utilize the entire drainage easement and maneuver free of obstructions if the drainage conveyance requires periodic maintenance or future re-construction.

The Drainage Program requests a 10-foot drainage easement around all catch basins located on private property to ensure adequate room for maintenance. The Drainage Program recommends restrictions on fences, sheds, and other structures within the easement to prevent obstructions from being placed within 10 feet of the catch basin.

Record all drainage easements on deeds and place restrictions on obstructions within the easements to ensure access for periodic maintenance or future re-construction.

The Drainage Program requests that all precautions be taken to ensure the project does not hinder any off site drainage upstream of the project.

There are several proposed lots on existing wooded steep slopes. Due to concerns about erosion, the Drainage Program recommends the re-configuration of said lots to preserve these wooded slopes.

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 into the Browns Branch drainage system. The Drainage Program requests that the engineer check downstream for function and blockages to the branch and pipes prior to the start of construction.

Open Space

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 areas. Doing so will preserve and expand the existing buffers on site and its value for birds and wildlife and it will create recreational opportunities for residents.

In areas set aside for passive open space, the developer is encouraged to consider establishment of additional forested areas or meadow-type grasses. Once established, these ecosystems provide increased water infiltration into groundwater, decreased run-off into surface water, air quality improvements, and require much less maintenance than traditional turf grass, an important consideration if a homeowners association will take over responsibility for maintenance of community open spaces.

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

It is unclear how the applicant calculated forest loss at 26.50 acres out of 88.68 (estimated 70% 'woodland preservation' on the site plan). Clearly 70% of this forest will not be preserved as there are at least 80 lots, associated roads and a stormwater management pond within the forested area. Forest fragmentation such as that proposed, 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. Further, when forested areas are converted into 'residential woods', some wildlife species must disperse into the surrounding areas which can result in increased interactions on the roadways. Human/animal conflicts result from those species that remain in the area.

DNREC strongly recommend the following site plan changes:

1. The applicant should consider reducing the number of lots and associated infrastructure. Not only would this reduce tree clearing, but would fit in with the character of the surrounding landscape.

2. Stormwater management ponds that require tree removal should be relocated to the non-forested portion of the site or an alternate method of stormwater management employed.

3. The application states (question #33) that there will be 55.70+ acres of open space which will be a linked network throughout the site. Clearly, the site plan indicates otherwise as many of the designated 'open space' and 'active open space' areas are disconnected and located in the middle of lot areas and roadways. A larger connected area of the forest should be preserved and designated as community open space. In general, larger, connected areas are more beneficial to wildlife and may be more useful to the residential community as well.

4. Tree clearing for homes and infrastructure should be minimized. The developer should not be permitted to clear the site prior to construction, but rather leave as many trees as possible.

5. Lastly, if a large percentage of forest loss is still going to occur despite our strong objections, trees should not be cleared from April 1st to July 31st to minimize

impacts to birds and other wildlife that utilize forests for breeding. This recommendation will serve only to protect those species during the breeding season, as once trees are cleared the result is an overall loss of habitat.

Site Visit Request

DNREC has not surveyed this property, therefore, it is unknown if there are state-rare or federally listed plants, animals or natural communities at this project site that would be affected by project activities.

In order to provide more informed comments and to make reasonable recommendations, our program botanist and zoologist request the opportunity to survey the forested and wetland resources which could potentially be impacted by the project. This would also allow the applicant the opportunity to reduce potential impacts to rare species and to ensure that the project is environmentally sensitive. Please contact Bill McAvoy or Kitt Heckscher at (302) 653-2880 to set up a site visit.

Wetland Buffers and State Natural Heritage Site

There should be no less than 100 feet in between Browns Branch (including associated wetlands) and lot lines/infrastructure. Current wetland buffers are inadequate especially for run-off that could be generated by 171 lots and associated infrastructure. Lots and infrastructure should be removed from this buffer zone and placed in a conservation easement.

Browns Branch should not be permitted to be a stormwater outlet for this subdivision as essentially anything residents use on their lawns or spill in their driveways could end up affecting water quality within the stream. We have records of American brook lamprey (Lampetra appendix), S2, within Browns Branch and because of the presence of this species, this site is within a State Natural Heritage Site. This is one of the criteria used by the USACE to determine critical resource waters.

Plant Rescue

Because there is forest and wetland loss associated with this project, we recommend that the developer/landowner contact the Delaware Native Plant Society to initiate a plant rescue. Selected plants from the site of disturbance will be collected by Society members and transplanted to the Society's nursery. Plants will then be used in restoration projects and/or sold at the Society's annual native plant sale. This can be done at no expense or liability to the developer/landowner. Please contact Lynn Redding at (302) 736-7726 or lynn.redding@ml.com.

Nuisance Waterfowl

Stormwater management ponds that remain in the site plan may attract waterfowl like 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. However, native plantings, including tall grasses, wildflowers, shrubs, and trees at the edge and within a buffer area (at least 50 feet) around ponds, are not as attractive to geese because they do not feel safe from predators and other disturbance when their view of the area is blocked. 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.

State Resource Areas

The Office of Nature Preserves objects to this development plan as currently proposed. This site is located within the Murderkill River watershed along Browns Branch, a tributary of the Murderkill River. The forested corridor comprises a large portion of the riparian buffer to Browns Branch. Recently, the Open Space Council moved to amend the State Resource Area map and identified the forested area on the site as a State Resource Area.

State Resource Area lands include any open lands characterized by great natural scenic beauty, or whose existing openness, natural condition or present state of use, if retained, would maintain important recreational areas and wildlife habitat, and enhance the present or potential value of abutting or surrounding urban development, or would maintain or enhance the conservation of natural or scenic resources, including environmentally sensitive areas.

As currently proposed, the plan has 77 lots either wholly in or partially in the Murderkill River State Resource Area. The developer should consider clustering smaller lots into the open fields on the site thereby maintaining the integrity of the State Resource Area on site as well as the larger surrounding forested tract currently providing pollutant removal benefits to the Murderkill River.

Solid Waste

Each Delaware household generates approximately 3,600 pounds of solid waste per year. On average, each new house constructed generates an additional 10,000 pounds of construction waste. Due to Delaware's present rate of growth and the impact that growth will have on the state's existing landfill capacity, the applicant is requested to be aware of the impact this project will have on the State's limited landfill resources and, to the extent possible, take steps to minimize the amount of construction waste associated with this development.

Underground Storage Tanks

There are no LUST site(s) located near the proposed project. 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 13.1 tons (26,246.7 pounds) per year of VOC (volatile organic compounds), 10.9 tons (21,730.5 pounds) per year of NOx (nitrogen oxides), 8.0 tons (16,033.2 pounds) per year of SO2 (sulfur dioxide), 0.7 ton (1,427.2 pounds) per year of fine particulates and 1,097.8 tons (2,195,504.3 pounds) per year of CO2 (carbon dioxide).

However, because this project is in a level 4 area, mobile emission calculations should be increased by 118 pounds for VOC emissions for each mile outside the designated growth areas per household unit; by 154 pounds for NOx; and by 2 pounds for particulate emissions. A typical development of 100 units that is planned 10 miles outside the growth areas will have additional 59 tons per year of VOC emissions, 77 tons per year of NOx emissions and 1 ton per year of particulate emissions versus the same development built in a growth area (level 1,2 or 3).

Emissions from area sources associated with this project are estimated to be 5.3 tons (10,586.5 pounds) per year of VOC (volatile organic compounds), 0.6 ton (1,164.8 pounds) per year of NOx (nitrogen oxides), 0.5 ton (966.6 pounds) per year of SO2 (sulfur dioxide), 0.6 ton (1,247.4 pounds) per year of fine particulates and 21.5 tons (42,915.3 pounds) per year of CO2 (carbon dioxide).

Emissions from electrical power generation associated with this project are estimated to be 2.1 tons (4,195.7 pounds) per year of NOx (nitrogen oxides), 7.3 tons (14,593.8 pounds) per year of SO2 (sulfur dioxide) and 1,076.3 tons (2,152,589.0 pounds) per year of CO2 (carbon dioxide).

	VOC	NOx	SO_2	$PM_{2.5}$	CO_2
Mobile	13.1	10.9	8.0	0.7	1097.8
Residential	5.3	0.6	0.5	0.6	21.5
Electrical Power		2.1	7.3		1076.3
TOTAL	18.4	13.6	15.8	1.3	2195.6

For this project the electrical usage via electric power plant generation alone totaled to produce an additional 2.1 tons of nitrogen oxides per year and 7.3 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 Energy office in DNREC 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: John Rossiter 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 Killen's Pond Road 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
- 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.delawarestatefiremarshal.com, technical services link, plan review, applications or brochures.

Department of Agriculture - Contact: Milton Melendez 698-4500

The proposed development is in an area designated as Level 4 under the *Strategies for State Policies and Spending.* The *Strategies* do not support this type of isolated development in this area. The intent of these plans is to preserve the agricultural lands, forestlands, recreational uses, and open spaces that are preferred uses in Level 4 areas. The Department of Agriculture opposes the proposed development which conflicts with the preferred land uses, making it more difficult for agriculture and forestry to succeed, and increases the cost to the public for services and facilities.

More importantly, the Department of Agriculture opposes this project because it negatively impacts those land uses that are the backbone of Delaware's resource industries - agriculture, forestry, horticulture - and the related industries they support. Often new residents of developments like this one, with little understanding or appreciation for modern agriculture and forestry, find their own lifestyles in direct conflict with the demands of these industries. Often these conflicts result in compromised health and safety; one example being decreased highway safety with farm equipment and cars competing on rural roads. The crucial economic, environmental and open space benefits of agriculture and forestry are compromised by such development. We oppose the creation of isolated development areas that are inefficient in terms of the full range of public facilities and services funded with public dollars. Public investments in areas such as this are best directed to agricultural and forestry preservation.

A significant portion of this site has been designated as having "excellent" ground-water recharge potential. DNREC has mapped all ground-water recharge-potential recharge areas for the state. 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 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.

Additionally, this site overlaps with the State's Green Infrastructure Investment Strategy Plan. The Forest Lands layer is present in this site; this designation identifies areas that possess unique natural features that are valuable for preservation. The developer should make every attempt to preserve as much forest as possible while developing this land.

The Delaware Department of Agriculture supports growth which expands and builds on existing urban areas and growth zones in approved State, county and local plans. Where additional land preservation can occur through the use of transfer of development rights, and other land use measures, we will support these efforts and work with developers to implement these measures. If this project is approved we will work with the developers to minimize impacts to the agricultural and forestry industries.

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 excess 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.

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.

Tree Mitigation

The Delaware Forest Service encourages the developer to implement a tree mitigation program to replace trees at a 1:1 ratio within the site and throughout the community. This will help to meet the community's forestry goals and objectives and reduce the environmental impacts to the surrounding natural resources. To learn more, please contact our offices at (302) 349-5754.

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 Karen Horton 739-4263

This proposal is for a site plan review for 171 residential units on 171 acres located northeast of Harrington, along the west side of Killens Pond Road, south of Carpenter Bridge Road. According to the *State Strategies Map*, the proposal is located in an Investment Level 4 area. As a general planning practice, DSHA encourages residential development only 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. Since the proposal is located in an area targeted for agricultural and natural resource protection, and therefore inconsistent with where the State would like to see new residential development, DSHA does not support this proposal.

Department of Education – Contact: John Marinucci 739-4658

DOE recognizes that this development project is in level 4 of the State Strategies for Policies and Spending and as such, DOE does not support the approval of this project.

This proposed development is within the Lake Forest School District. 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 85 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, 2005 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, 2005 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. 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.
6. 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,

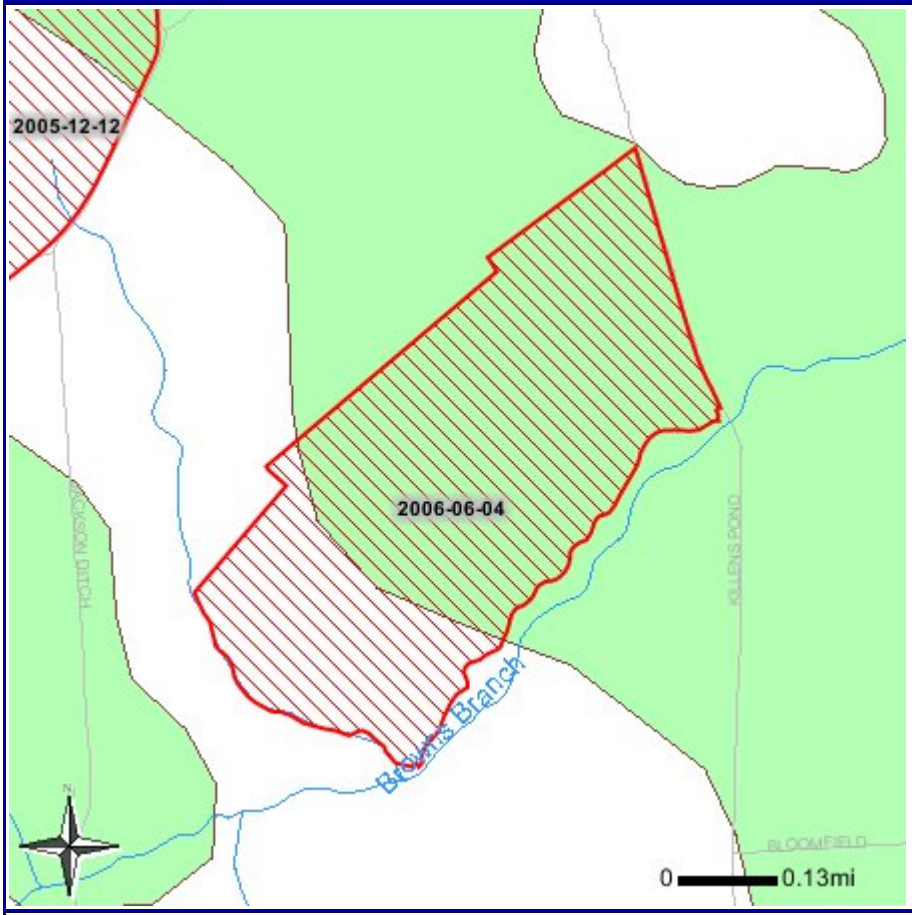
Constance C. Holland

Constance C. Holland, AICP
Director

CC: Kent County

Shaw Property

2006-06-04



PLUS Projects
NHDFlowLine
All Roads
Excellent Recharge Areas

This map was produced by the Delaware
Department of Natural Resources and Environmental Control.