



Nathan L. Jacobson & Associates, Inc.
 Nathan L. Jacobson & Associates, P.C. (NY)
 86 Main Street P.O. Box 337 Chester, Connecticut 06412-0337
 Tel: (860) 526-9591 Fax: (860) 526-5416
 www.nlja.com
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MEMORANDUM

TO: Christine Nelson, AICP

DATE: December 2, 2004

FROM: Geoffrey L. Jacobson P.E.

PROJECT No.: 0719-0011

SUBJECT: The Preserve – Conceptual Standard Subdivision **Review No. 2**

COPIES: R. Snarski, CPWS, W. Goodfriend, PhD, L. Bonin, S. Lockett, S. Martinson, RS, C. Costa, M. Branse, Esq., Alan Plattus, A.I.A., B. Hillson, P.E.

This memorandum summarizes a second joint review of the Conceptual Standard Subdivision conducted by Richard Snarski, Wendy Goodfriend and me, and is intended to supersede our prior review memorandum dated October 27, 2004. To be consistent with our prior review, this review also includes an overview of the roadway system layout and the location of proposed storm water basins with respect to existing natural resources, as well as a review of individual lots with respect to both existing natural resources and the ability of existing soils to support development of individual onsite subsurface sewage disposal systems. This second review includes our analysis of the following additional information that has been submitted by the applicant in response to our first review, as well as reviews conducted by others.

- Item 1: Bound document entitled “The Preserve, Response to Town Review Comments, Application for Special Exception Use, Planning Commission, Old Saybrook, CT, Prepared for: River Sound Development LLC”, dated November 10, 2004, prepared by BL Companies.
- Item 2: Bound document entitled “The Preserve, Response to Town Review Comments, Response #2, Application for Special Exception Use, Planning Commission, Old Saybrook, CT, Prepared for: River Sound Development LLC”, dated November 17, 2004, prepared by BL Companies.
- Item 3: Bound document entitled “Herpetological Survey and Vernal Pool Analysis with Conservation Planning Recommendations and Strategies, The Preserve, Old Saybrook, Westbrook, and Essex, Connecticut”, dated October 26, 2004, prepared by Michael W. Klemens, LLC.
- Item 4: Bound document entitled “Biological Survey, The Preserve, Old Saybrook, Wetsbrook and Essex, CT”, dated October 27, 2004, prepared by Environmental Planning Services.

Item 5: Set of bound drawings entitled “Conceptual Standard Plan, Zoning Regulations of the Town of Old Saybrook (Section 56), The Preserve, An Open Space and Recreation Community, Ingham Hill Road – Bokum Road, Old Saybrook, Westbrook, Connecticut, Prepared for: River Sound Development LLC, 399 Park Avenue Eight Floor, New York, New York, 10022”, dated September 1, 2004, last revised November 19, 2004, prepared by BL Companies.

The overall objective of this review remains the same, which is to identify those lots, which in our opinions, would not realistically conform to applicable regulations and design principals that would be applied during review of a conventional subdivision layout. Our comments are as follows:

Roadway System

With regard to wetland impacts resulting from the proposed Roadway Layout and the location of Storm Water Basins the applicant makes reference to the fact that the 100-foot review area from wetlands and watercourses are “regulated areas” and not “no build areas”, and that this review area is no different for vernal pools. We are quite aware of these regulatory definitions and do not dispute these facts. However, we do take exception to the applicant’s statement in item 2 above that “the only disturbances within the upland review area are associated with roadway crossings and potentially storm water basins.” In fact, the Conceptual Standard Layout that was provided for our first review included the following disturbances:

- 10 crossings of wetlands and watercourses.
- In excess of 5,700 lineal feet (more than one mile in length) of proposed roadway located within the 100-foot review area, along with associated clearing and grading.
- 11 storm water basins located within the 100-foot review area, along with associated clearing, grading and storm water discharges.
- One house and five driveways were located within the 100-foot review area, with numerous other areas of minor clearing associated with the development of individual house sites.

Being cognizant of the fact that the 100-foot review area is not a “no build area”, **we neither noted the extent of these areas of disturbance in our initial review memorandum nor recommended any reduction in lot count**, even though it is quite likely that some modifications resulting in the potential loss of lots might occur during a formal review by the Inland Wetlands & Watercourses Commission. We deliberately made this decision because of the subjective and speculative suppositions that would be required. However, it has been our collective experiences in representing municipal land use agencies that local commissions do in fact place a much greater emphasis on the protection of vernal pools due to their increased awareness of the uniqueness, biodiversity and high productivity of these areas, and because “these habitats are disproportionately impacted by development trends associated with regional urban and economic growth” (Calhoun and Klemens 2002). In fact, one of the applicant’s environmental consultants (Klemens) has authored a technical guidance document, which is often referred to by local land use agencies, that emphasizes the relative importance of vernal pools. As such, rather than focus on the more subjective nature of the previously noted disturbances, we specifically focused, and in fact purposely limited our review

comments, on proposed disturbances within the 100-foot review area around vernal pools, with particular attention given to impacts that could adversely impact pool hydrology and water quality. It is especially important to note that the preservation of the 100-foot review area around vernal pools is not at all arbitrary, and is in fact supported by considerably scientific research, including that conducted by Klemens. In Klemens publication, “Best Development Practices, Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States”, the discussion pertaining to the “Vernal Pool Envelope”, which is defined as the area within 100-feet of the pool’s edge, it is stated that “The integrity of the forest immediately surrounding the pool depression is critical for maintaining water quality, providing shade and litter for the pool ecosystem, and providing suitable terrestrial habitat for pool-breeding amphibian populations”. With regard to Storm Water Basins this same publication states that “Stormwater detention basins and biofiltration ponds can serve as decoy wetlands...” and that “Detention and biofiltration ponds should be located at least 750 feet from a vernal pool; they should never be sited between vernal pools or in areas that are primary amphibian overland migration routes, if known”. While we recognize that there is no regulatory authority for this recommended 750-foot distance, it is certainly not much of stretch to expect that a commission would at least exercise its authority within the 100-foot review area for a vernal pool.

In summary, it is our opinion that our initial review was quite conservative in its approach, and gave considerable latitude to the applicant’s proposal by **strictly limiting our focus to only those impacts located within the 100-foot review area of vernal pools**.

Roadway Layout – The roadway layout, presented in the revised Conceptual Standard Subdivision drawings (identified as item 5 above), has been revised to the extent that the previously identified disturbances located within the 100-foot review area of vernal pools (Vernal Pool Envelopes) have been eliminated with the exception of one location. We have the following comment in this regard:

- The end of proposed Road #2, northeast of its intersection with Road #8, is still located within the 100-foot review area for vernal pools 9 and 11. Even though these two vernal pools have been identified as “intermediate”, data provided by the applicant indicate that they are still very productive. As such, it is our opinion that their close proximity and interconnection with pool 10 (100 feet from pool 11 and 200 feet from pool 9), which is identified by the applicant as a “high conservation priority pool”, warrants protection of pools 9 and 11 as well. As such, it is recommended that this section of Road #2 be eliminated. This will result in the elimination lots 97, 98 and 99, along with more than 900 feet of roadway that only provides access to these three lots.

Storm Water Basins – The location of storm water basins as shown on the revised Conceptual Standard Subdivision drawings (identified as item 5 above), have been revised to the extent that two of the four previously identified basins located within the 100-foot review area of vernal pools (Vernal Pool Envelopes) have been eliminated. We have the following comment in this regard:

- Storm Water Basins are still proposed to be located within the 100-foot review area of vernal pools 10 and 23. Both of these vernal pools are very productive, with pool 10 identified by the applicant as being a “high conservation priority pool”. Based on a cursory examination, logical areas for relocating these basins beyond the 100-foot review area for

the vernal pools would be on lots 102 and 227 respectively. We would therefore recommend elimination of these two lots.

It should be further noted that in item 2 above, the applicant acknowledges that “stormwater basins should be excluded from vernal pool envelopes of conservation priority pools”. However, as noted in the preceding bullet, this objective has not been achieved. Rather than simply addressing this deficiency, the applicant attempts to dismiss it by stating “it is not the intent of the yield plan to have a complete design of the means of stormwater management but, merely suggesting that stormwater can be dealt with”. Section 56.3.1 of the Zoning Regulations clearly states that the Conceptual Standard Plan must show infrastructure improvements. There was nothing in our prior review that requested or even suggested anymore of an effort than simply relocating the stormwater basins beyond the 100-foot review area of vernal pools.

Individual Lots

As noted in our prior review memorandum, individual lots were reviewed with respect to their potential impacts to vernal pools, species of special concern, and the ability of existing soils to support development of individual onsite subsurface sewage disposal systems.

Species of Special Concern – In item 2 above, the applicant states that “there is no regulatory nexus between the creation of a building lot and the presence of a species of special concern”, and that “there is no regulatory requirement for the protection of Species of Special Concern”. While there may not be specific regulatory requirements, the Statement of Purpose in the Subdivision Regulations states that “the subdivision of land shall be conducted in such a manner...which preserves the character of the land and valuable natural resources for future generations”. While this is a rather broad and general statement, Species of Special Concern have obviously been designated as such by regulatory agencies for very specific reasons, and certainly warrant special attention and consideration by the commission. In this regard, it remains our position that such species, and in particular immobile species, be held in public trust (publicly owned open space areas) to protect them to the extent that it is reasonably possible. In this regard, we previously made specific recommendations regarding the box turtle and the cactus. With respect to the box turtle, the applicant has stated that “the box turtle population is confined to a stream corridor and wetland separated from house lots 5 and 11 by a sheer escarpment that is not surmountable by these high domed top-heavy terrestrial turtles”. We have made a follow-up inspection of this area, and concur with the applicant’s assessment in this regard. We do, however, have the following comment with respect to the cactus:

- Based on the above, we recommend elimination of lot 11, with the addition of this area to the adjacent open space parcel, due to the location of *Optunia Humifusa* (cactus) along the limit of the proposed clearing required for this lot.

Vernal Pools – Our rationale and approach regarding review of impacts within the 100-foot review area is the same as was discussed in the preceding **Roadway System** section, which was to strictly limit our focus to only those impacts located within the 100-foot review area of vernal pools. As such we did not assess any impacts related to disturbances within the 100-foot review area of all other wetlands and watercourses because of the subjective and speculative suppositions that would be required. The location of individual lots and associated clearing as shown on the revised

Conceptual Standard Subdivision drawings (identified as item 5 above), have been revised to the extent that disturbances on only three of the sixteen previously identified lots are located within the 100-foot review area of vernal pools (Vernal Pool Envelopes). We have the following comment in this regard:

- Based on the above noted criteria, we recommend elimination of lots 207, 208 and 209.

Soils – With respect to our soils analysis, the applicant has first made some general statements indicating that the Open Space Zoning regulation was changed to eliminate the requirement for conducting “detailed on site testing” and that “this level of review is unnecessary and inappropriate for developing yield plans”.

The applicant is correct in stating that the revised Open Space Subdivision regulation does not require on site soil testing. However, section 56.3.1C.11 in the Zoning Regulations indicates that conceptual proposed lots should demonstrate conformance with MABL requirements, and that “Said demonstration may be based upon soils type analysis, slope analysis and potential site grading and filling, but shall not require the detailed soils testing”. As such, while detailed soils testing is neither required nor prohibited, it is clear that some “soils type analysis” was to be included in the commission’s decision making process with respect to demonstrating compliance with MABL. The question then becomes, if detailed on site testing is not required, what is a “soils type analysis”. The best available published information regarding “soils types” consists of the mapping information and soils type descriptions included in the document entitled “Soil Survey of Middlesex County, United States Department of Agriculture, Soil Conservation Service, in Cooperation with Connecticut Agricultural Experiment Station, Storrs Agricultural Experiment Station”. In fact, it is the mapping information contained in this document that the applicant superimposed on their Conceptual Standard Plan, and that we utilized for our “soils type analysis”. The next question is then how this soils mapping is to be analyzed. In this regard, the “soils types” descriptions included in the aforementioned publication identify a wide variety of soils properties and limitations, which are what we utilized as the basis for our “soils type analysis”. However, the applicants response suggests that the limitations related to individual soils types are essentially irrelevant because the Public Health Code allows for engineered systems that might be capable of overcoming these limitations. If the commissions approach was intended to be this simplistic, one would then have to question why there is even a requirement for a “soils type analysis” to demonstrate compliance with MABL. Using the soils mapping and soils type descriptions included within published Soil Surveys is not a new or unique land use concept for establishing lot counts based on soils limitations. One nearby example is in the Town of Deep River, where they have a Net Buildable Lot Area calculation that excludes certain percentages of limiting soils types, including 25% of Charlton-Hollis (Crc) and 100% of Hollis-Charlton (HpE) soils. We remain firm in our belief that the “soils type analysis” methodology that we developed for the evaluation of this project is both a sound and equitable manner for establishing the lot count.

As outlined in our previous memorandum dated October 27, the methodology that we employed for the “soils type analysis” was as follows:

The Conceptual Standard Subdivision plan that was submitted with the current application shows the delineation of different soils types based on the Soil Survey of Middlesex County as well as actual test pit data from a prior application. Where existing test pit data is provided, definitive conclusions

can be made regarding conformance with the MABL criteria. However, where only the general soil type is known, a more subjective type analysis is required. More specifically, the majority of the developed portion of the site consists of soils identified in the Soil Survey of Middlesex County as Hollis-Charlton (HpE) or Charlton-Hollis (CrC). Both of these soil types have a wide range of characteristics, with the Charlton portion consisting of a well drained soil with depths to ledge of 60-inches or more, and the Hollis portion consisting of soils with a depth to ledge of less than 14-inches. Based on the Soil Survey of Middlesex County, the HpE soil type includes approximately 40% of Hollis type soils, while the CrC soil type includes approximately 30% of Hollis type soils. Both of these soil types also include 25% and 20% of “other soils and bedrock outcrops”, for the HpE and CrC soils types respectively. The variation in depth to ledge within the HpE and CrC soils types presents a dilemma with respect to the determination of whether a particular lot should be considered to conform to the MABL criteria. In this regard, the following guidelines were established for our decision making process:

- *Lots where existing test pit data, located in the immediate vicinity of proposed leaching systems, showed that the depth to ledge was less than 48-inches, were not considered to conform to the MBL criteria and thus were recommended to be eliminated.*
- *Lots where existing test pit data, located in the immediate vicinity of proposed leaching systems, showed that the depth to ledge was greater than 48-inches, were considered to conform to the MABL criteria, regardless of the soil type.*
- *Where lots with HpE or CrC soil types did not have any existing test pit data, but were located between lots where existing test pit data revealed an acceptable depth to ledge, and the existing topography was generally uniform, were considered to conform to the MABL criteria, regardless of the soil type.*
- *Where lots with HpE or CrC soil types did not have any existing test pit data located in the immediate vicinity of the proposed leaching system, tallies were made for each soil type. For those lots located in the HpE soil type, 40% were considered not to conform to the MABL criteria, and thus were recommended to be eliminated. For the CrC soil type, 30% were recommended to be eliminated. No deductions were made for those portions of each soil type that included “other soils and bedrock outcrops”. So as to avoid double counting, any lots that were previously eliminated for other reasons (i.e. impacts to species of special concern, vernal pools, etc.) were not included in this analysis.*

With respect to the specific methodology that we employed, the applicant has stated that “because River Sound opted to submit this information (*in reference to test pit data*) as part of its application, the staff has performed a more stringent review of the Yield Plan than the new ordinance language required or intended to require”; “that 94% of the 731 test pits completed on the site have bedrock at a depth of greater than 24”; and, that the “regulations allow the MABL to conform to the minimum requirements of the State Department of Public Health regulations for on site septic systems. State health code allows an engineered system if a minimum depth to bedrock is 24”. Therefore, the MABL requirement can be met.” We have the following comments in this regard:

1. The statement regarding the utilization of test pit data, that the applicant opted to show on their drawings, which they feel was used to their detriment is not factual. In fact, the guidelines we

employed actually worked to their advantage. While we utilized this information to eliminate a total of six lots, there were dozens of lots that we accepted within both the HpE and CrC mapped soils (because test pit data revealed depths to ledge exceeding 48-inches) that would have otherwise been included within the grouping of lots where percentage reductions were applied. **Regardless, so as not to penalize the applicant in any way for having shown available test pit data, we have decided not to eliminate any lots on the basis of available test pit data.**

2. While we have no reason to doubt the applicants assertions regarding the percentage of test pits that have a depth to bedrock exceeding 24-inches, it must be recognized that the distribution of test pits throughout this site was based on a selective sampling process, and not on one which would truly provide a representative sampling. That is to say, test pit locations were selected by engineers or technicians looking for suitable locations for subsurface sewage disposal systems. Such a process would, based on the individual's experience, exclude locations where there was a likelihood or strong probability of encountering unsuitable subsurface conditions. This is also apparent from the testing patterns, which reveal groupings of five to ten test pits located within 100-feet or less from each other. While we would like to make it very clear that we are by no means inferring that there was something inherently wrong with the testing process, because of the nature of this type of testing, it may not necessarily present a valid sampling of data from which to make broad based conclusions regarding the overall suitability of the site for subsurface sewage disposal.

3. The applicant is correct that regulations allow the MABL to conform to the minimum requirements of the State Department of Public Health regulations for on site septic systems. Specifically, section 7.2.1E of the Zoning regulations states "No land will be included in the MABL which is identified as having ledge at a depth of less than four (4') below the natural ground surface as observed by *soil* testing; unless an area of suitable size and location has been identified through *soil* testing which demonstrates the suitability of *soil* in that area for the sewage system placement in accordance with the requirements of the Connecticut Public Health Code in effect at the time of the testing. The soil testing required will be witnessed by the Environmental Health Officer, or the Officer's designee, unless otherwise approved by the Environmental Health Officer. The number and location of the tests as required to demonstrate the suitability of the soil for sewage placement will be determined by the Environmental health Officer, who will certify compliance of the testing with the requirements hereof. No fewer than three (3) test holes, which have been observed by the town Sanitarian or his/her agent, will be provided and will be conducted the that both the primary and reserve system are investigated." For background purposes, the Connecticut Public Health Code identifies locations where "Ledge rock" is less than five feet below ground surface as "Areas of Special Concern", which require the preparation of a plan by a registered engineer. Furthermore, the Public Health Code prohibits approvals "for any new subsurface sewage disposal system where soil conditions in the area of the leaching system are unsuitable for sewage disposal at the time of site investigation Unsuitable soil conditions occur ... where there is less than four feet depth of suitable existing soil over ledge rock, two feet of which is naturally occurring soil" (underlining provided for emphasis). Therefore, while provisions are included in the Zoning Regulations to allow for MABL to conform with "requirements of the Connecticut Public Health Code in effect at the time of the testing", there is no mechanism in either regulation that permits for approval of areas that have a depth to bedrock of less than 48-

inches unless certain specified conditions are met, including but not limited to, three test holes in both the primary and reserve system areas; testing witnessed and certified by the Town Sanitarian; preparation of a plan by a registered Professional Engineer; and, placement of any fill required to provide a minimum depth of four feet over ledge rock. I have discussed this issue with both the Commissions Attorney and the Town Sanitarian, neither of whom are of the opinion that lots can be considered to conform to the MABL requirements at this time unless it can either be reasonably demonstrated that a minimum soil depth of 48-inches exists or that the steps necessary to demonstrate compliance, as specified in both the Old Saybrook Zoning Regulations and the Connecticut Public Health Code have been completed.

We have the following comments based on the criteria established in our previous memorandum dated October 27, and as restated in this memorandum, with the exception that we have not eliminated any lots on the basis of available test pit data provided by the applicant (first bullet in guidelines); the additional test data provided by the applicant in item 1 above; and, the revised Conceptual Standard Plan identified as item 5 above:

- It is recommended that 28 lots be eliminated from areas consisting of HpE soil types. The number of lots eliminated was based on 40% of the 70 new total lots located within this soil type. The new (not previously eliminated for other reasons) lots located within this soil type include the following: 8, 16, 17, 18, 21, 22, 26, 36, 38, 39, 40, 41, 42, 43, 58, 60, 61, 62, 75, 76, 77, 78, 124, 129, 133, 134, 135, 136, 137, 138, 139, 140, 141, 143, 144, 145, 147, 148, 149, 151, 155, 164, 165, 166, 167, 171, 182, 183, 190, 191, 192, 193, 194, 203, **207**, 219, 259, 260, 268, 269, 270, 272, 273, 274, 276, 277, 278, 284, 289, 290 and 292 (bold type identifies lots previously recommended to be eliminated for other reasons stated in this memorandum and were not included in the calculation for this total).
- It is recommended that 25 lots be eliminated from areas consisting of CrC soil types. The number of lots eliminated was based on 30% of the 85 total lots located within this soil type. The new (not previously eliminated for other reasons) lots located within this soil type include the following: **11**, 19, 33, 56, 57, 59, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, **97, 98, 99**, 100, 101, **102**, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 125, 130, 131, 132, 153, 197, 198, 199, 204, 210, 217, 218, 222, 223, 224, 225, 226, 228, 229, 230, 231, 232, 233, 235, 246, 248, 253, 254, 261, 264, 265, 271, 275, 279, 280, 281, 282, 283, 285, 286, 287, 291 and 293 (bold type identifies lots previously recommended to be eliminated for other reasons and were not included in the calculation for this total).

Individual Driveways – As previously noted, driveways serving virtually all of the lots were found to conform to basic town standards. For those few that did not, it would appear as though they could be modified to conform. However, it is important to note that driveways for a number of lots were at the maximum permitted driveway grade of 15%, and that several employed extraordinary measures in order to demonstrate compliance (i.e. lot #79 driveway which has a retaining wall over 200' in length with heights up to 20'). While economics is not one of the metrics for determination of the lot count, it is quite likely that some of the lots would be difficult to develop with a realistic expectation of having a positive economic gain.

END OF MEMORANDUM