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FAX COVER SHEET

TO: Ryan Courtica FAX #: () 832 6130

FROM: Scott Ballard Phone: (845) 256-3055

DATE: 6/30/09 NUMBER OF PAGES (including cover): 15

RE: DEC Application No. 3-1326-00023/10

Project: Dover Knolls

MESSAGES: Supervisor Courtica -

Attached are DEC's comments
on the Dover Knolls DEIS.

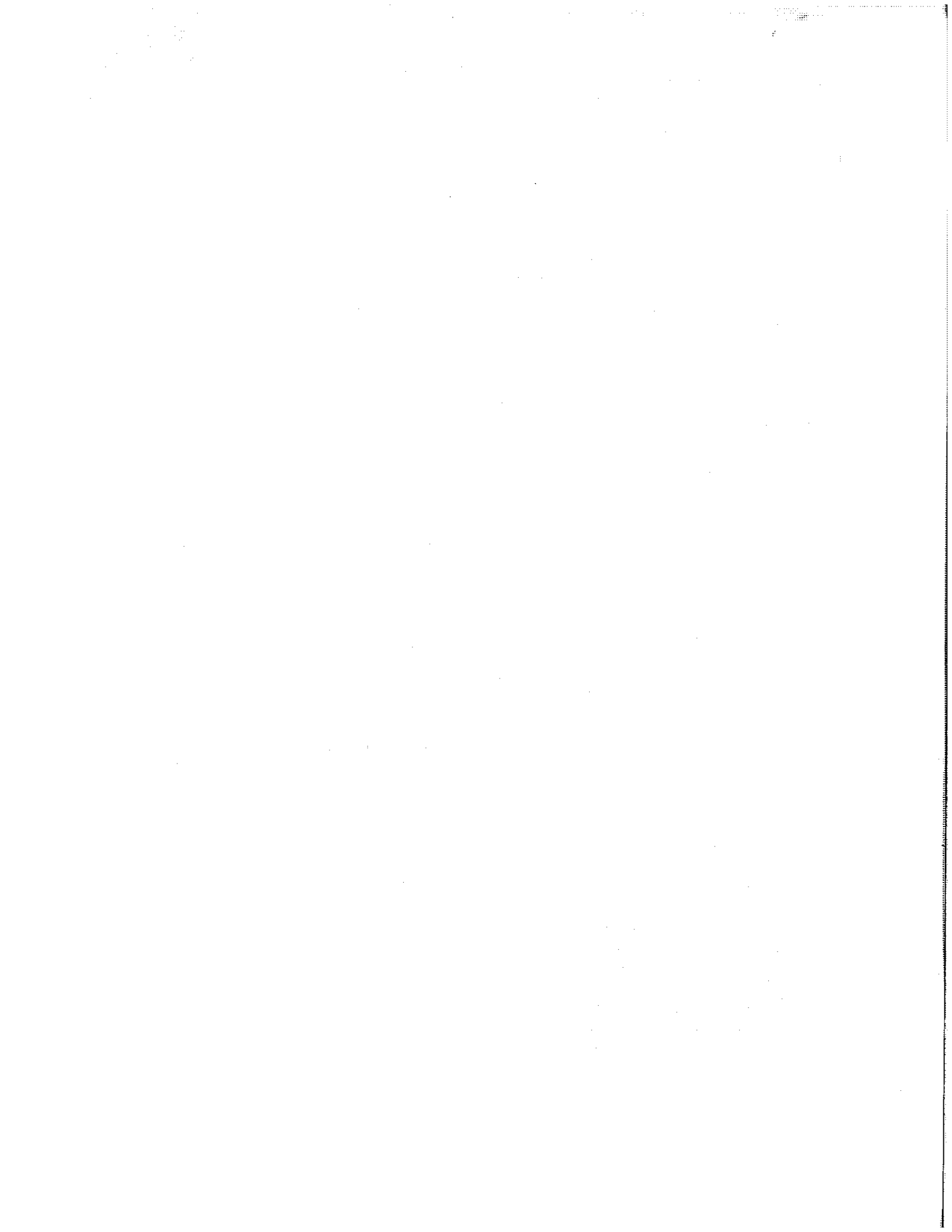
Hardcopy is on its way, with
attachment.

Scott Ballard

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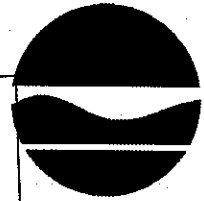
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RECEIVED

JUL 01 2009

TOWN CLERKS OFFICE Alexander B. Grannis
TOWN OF DOVER Commissioner

June 30, 2009

Ryan Courtien, Supervisor
Town of Dover Town Board
126 East Duncan Hill Road
Dover Plains, New York 12522

Re: Dover Knolls Development Company II, LLC - **Comments on DEIS**
Town of Dover, Dutchess County
DEC No. 3-1326-00023/00010

Dear Supervisor Courtien:

The NYS Department of Environmental Conservation (DEC) has reviewed the DEIS for the Knolls of Dover proposed Harlem Valley Psychiatric Center redevelopment project. The DEC supports many of the proposal's stated goals, such as the "transit oriented" aspects of the redevelopment of the site, clustering of homes, "walkability" of the central commercial area and outlying "hamlet" areas, the redevelopment and reuse of an existing site with many deteriorated facilities, and the proposed utilization of energy and water conservation measures.

The proposed project, however may also result in environmental impacts and therefore additional analysis is necessary pursuant to the State Environmental Quality Review Act. The DEC's comments provide suggestions that can help advance the stated goals of the proposed project and that can avoid, and if necessary minimize and mitigate, these environmental impacts.

As we have indicated in previous correspondence regarding this proposal, the proposed site lies within a Significant Biodiversity Area, which includes threatened and endangered species such as timber rattlesnakes, Indiana bats, bog turtles and a variety of reptiles and amphibians. Loss of wetlands, biodiversity and fragmentation of habitat within the Great Swamp and adjacent areas are of particular concern to the DEC. The development of the proposed potable water supply and its potential associated impacts, are also concerns. The potential generation of heat-trapping greenhouse gas (GHG) emissions, energy use and transportation related impacts are all issues which must be examined closely when weighing the proposal and alternatives to the proposal in its current configuration. Recognition of the site's previous functions and impacts also factors into the proposal review.

To the extent that the proposal represents a *transit oriented development* (TOD) and redevelopment located on lands previously developed as part of the pre-existing use, the DEC is pleased to see this approach. DEC offers the following suggestions to ensure that the project, when ultimately built, will capture the full potential of an *environmentally sustainable, climate smart* and *transit oriented* redevelopment of a previously used site.

I. NEEDED CONSERVATION ALTERNATIVE AND ADDITIONAL INFORMATION/ANALYSIS

- I. The DEIS lacked a true *conservation alternative* which avoids all sensitive and regulated areas, including important habitat areas (identified bog turtle habitat, marble knolls, vernal pools), regulated areas (freshwater wetlands, fens), open space and un-fragmented forested areas, and areas where rare plants have been identified. A comprehensive conservation alternative which incorporates, but is not limited to, all the above should be included for evaluation within the Alternatives section of the EIS. The significant natural resources issues discussed in these comments underscores this point. Alternatives presented for consideration should include detailed analysis of how the alternative *avoids* impacts to those natural resources noted above to the greatest practicable extent and how the alternative *minimizes* impacts to those resources to the greatest practicable extent after all efforts to avoid such impacts have been exhausted. **Only after all efforts to avoid and minimize impacts to those resources noted above have been fully incorporated into the alternative, should mitigation for unavoidable and minimized impacts be discussed.** Such a conservation alternative could include measures to lessen the overall project footprint and area of disturbance and achieve greater density of the proposed development, such as enhanced clustering, reduction in the overall number of proposed residential units and/or commercial units, reduction in the number of proposed hamlet areas, increase in the number of stories per unit, etc. One benefit from developing such a conservation alternative would be to reduce the proposal's *carbon footprint*: overall generation of greenhouse gases would be minimized by maximizing density and enhancing the transit oriented aspects of the project (i.e., greater *walkability* within the Dover Knolls site with concurrent reduction of automobile trips). The analysis of potential greenhouse gas (GHG) emissions in this conservation alternative could then reflect this reduction in emissions of GHGs caused by automobile exhaust and buildings.

The conservation alternative should also identify enhanced land stewardship opportunities. The DEIS discusses a limited proposed program to control an invasive species, mile-a-minute vine, primarily in the forested area near the reservoir (proposed for residential development). Additional analysis and effort is appropriate. The proposed invasive species control program could be expanded to include other species, such as phragmites, especially along the Swamp River in the central portion of the site. DEC staff discussed potential expanded public fishing access in this area of the Swamp River with project representatives during a field inspection of the site. In combination, such an invasive species program which includes phragmites control, could serve the dual purpose of improving public fishing access. Other enhancements to stewardship of the site could include restoration of previously disturbed wetland and wetland adjacent areas, especially in the southern portion of the existing golf course (within regulated areas of Freshwater Wetland DP-22). As discussed with project representatives during the field inspection, this portion of the golf course is reportedly to be relocated slightly further north of its present location. The conservation alternative should specifically show that previously disturbed wetland areas in this portion of the site will be restored as wetland, and plans should reflect the revegetation of this area with native species that will remain undisturbed and unmowed.

There is a large forested area on the easternmost portion of the project site. This portion of the site is part of a much larger (unfragmented) forest which extends beyond the

property's perimeter. This forested area (reportedly 1000 acres in total) includes one or more high-quality vernal pools and rock outcrops. Large forests are increasingly rare in the region, and are important to wide-ranging species and forest-interior breeding birds. Therefore, protecting this area from forest fragmentation is a necessary component of the conservation alternative. The conservation alternative should maximize preservation of this forested portion of the site in an undisturbed state. Such an alternative would preserve open space for the enjoyment of all residents of the development, and further lessen the potential for generation of GHGs associated with developing this portion of the site. The addition of walking trails in this area would further benefit this alternative.

The conservation alternative should go a step further than the current preferred alternative and concentrate development within areas that have been previously developed with buildings, paved areas, and other infrastructure, and avoid areas which currently can be considered as open space, although previously disturbed for agricultural purposes. One such area is located at the southwestern portion of the site, and is proposed to be developed into a "hamlet". Preserving this open field would serve multiple purposes: limit overall disturbance; limit GHG emissions and carbon footprint associated with development of an outlying area; and preserve valuable open space and potential habitat areas.

Specific Additional Conservation Alternative Comments

2. Section V does not include discussion of an alternative that reflects conserving the forest on the eastern side of the project, as discussed above and during pre-application meetings with the sponsor. In addition to potential fragmenting impacts to the large forest and associated species such as forest-interior breeding birds documented on-site (page III.D-13), the proposed "Reservoir Hamlet" is located in the center of four areas identified as "Environmental Sensitive Areas" as established by Klemens (Exhibit II-9); this area is also included within the Quaker Lake/Duell Hollow Critical Environmental Area, or CEA (see Exhibit III.C-3). From a conservation perspective, DEC recommends elimination of this area of sprawl in the southeastern portion of the site. The conservation alternative could include restoration of existing roads in this area back to natural habitat, and allowing this portion of the parcel to be left intact.
3. The "Lower Density" Alternative presented in the DEIS includes fewer residential units. However, the golf course in this scenario is expanded, and there is also a corresponding reduction in the number of units in the high-density "Valley Neighborhood" hamlet - which is one of the *smart growth* components of this "transit-oriented" proposal. This alternative should be revised to be more protective of important resources and habitats. For example, if the number of units will be reduced, perhaps the "Knolls Hamlet" can be eliminated entirely which would preserve the marble knolls in an un-fragmented state. The marble knolls area is important for species which use complexes of habitats, like the spotted turtle, as well as a number of State-listed plant species documented in the Hudsonia report of 2005.¹ This in turn would also more generously buffer the fen that was recognized as an "Environmental Sensitive Area" by Klemens.

¹ Klemens, LLC, M. W. (2005). *Habitats and Rare Plants at the Proposed "Dover Knolls" Development Site, Town of Dover, Dutchess County, New York: Existing Conditions*. Hudsonia, Ltd., Annandale, NY.

Freshwater Wetlands

4. The proposal includes 1.67 acres of impact to NYS Freshwater Wetlands (DP-22 & DP-30) and 9.10 acres of impacts to the 100 foot adjacent area of these wetlands. Freshwater Wetland and SEQRA regulations require that the sponsor must *minimize* any proposed disturbances to regulated areas that cannot be avoided. The DEIS does not discuss how the sponsor has avoided and minimized proposed impacts to NYS wetlands and must be revised to include such a discussion. **Mitigation should only be proposed after all efforts at avoidance and minimization of impacts have been exhausted.** In addition, as required by applicable regulations (Part 663), the first step when designing such a project is to *avoid* any impacts to the Freshwater Wetland and the associated adjacent area to the maximum practicable extent.
5. The construction or expansion of parking lots and proposed parking areas should be located outside of wetlands and respective adjacent areas. Use of pervious paving materials should be considered. No fill or grading should be proposed within regulated areas of NYS wetlands for parking lot construction. In addition, the DEIS should discuss, and DEC will require, the following:
 - A. Widening of existing roadways: roadway footprint(s) must be reduced to the smallest widths possible [usually 24 feet for Town roads]. Designs should incorporate retaining walls in order to limit required grading.
 - B. Construction of stormwater basin outlets: all stormwater treatment structures (including basin, grading and outfall) must be located outside the wetland and adjacent area. Wetlands perform a necessary function to filter out any of the fine particulates and other materials from the stormwater. For the wetlands to function properly there must be at least 100 feet of natural vegetation between the wetland and the stormwater outfall.
 - C. Residences: all components of residential structures must be designed to be outside of wetlands and wetland adjacent areas. This includes the homes, garages, lawns, driveways, utilities and grading.
 - D. Plans must be developed which show the actual *limits of disturbance* for all proposed disturbances.
6. The DEIS states: "the wetland crossings potentially could result in the alteration of the hydrology of the wetlands by impeding flow between the different sections of the wetlands." See page III.E-35. **The hydrology of the wetland cannot be altered due to new construction for the development.** The EIS and project plans must be revised to indicate that no alteration in hydrology will result from construction of any component of the project, including construction and operation of the potable water supply. See also section below which discusses *Water Supply and Wells*.
7. Current plans (Exhibit III.E-2 in the DEIS) show a proposed wetland disturbance between Wetland N and Wetland E (both part of Freshwater Wetland DP-22) which extends southward from proposed housing along Wheeler Road. DEC believes that in the Conservation Alternative this proposed disturbance should be deleted from project plans and that this area should be restored as wetland and wetland adjacent area.

8. Plans must be developed which show that the 100 foot adjacent area ("buffer area") of all NYS Freshwater Wetlands on site will be protected in the long term (i.e., fences, survey markers, signage, walls, etc.) especially in those areas near residential development, recreational facilities, and the golf course. In addition, plans should show how such adjacent areas will be *enhanced* throughout the site, especially in those areas where the wetland buffer(s) have been previously disturbed. The DEIS should also note that, if an Article 24 permit is issued for the project, DEC will require a deed notification for all lots containing regulated portions of NYS Freshwater Wetlands.

Wildlife and Habitat Concerns

9. The DEIS states "The roads across, and around, the wetlands could also potentially impact the movement of amphibians and other wildlife that may utilize the wetland." See Page III.E-35. As DEC had indicated during pre-application meetings with the sponsor, any road improvements that are planned for the development must be designed with both hydrology and habitat concerns in mind, and must allow for the free movement of amphibians and reptiles through and across the site. The EIS and project plans must be revised to indicate that all necessary design considerations (such as roadway curb modifications) will be implemented so that free movement of amphibians and reptiles will not be impeded as a result of project construction, and that road-kills of such species will be avoided to the maximum extent in the post-construction phase.
10. Several sections of the DEIS which discuss the protection of important habitat areas are unclear and are apparently contradictory, and must be corrected. For example, Page III. A-24 states the following, "In order to protect these features and habitats, the Project provides buffer areas required by applicable regulations, as well as those recommended by the Town's consultant for environmentally sensitive habitat for turtles and salamanders." It is not clear whether or not the recommended buffers are proposed in all instances where required. In a later section (*Natural Resources*), it is noted on pages III.D-26 and III.D-27, respectively, that "The Project also follows many of the conservation recommendations in the natural resources technical reports that were prepared under the direction of Michael W. Klemens, LLC," and "generally follows the conservation recommendations in the natural resources technical reports that were prepared under the direction of Michael W. Klemens, LLC" [emphasis added]. These sections must be clarified to specify which recommendations are being followed and which recommendations are not. In addition, in instances where the recommendations are not followed, those specific areas should be pointed out, and the reasoning for not following the recommendations explained.

Marble Knolls

11. The Habitat Impact Map – West (Exhibit III.D-3), which shows the limits of disturbance, appears to be lacking proposed changes to the golf course and the resultant impacts to the Marble Knolls. This plan should be revised to include proposed golf course modifications and potential impacts to the marble knolls. The plan should also include any proposed restoration of previously disturbed areas, as noted above. The Department prefers that disturbance to the marble knolls be avoided.

II MODIFICATIONS TO PREFERRED ALTERNATIVE AND MITIGATION

As detailed above, to the extent that the proposal described in the Draft EIS includes elements that extend beyond the previously built footprint (not including the golf course) of the previous development, and are likely to be associated with potential or likely impacts to significant environmental resources, a conservation alternative that avoids these impacts is needed to inform and help guide the SEQRA project review process. This conservation alternative might be smaller than what was originally proposed. It might be a redesign of the original with a modified layout and increased density in core previously impacted areas. This conservation alternative can be, but may not necessarily be, the only alternative considered; however, it is needed to better understand site limitations and to better consider other options and potential modifications to the original preferred alternative proposed in the DEIS. The conservation alternative can and should inform modifications and possible reductions to the draft preferred alternative based on the principles of minimizing and mitigating unavoidable impacts to the maximum extent practical.

12. Page III.E-83 of the DEIS discusses mitigation: as noted above, the sponsor must first *avoid* proposed disturbances to NYS wetlands, and then *minimize* proposed disturbances which cannot be avoided, before mitigation measures are proposed. This section of the EIS must be expanded to clearly describe how the project has avoided and then minimized proposed impacts to wetlands to the maximum practicable extent. Further, the proposed mitigation plan is unclear and lacking in detail. Plans must be developed which contain additional details (planting plans, grading, cross sections, etc.). The Department will require that specific wetland areas, if they are to be impacted, also be mitigated in-kind and within the same wetland area, rather than proposing wetland mitigation elsewhere within the 937-acre site. We note that restoration of previously disturbed wetland areas has been discussed with project representatives, but that such plans have not been incorporated into the DEIS. We anticipate that the project sponsor will prepare wetland restoration plans as recommended during our discussions, and will incorporate such plans in future iterations of the EIS.

Wildlife and Habitat Mitigation

13. The section which discusses proposed mitigation measures must include discussion of specific mitigation measures the sponsor intends to utilize, as well as a discussion of those measures which will not be used. See Page III.D-27. This section should also include an explanation of their choice(s) of mitigation measures to be implemented. Further, this section of the DEIS does not discuss how wildlife impacts will be mitigated during the construction phase, which according to the DEIS, will be phased over a ten-year period (e.g., turtles moving overland during the April/May nesting season will be vulnerable to heavy equipment). Please expand this discussion to include mitigation proposed during the construction phase of the project. We are particularly interested in any proposed mitigation measures which allow for free movement of reptiles and amphibians across roads from wetlands to potential nesting sites or other elements of critical habitat complexes.

III Climate Change and Greenhouse Gas Emissions

14. The *Greenhouse Gas (GHG) Emission and Carbon Footprint Analysis* (B. Laing Associates, December 2008, revised April 2009) presented in support of the DEIS presumes that all residences (and a portion of the proposed site commercial development) will utilize natural gas for heating purposes. Natural gas combustion produces lower carbon dioxide emissions than fuel oil combustion in order to produce an equivalent measure of heat. However, as indicated in Section O. of the DEIS (*Infrastructure and Energy*, Subsection 5., *Natural Gas*, page III.O-20), "Natural gas does not currently exist at the project site." Further, it is not certain whether natural gas will eventually be made available to the site, per noted discussions with the New York State Electric & Gas (NYSEG). Therefore, the GHG analysis, the calculated project "carbon footprint," and all EIS discussions and results predicated upon natural gas use must be revised to include a scenario in which natural gas is not available, and that the use of other fuels (such as #2 fuel oil for home heating) is necessary.
15. If natural gas is eventually made available to the site, every effort should be made by the project sponsor to ensure that natural gas is utilized throughout the site to the maximum practicable extent in order to minimize carbon dioxide (CO²) emissions throughout the project's lifetime. This may include a commitment on the developer's part to incorporate the most efficient available natural gas fueled furnaces (and boilers) in every home and commercial structure built on site, as well as maximizing window glazing and insulation for all structures. If details or assurances exist that natural gas is being made available in association with the redevelopment of the property, that information is needed.
16. The GHG analysis should also be revised to include the Conservation Alternative noted above. Under such a scenario, the sponsor could further reduce the carbon footprint of the development due to the preservation of greater areas of open space and forested areas. The GHG report and related sections of the EIS should also be updated as construction plans are further refined and more data becomes available, as discussed in Section 3.3 (page 10) of the report (i.e., "building locations, uses, types, and sizes, building materials, volumes, and sources are not well established"). We also strongly encourage the sponsor to incorporate renewable energy sources (solar and wind) into final project plans, wherever practical (photovoltaic cells on golf course club house, commercial facilities, water treatment plant and wastewater treatment plant, solar heated swimming pools, photovoltaic lighting for streets and parking areas, etc.).
17. Finally, we believe the GHG analysis and related sections of the EIS do not adequately explore available mitigation measures; the NYSDEC guidance document for conducting GHG analysis (Section G., *Examples of Mitigation Measures*) provides over 60 potential mitigation measures (and is not an exhaustive summary of potential measures); whereas the GHG report discusses only six (6) such measures proposed to be integrated into project design. We believe that the EIS must examine each of the mitigation measures listed in the DEC draft guidance document entitled *Guide for Assessing Energy Use and Greenhouse Gas Emissions in Environmental Impact Statements* [available on the DEC website], where applicable. The revised analysis should provide, at a minimum, a brief discussion of how the proposed measure could be implemented, and if the measure is not implemented, an explanation as to why the measure was not selected.

IV Water Resources: Water Supply, Wastewater and Stormwater

Water Supply and Wells

18. The plan which shows locations of proposed water supply wells in the DEIS (Exhibit III.O-4), apparently shows a well (Well #W-18) located in an area identified elsewhere in the DEIS as an area containing coal ash deposited as a result of historic operation of the coal fired power plant at the Harlem Valley Psychiatric Center. The Phase I Environmental Site Assessment (ESA) performed by Freudenthal & Elkowitz Consulting Group, Inc. (dated December 2008), indicates that "soil and groundwater in the vicinity of the ash disposal areas had been impacted with sulfates and heavy metals." Due to the fact that groundwater has been shown to be impacted in this area, we believe that additional information is needed to justify this proposed well; alternatively, this well should be removed from consideration as a potable water supply source. As Well #18 has also been identified as the "best producing well" in discussions with project representatives, additional exploratory wells may need to be constructed and tested. NOTE: Any additional wells should be located outside of regulated areas of NYS wetlands.
19. Our review of those sections of the DEIS and the supporting report entitled "The Knolls of Dover Well Supply and Aquifer Recharge Analysis" indicate that certain information was lacking, and that additional details regarding the potable water supply must be developed, including the following: raw drawdown data for all wells, including well identification numbers; pump yields during the pump test(s); and drawdown data for each well per test (length of time for each test and recovery period for each well). The EIS should also provide time/drawdown graphs in a more highly detailed scale.
20. Contrary to the DEC guidance document entitled *Recommended Pump Test Procedures for Water Supply Applications* (attached), the pump test on Well 15B did not use a stabilized pumping rate. When the pumping rate information is furnished, please include the exact rate used for the test and specify when the rate changes were made. When application to the DEC is made for the Water Supply permit, it is likely that we will require this well to be retested in conformance with the attached guidelines; new pump test data will also be required to be submitted.
21. It appears that some wells were installed in wetlands and were monitored during the pump tests. However the report contained very little descriptive information regarding these well installations. The EIS should provide an expanded discussion of the relationship of the wetlands to the pumping wells and what impact, if any, there will be to the wetlands. If insufficient information is available, propose a testing strategy to DEC that will enable a solid understanding of this relationship. Exhibit III.O-4, *Proposed Water System*, should also be revised to show all proposed wells, including monitoring wells, in relation to wetlands located on site. In addition, the following should be clarified in the EIS:
 - A. Explain the loss of yield for wells 11A & 15B between the time they were drilled and the time when they were pump tested.
 - B. Provide well logs and construction details, especially pump setting information.
 - C. Provide a scaled map (minimum of 1:24,000 scale) showing locations of all pumping and monitoring wells.

- D. The 180 day time/drawdown projections must include depth of pump setting, rate of pumping used for test, and a more detailed scale for legibility.
- E. Describe how the relatively heavy rainfall during the test impacted the results.
- F. As the existing reservoir is proposed to be used as a backup water supply, provide an estimate of the safe yield during drought conditions.
- G. Discuss whether the Swamp River is proposed for use as a source under drought conditions. If this is the case, then provide the safe yield for taking water from the Swamp River.
- H. The DEIS indicates that when the reservoir's water surface dropped approximately 10 feet (during drought), the embankments eroded, thus causing deteriorated raw water quality and creating stress on the existing filtration plant. The EIS should expand on this discussion, and include a discussion of measures proposed to prevent such erosion in the future.
- I. It appears the safe yield discussed in the DEIS does not consider loss from evaporation from the lake surface and seepage from the reservoir. The EIS should provide an estimated safe yield from the reservoir with due consideration of these factors. The discussion should also address the issue of erosion as discussed in *Item 21.H* above.
- J. Discuss the potential contamination of groundwater from multiple onsite dumps and landfills (as in the case of well# W-18 noted above). Explain how these onsite dumps could affect the planned groundwater sources. Further analysis in the EIS is required.
- K. According to the *Water Supply Fact-Sheet* provided to DEC June 2, 2009 during a pre-application meeting with project representatives, the sponsor is claiming a yield of 225 gallons per minute (gpm) from "other wells, not included in primary system". However, the DEIS contained no information regarding pump tests of these wells. The EIS should provide pump test results for these wells which prove their safe yields. When application is made for the necessary Water Supply permit, DEC will require that these wells be pump tested in accordance with the attached pump test protocols.
- L. In addition to the above, DEC had the opportunity to review an analysis prepared by Leggette, Brashears & Graham, Inc. (LBG) that was provided to DEC, and which comments specifically on the hydrogeologic and water supply sections of the DEIS. We anticipate that a document including this analysis, when finalized, will be transmitted by LBG directly to the Town of Dover as a comment on the DEIS. DEC staff believes the version of the document submitted to the Department to be well prepared and accurate.

Sanitary Wastewater Treatment

22. The existing SPDES permit must be modified per previous discussions with the project sponsor. However, DEC staff has confirmed that the receiving stream (Swamp River) is not a trout spawning (ts) stream; therefore, a waste assimilative capacity (WAC) analysis will not be mandatory. However, the EIS should include a narrative description and discussion of the existing quality of the receiving water and potential impacts the proposed discharge will have. The sponsor should be aware that effluent limits contained in any SPDES permit eventually issued by the Department may be different from those contained in the existing SPDES permit.

23. The EIS should provide the projected wastewater flow for the proposed project for each phase of the project. Projected wastewater flows must be based on the number of residential units per phase, anticipated population count(s), square footage of commercial space, etc.
24. The DEIS states that the proposed project's anticipated average daily design flow is 0.467 million gallons per day (MGD). The EIS should note that the actual capacity of the wastewater treatment plant (WWTP) will be determined during the design phase of the upgrade to the WWTP, with the minimum capacity recommended at 0.6 MGD.

Stormwater

25. The project's proximity to the Great Swamp, with potential stormwater runoff impacts, requires that the project demonstrate **aggressive** sediment and erosion control measures. The project must also address all of the required elements of each type of chosen Stormwater Management practice as outlined in Chapter 5, List of Acceptable Stormwater Management Practices, of the "NYS Stormwater Management Design Manual." In addition, the EIS must note that the following criteria will apply to the Stormwater Pollution Prevention Plan (SWPPP) for the project:
 - A. The project must meet all the substantive requirements of Chapter 4, Unified Stormwater Sizing Criteria, of the "NYS Stormwater Management Design Manual." All calculations must be shown.
 - B. No more than five (5) acres of soil may be disturbed at any one time without prior written permission from the Department. SWPPP and Site Plans must clearly include a detailed construction sequence for each proposed construction phase, limiting disturbance to the aforementioned criteria for each phase.
 - C. A narrative must be included stating how each sub-watershed will be treated, both pre-construction and post-construction. The discussion must include the size of each sub-watershed.
 - D. A Site Plan, indicating all proposed sediment and erosion controls, must be included in the eventual SWPPP/Site Plan submissions to DEC. The Site Plan must include a detail drawing of all proposed sediment and erosion control measures, and must be in conformance with those found in "NY Standards and Specifications for Erosion and Sediment Control".
 - E. The DEIS does not mention what type of sediment basin(s) or trap(s) are proposed. These must be specified and it must be demonstrated that any proposed temporary basin or trap is appropriately sized to hold the required 3600 cubic feet per acre drained. Note that where *infiltration* is the chosen stormwater control measure, such controls cannot be used as temporary measures. In addition, it must be demonstrated that the required soil testing has been conducted for any proposed infiltration measure. Finally, the construction sequence must indicate these infiltration measures will not go on-line until after the contributory area is stabilized.
 - F. Temporary roads, road cuts and fills, and drainage ditches must be stabilized early in the construction sequence and constructed in conformance with the standards contained in the "NYS Standards and Specifications for Erosion and Sediment Control."
 - G. The SWPPP must clearly indicate how stormwater will be conveyed to the temporary retention measures during the construction phase.

- H. A profile detail of all proposed stormwater management measures must be included in the SWPPP. All requirements and/or features of any proposed stormwater management facility must conform to NYS design standards and must be included in the Site Plan.
- I. Rain gardens and other 'credit' or alternative treatment methods proposed for new construction will require submission of the Notice of Intent (NOI) to the Department and must undergo the required 60 day review process.
- J. Any proposed hydrodynamic proprietary measure must come from the approved list and must be installed for the accepted purpose. The list of approved measures can be found on the DEC website by following this link: <http://www.dec.ny.gov/chemical/29089.html>. Each such measure would also have to demonstrate that it was sized correctly.
- I. The Site Plan must identify the entity responsible for long term maintenance of stormwater management facilities and must include a maintenance schedule for each type of stormwater management measure used.

V Miscellaneous

Open space

- 26. The EIS should identify and catalog all areas of open space at the site. A section should be added to the EIS which discusses any and all proposed methods to ensure that the areas of open space identified in the EIS will be protected from the possibility of future development. This section could reference the conservation alternative discussed above.

Species Lists

- 27. The lists of species (Tables III.D-3, D-4 & D-5) do not contain much useful information regarding potential impacts to these species by the proposed development. These lists need to be revised to contain additional information such as the specific areas of the project site that these animals inhabit. This information is important in order to assess what the impacts will be, especially as some components of the project will have greater impacts to certain species. For example, the development on the east side of the property in the currently un-fragmented (forested) portion of the site may have more of an impact on certain species than new development in the currently developed (and disturbed) areas of the site.

Specific Species Concerns

Indiana Bats

- 28. Page III.D-21: Two males were apparently found on site, but the DEIS does not discuss whether there are mitigation plans or whether those areas are planned for development. This section of the DEIS must be expanded to discuss potential impacts to the Indiana bat and proposed mitigation measures.

Bog Turtles

- 29. The DEIS does not make clear what specific areas were assessed during the initial Phase I bog turtle surveys. See Page III.D-22. This section should discuss, at least generally, what areas of the 937-acre site were investigated. A map depicting the assessed areas should be added to the EIS as well. As discussed with the project sponsor during pre-application meetings, those areas identified as potential bog turtle habitats should be

protected by 300 foot buffer areas; these buffers should be included on revised drawings in the EIS. Also as previously discussed with project representatives, the sponsor was to provide the Department an updated habitat map which includes the most recent information for all species studied thus far on the 937-acre site; we continue to await submission of this habitat map. At a minimum, the EIS should include a narrative discussion of the most recent information regarding species.

Approvals Required

30. On April 9, 2009, DEC Dam Safety staff inspected the dam at the site reservoir and issued a letter to the sponsor which indicated that "any repair or construction related to the dam may require permits from the Department." Therefore, Table I-4 in the EIS must be revised to reflect recent discussions regarding required repairs to the dam located on site (Dam ID# 230-0677) which may need a Dam Safety permit from DEC. See pages I-5 & I-6.
31. The use of the phrase 'disturbed area' does not provide a true idea of the actual amount of *new* disturbance which is proposed. It appears that *agricultural lands* are included in that area noted as "disturbed." The discussion of proposed disturbance versus existing disturbance (including agricultural areas), should be clarified and expanded. We believe that the change from "agriculturally disturbed" to new disturbance (i.e., new development) is more drastic than that from converting existing structures to new development.

Cumulative Impacts

32. This section of the DEIS, Section IX., *Growth Inducing and Cumulative Impacts*, focuses on potential development and economic impacts that may accrue due to construction of the project, and casts these potential impacts in a [mostly] positive light. No discussion is provided of potential cumulative impacts to natural resources. The discussion of cumulative impacts should be substantially expanded to discuss potential impacts to natural resources, including species, both within and beyond the border of the 937-acre site. The discussion should include potential impacts from all large scale proposed developments along the Route 22/55 corridor, and must include a discussion of species habitats and fragmentation and/or connectivity of habitats throughout the Route 22 corridor and Great Swamp. The discussion should include, but not necessarily be limited to, the following large-scale projects:
 - Ketcham's Corners (Dover, NY)
 - Country Squire (Dover, NY)
 - Stony Brook (Dover, NY)
 - Furnia Subdivision (Dover, NY)
 - Wind Rose (Dover, NY)
 - Carvel (Pine Plains, NY)
 - Brady Brook (Pawling, NY)
 - Madison Woods Development Company (Pawling, NY)
 - Deerfield Estates (Pawling, NY)
 - Jucca Company/Castagna Realty/Westage Company (Pawling, NY)
 - Silo Ridge (Amenia, NY)
 - Keane Stud Ridge (Amenia, NY)

Noise Impacts

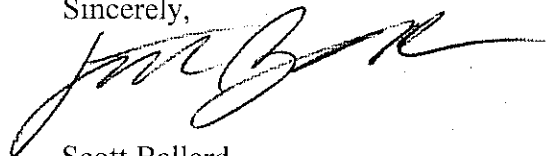
33. The DEIS states that one noise receptor, located near Hoag Corners Road, will experience an increase in noise levels of approximately 35 dB(A) [to 84.8 dB(A)], for a period of several weeks during construction. See page III.L.10. It is suggested in the accompanying text that "all contractors and subcontractors could be required to properly maintain their equipment and have ... a muffler that is in good working order." As an increase of 35dB(A) is significant, and as stated on page III.L.10, this would be "very audible and loud", DEC believes that contractors must maintain their equipment properly, adequate mufflers must be used, and contractors must make every effort to attenuate noise levels in the vicinity of this residential receptor. A temporary berm or other measure (such as movable barriers), could mitigate unacceptable noise levels at this, and other, locations during construction.
34. This section of the DEIS could also be revised to state that all equipment will be required to utilize alternative back-up alarm systems, rather than "beepers", to mitigate noise impacts associated with construction.
35. Page III.C-11 indicates that rock crushers will be used on site to prepare fill material for reuse. The noise analysis did not include potential noise generated by operation of rock crusher(s), and must be revised to include these additional pieces of equipment. Additional detail is also required regarding proposed rock crusher use: a plan should be developed which specifies where the crushers will be used; whether these will be mobile; whether any mitigation is proposed for these additional noise sources; and whether the rock crushers will require a permit or registration from the Department.

Visual Impacts

36. The DEIS assessed visual resources using a two-mile radius; the visual analysis and this section should be revised to be consistent with the DEC guidance document entitled *Assessing and Mitigating Visual Impacts*, which specifies a five-mile radius for use in such analysis. See Section III.B. at page III.B-5.

Thank you for the opportunity to provide these suggestions and requests regarding the proposed project described in the DEIS. If you have any questions regarding these comments please contact me at (845) 256-3055. DEC staff is available to meet and discuss any of these comments.

Sincerely,



Scott Ballard
Environmental Analyst

Attachment: *Recommended Pump Test Procedures for Water Supply Applications*

cc w/ attachment: Dover Knolls Development Company II, LLC
 R. Mohr – The Benjamin Companies
 G. Trelstad – AKRF Consultants
 M Zarin – Zarin & Steinmetz Attorneys
 O. Wells - Saccardi & Schiff, Inc.
 B. Evans – Evans Associates, Inc.
 J. Schwalbe/M. Gratz - Divney Tung Schwalbe

cc w/o attachment: Supervisor, Town of Dover
 Planning Board, Town of Dover
 T. Cusack, Principal - Leggette, Brashears & Graham, Inc.

cc via e-mail: W. Janeway, Regional Director
 J. Parker, Regional Attorney
 M. Duke
 K. Grzyb
 L. Masi
 L. Heady
 H. Gierloff/J. Pinheiro
 S. Parisio/ E. Moore
 J. Garry (3508)
 D. Harmon (3504)
 J. Isaacs
 J. Swentusky
 V. Gandhi



Recommended Pump Test Procedures For Water Supply Applications

Public Water Supply Permit Program Application Processing

August 31, 2005

Department regulations require that pump test results be submitted as part of any Water Supply Application involving a new or additional groundwater source (6 NYCRR 601.5(f)(12)). To approve any such application, the Department must determine that the proposed well or wells will adequately meet the needs of the applicant without adversely affecting others who may rely on the same aquifer. The recommendations that follow have been designed to produce the accurate and complete information that is vital to these determinations.

APPLICANTS ARE ADVISED TO SUBMIT THEIR PUMP TEST PLANS TO DEC PRIOR TO CONDUCTING A PUMP TEST, PARTICULARLY IF THE PROPOSED TEST PROCEDURES WILL DEVIATE FROM THESE RECOMMENDATIONS.

FOR INFORMATION AND ASSISTANCE

Call the Public Water Supply Program in the Bureau of Water Permits: James Garry (518) 402-8101 or Michael Holt (518) 402-8099

NOTE: Before starting construction, it is advisable to submit a location map of the proposed new wells and any related construction to the Division of Environmental Permits in the appropriate DEC Regional office for a determination as to whether that construction requires any other DEC permits, such as for disturbance of protected streams, protected freshwater wetlands, or for storm water runoff from a construction site. Other factors to consider when siting a project include flood plain location, agricultural districts, conceptual wellhead protection/recharge areas, existing or potential groundwater contamination sources, and existing sub-surface utility corridors (whose bedding might provide a preferential path for groundwater flow or contamination).

1. TIME OF YEAR - The pump test of unconfined sand and/or gravel aquifer wells should be conducted during a period of time of average or below average seasonal stream flow conditions; that is, when "normal" groundwater gradients have not been reversed or significantly altered. (Typically, this eliminates the months of March, April, and May.) Pump tests for rock wells or confined sand and/or gravel wells not significantly influenced by overlying unconsolidated ground or surface water may be conducted during any month of the year. The applicant should demonstrate that the test well(s) will not be affected by spring recharge.

2. TEST PUMPING RATE - The pump test must be performed at or above the pumping rate for which approval will be sought in the water supply application. If multiple wells are to be pumped simultaneously to achieve the necessary yield, the test should incorporate such a pumping plan. To reproduce the anticipated stress on the aquifer, the pump test should be done when nearby wells normally in operation are running. Pumping of other

wells in the test area should be monitored.

A constant pumping rate should be maintained throughout the test. The pumping rate should be measured accurately and recorded at least as often as water level measurements (see No. 6). It should be noted that a decrease in discharge from the pump will normally occur with increasing drawdown, as the pump works against a greater hydraulic head and increasing friction in the system. These effects should be compensated for during the test. The flow rate should be held to within 5 percent of the of the design pump rate.

During the first hour of the test, any failure to pump within 10 percent of the test pump rate for any reason will require termination of the test, recovery of water levels to static, and a restart of the test. Later pump failures must have no significant effect on the data or a similar termination and restart is necessary

3. LENGTH OF TEST - Regardless of the type of aquifer, pump tests shall be conducted for a minimum of 72 hours at a constant pumping rate.

(a) A minimum of six hours of stabilized drawdown must be displayed at the end of the test. Stabilized drawdown is defined herein as a water level that has not fluctuated by more than plus or minus 0.5 foot for each 100 feet of water in the well (i.e., static water level to bottom of well) over at least a six hour period of constant pumping flow rate. The plotted measurements shall not show a trend of decreasing water level.

(b) If stabilized drawdown is not achievable, the test period may be extended or semi-log extrapolation of drawdown versus time (or other similar methods) may be employed to demonstrate the ability of the aquifer to supply a pumping rate equal to the desired yield (which must be equal to or less than the pump test yield) on a long term basis. Normally, an extrapolation of six months of pumping with no assumed recharge must be compared against the level of water remaining above the pump intake at the end of the period (see paragraph No. 13). This type of evaluation may be used in lieu of satisfying the objectives of section 3.(a) of this document at the discretion of NYSDEC.

(c) If positive (recharge) or negative (barrier) boundary conditions are encountered during the test, they must have a record of at least 24 hours.

(d) Excessive rainfall may require extension of the test or a rescheduling of the test.

4. PRE-TEST CONDITIONS - No pumping should be conducted at or near the test site for at least 24 hours prior to the test. Static water levels at the pumping well and observation wells should be measured at least daily for one week prior to the start of the test and again immediately prior to the start of the test. If on site or nearby pumping cannot be curtailed due to system supply needs or other factors, DEC should be consulted prior to the start of the test.

5. DISCHARGE OF WATER - Water discharged during the pump test should be conducted away from the pumping well in a down gradient direction and at sufficient distance to eliminate recharge of this water to the aquifer. The discharge line and discharge point must be shown on the site plan referenced in paragraph No. 14. If the aquifer is confined or if it can be otherwise demonstrated that discharged water will not recharge the

aquifer being tested, a more convenient method of discharge can be used (within caveats of paragraph No. 15).

6. MEASURING SCHEDULE - Water levels in observation wells and at the pumping well should be measured to give at least ten observations of drawdown within each log cycle of time, beginning one minute after the start of pumping. A suggested schedule of measurements at all wells is as follows:

Time intervals for water level measurements

Time After Pumping Started	Time Intervals
0 to 15 minutes	1 minute
15 to 50 minutes	5 minutes
50 to 100 minutes	10 minutes
100 to 500 minutes	30 minutes
500 to 1000 minutes	1 hour
1000 to 5000 minutes	4 hours

7. OBSERVATION WELLS - At least three observation wells should be monitored during the pump test. The horizontal distance between each observation well and the pumping well should be measured to the nearest 0.1 foot. The vertical elevation of a fixed reference point on each observation well and on the pumping well (e.g., "top of casing") should be established to the nearest 0.01 foot and reported in NAD 1983 (or in NGVD of 1929 if this is the standard at the test site). One observation well should be located outside of the expected influence of the pumping well; this observation well should serve to monitor background conditions during the pump test. The remaining observation wells should be placed so as to best define the hydrogeologic characteristics of the aquifer with respect to the pumping well. In some cases the Department may recommend that a representative sample of nearby homeowner wells be monitored during the pump test, regardless of whether the anticipated zone of influence will extend to those wells.

Observation wells should be just large enough to allow accurate and rapid measurement of the water levels. Small diameter wells are recommended because the volume of water contained minimizes time lag in drawdown changes. Existing wells can be utilized if they are in good condition and were properly installed.

For unconfined aquifers, at least two observation wells should generally be placed no farther than 300 feet from the pumping well and at least one additional observation well should be placed beyond the 300 foot radius. For thick confined aquifers that are considerably stratified, at least two observation wells should be placed within 700 feet of the pumping well and at least one observation well located further than 700 feet from the pumping well.

Observation wells should be screened in, or open to, the same formation as the pumping well. Additional observation wells beyond the specified minimum number may be screened in, or open to, formations above or below the one tapped by the pumping well to determine if there is any hydraulic connection between formations.

Water levels in nearby water bodies should be measured prior to and during the test.

8. RECOVERY PERIOD - Water level measurements should be collected during the recovery period for all wells using the same procedure and time pattern followed at the beginning of the pump test (see No. 6). Measurement should commence at least one minute prior to shutdown of the pumping well and continue for at least 12 hours. Water level measurements should be made to the nearest 0.01 foot. To obtain accurate data during the recovery period, a check valve must be installed at the base of the pump column pipe in the pumping well to eliminate backflow of water into the well. Water level measurements should also be collected during the recovery period in all off-site monitoring wells, such as homeowners private wells.

9. RAINFALL MEASUREMENT - Rainfall should be measured to the nearest 0.01 inch and recorded daily at or near the site for one week preceding the pump test, during the test, and during the recovery period. A log of weather conditions during this period should also be kept, including barometric pressure recorded on the same schedule as rainfall. Weather station data available from within a reasonable distance of the test site can be utilized.

10. SURFACE WATER MEASUREMENTS - Fluctuations in surface water stages (or flow) for all surface waters within 500 feet of the pumping well should be measured to the nearest 0.01 foot. Measurements should be made using, as appropriate: weirs, staff gages (with stilling wells as necessary), nested piezometers, etc. The horizontal distance between each observation point and the pumping well should be measured to the nearest 0.1 foot. The vertical elevation of a fixed reference point on each observation point should be established to the nearest 0.01 foot and reported in NAD 1983 (or in NGVD of 1929, if this is the standard at the test site). Measurements should be read and recorded at least once daily for one week prior to the start of the test and at least twice per log cycle, after the first ten minutes, for the duration of the test. Measurements should be made more frequently if surface water levels are changing rapidly. The degree and nature of hydraulic connection with the surface water body should be quantified.

11. WATER QUALITY SAMPLES - Comprehensive (per NYS DOH requirements) water samples should be obtained from the pumping well during the last hour of pumping. Samples should be analyzed to establish acceptable quality as per NYSDOH requirements.

12. WELLS UNDER THE INFLUENCE OF SURFACE WATER - Additionally, If the pumping well is, or may be, hydraulically connected to a surface water body, water samples from the well should be analyzed in the field at least once every four hours for the following parameters: pH, temperature, conductivity, and hardness. Further, representative water samples from the surface water body should be taken at both the beginning and the end of the pump test and analyzed for the same parameters. The NYS DOH should be consulted on all issues related to groundwater under the influence of surface water.

13. ANALYSIS OF PUMP TEST DATA - In order to accurately analyze pump test data, it is necessary to use the methods and formulae appropriate for the hydrogeologic and test conditions encountered at, and specific to, the pump test site. Knowledge of the hydrogeologic conditions of the area is necessary in order to ensure the use of appropriate techniques of analysis. Accordingly, analysis of pump test data should be carried out by a hydrogeologist, professional engineer with hydrogeologic training, or other appropriately trained evaluator.

(a) **DATA CORRECTIONS** - Water level data, graphs, and interpretations should be corrected, as appropriate or deemed significant, for the effects of: ambient water level trends; partially penetrating production well(s); partially penetrating observation wells; delayed yield from unconsolidated aquifers; aquifer thickness, recharge and/or impermeable boundaries; barometric pressure changes; changes in stage in nearby surface water bodies; recharge events (rainfall, snow melt) during the week preceding the test, during the test, or during the recovery period; influence from nearby pumping wells; and any other hydrogeologic influences. All such data and calculations should be included in the test information package.

(b) Theoretical time-drawdown graphs should be prepared from the recorded drawdown graphs. The graphs should be derived from the pump test data, setting time equal to 180 days and groundwater withdrawal equal to the pump test production rate. Based on these graphs and the remaining standing water in the well at the end of the pump test, a maximum safe pumping rate (yield) should be established for each production well or for the well field if simultaneous pumping of multiple production wells is planned (taking into account well

interference).

(c) Theoretical distance-drawdown graphs should be prepared. The graphs should be derived from the pump test data, setting time equal to 180 days and groundwater withdrawal equal to the pump test production rate.

The theoretical cone of depression so determined should be used to establish the area of influence of the well

(s). It is highly recommended that the following wellhead protection areas be delineated using all available information (e.g., published hydrogeologic information, local knowledge, pump test results, etc.) and best professional judgement: 60-day time-of-travel area, zone-of contribution area or recharge areas (for confined or bedrock aquifers), and aquifer boundary area.

(d) Recovery data should be analyzed in a similar manner to drawdown data.

14. SUBMISSION OF DATA - Data submitted in support of a requested groundwater withdrawal should include:

- the raw pump test data (legible) with: date, clock time, elapsed time (minutes), measuring point (top of casing) elevation, static water level, water level measurements, and calculated drawdown [an "Excel" or "Quattro Pro" spreadsheet file may be submitted with this data in place of a written record];
- engineering diagrams showing construction details (e.g. well casing, screen setting and casing stickup, etc.) and depths of pumping wells and observation wells;
- geologic logs (completed well registration reports);
- graphs, formulae and calculations used to estimate transmissivity, storage coefficient, and safe yield;
- scaled site plan showing water level elevation controls (e.g., top of casing) and grade elevation for all wells, staff gages and other water measuring points, pump test discharge piping and discharge point, the location of nearby surface water bodies, and, if applicable, the 100-year flood plain and elevation;
- latitude and longitude (in degrees, minutes, seconds, tenths of second) or UTMs for all production wells and any observation wells which are to remain, preferably in NAD83 (specify the method and datum used to locate the wells);
- a topographic map showing wellhead protection areas and the locations of existing or potential groundwater contamination threats; and
- interpretations including methodology, geologic sections of the area, references, and rationale.

All documentation submitted must be legible. Plans and maps should use shading, cross-hatch patterns, symbology, etc., such that features are readily distinguishable and remain readable when photocopied in black and white.

15. DISCHARGE OF WATER - Please note, it is not legal to discharge water into any water body or wetland if such discharge results in turbidity or erosion leading to turbidity or down stream flooding. Accordingly, if it is anticipated that discharged water will create flooding, erosion and/or turbidity, water must be directed to a holding area and released in a controlled manner to prevent such problems.