Michael W. Klemens, LLC
POB 432
Falls Village , CT 06068
February 12, 2011

Mr. Robert McIntyre, Chairman
Old Saybrook Planning Commission
302 Main Street
Old Saybrook, CT 06475

Re: River Sound Development, LLC
Preliminary Open Space Subdivision Modification

Dear Chairman McIntyre:

At the request of River Sound Development, LLC, I have conducted a peer review of the following documents: Letters from Connecticut Fund for the Environment to the Planning Commission dated January 5 and 19, 2011; letters from Rema Ecological Services to the Planning Commission dated January 5 and January 19, 2011; letters from Environmental Planning Services to the Planning Commission dated January 18 and February 11, 2011; Ecological Connectivity Map dated 02/02/11 revised to 02/11/11 by Doane -Collins Engineering Associates, Inc; and sheets R-1, R-2, R-3, R-4, R-5, and R-6 Preliminary Open Space Modification for River Sound Development LLC dated 10/07/10 by Doane-Collins Engineering revised to 02/11/11.

My involvement with The Preserve project commenced with my first field visit on 14 October 2002 at which time I examined a few of the entire site's many vernal pools and wetlands observing a variety of amphibians including dusky, two-lined, four-toed, redback, spotted, and marbled salamanders, as well as wood frogs. In 2003, field work commenced on April 10th and continued through October 2nd and formed the basis of my first report dated October 26, 2004 (Pools 1-31). In the first half of 2005, additional field work was conducted focused on further characterization of the vernal pools as well as adding additional pools to the inventory (Pools 32-38). It would not be an overstatement to state that another 200 hours were spent in the field in 2005, added to the 391 hours in 2003, bringing the total person hours engaged in field work on The Preserve to at least 600 hours devoted solely to the vernal pool analyses and characterizations. This is one of the most intensively studied sites in Connecticut in regard to vernal pool species.

While these data are now five-seven years old, as most of the amphibian species recorded have 10 year+ life spans, absent any environmental perturbation there is no reason to assume that amphibian distribution has significantly altered within the study area. Wood frogs have a shorter life span, and are among the most plastic of vernal pool species, however, within a large landscape such as The Preserve, one would anticipate that the meta-population of wood frogs would not be altered, however, there could be some individual fluctuations in populations numbers due to their cyclical nature. This would be

most likely in some of the less-productive pools that contained low numbers of wood frogs in 2003-2005. Because of the longevity of the target species, and the lack of any disturbance to the study area within the intervening five-seven years, I do not agree with Mr. Logan's statement in his letter of January 19th that the data are too old to be valuable. I also note that Environmental Planning Services (EPS) re-sampled pools on the Pianta parcel in the spring of 2010 (see letters and data from Michael Klein submitted into the record). Other species, such as the eastern box turtle, have even longer life spans, and population changes in this species are measured in multiple decades.

There is much discussion about the Calhoun and Klemens (2002) assessment methodology and the conclusions have been argued and manipulated to suit various arguments taken by opponents to this project. Let me be quite clear that, along with many other conservationists, my preference would be to have the entire parcel conserved as open space, but in the absence of either the funds or political will to effect total site-wide conservation, Calhoun and Klemens (2002) provides an important discriminatory tool to help focus conservation and development by prioritizing pools on their biodiversity and overall integrity. In my 2004 and subsequent 2005 studies, I followed the Calhoun and Klemens methodology and allocated pools to "conserved" and "non-conserved status ." This terminology has proven confusing. A "non-conserved" vernal pool is one where the development in the critical upland habitat zone (100-750 feet) exceeds 25%. Let me be clear that a "non-conserved" pool is not filled or destroyed, and there are many highly functional vernal pools in Connecticut that have 25-50% development in the critical upland habitat zone. Calhoun and Klemens recognized this in their assessment tool and indicate that many valuable pools have existing development that exceeds 25% up to 50% in the critical upland habitat zone. However, for *denovo* development they recommended that no more than 25% of the upland habitat zone be developed to **optimize conservation**. In retrospect, a terminology that would have been less confusing would have been optimally conserved(for pools up to 25% development in the critical upland habitat zone); conserved (for pools between 25-50% development in the critical upland habitat zone); and non-conserved for any pools with more than 50% development in the critical upland habitat zone. Therefore the following discussions in regard of Pools 10, 11, 16, 29, 30, and 31 is not about whether these pools will no longer function as viable vernal pools, but rather about the landscape-scale conservation strategy of these pools.

This tool(Calhoun and Klemens) is designed to help (and has helped effectively on many other projects) in making site-planning choices. But if selectively applied absent the larger site context, it becomes counter-productive. This selective application is exemplified by the debate concerning Pool 37 discussed both by REMA and CFE as if it was a standalone resource and is an example of how this assessment tool can be misused to sway public opinion. In fact there is a confusing pattern of selectively jumping between individual pools when it serves REMA to make a point while ignoring the landscape scale ecological issues, and then invoking landscape scale issues several pages later. Data from my 2004 report was used both by REMA and CFE to discuss Pools 16 and 31, although it was quite clear that my 2005 report superseded and ascribed a different status to these pools. This tactic, while possibly serving as effective advocacy to the uninformed or those unconcerned by the facts, can hardly be considered a scientifically-based analysis of the research that has been rigorously conducted over multiple years at The Preserve.

Pool 37 was assessed in 2005 and recorded as lacking the biological criteria to deem it an important pool. The pool was re-sampled by EPS this spring, and once again found to be marginally productive--in fact this pool may be an ecological sink, so shallow and prone to early drying that the consistent (annual) survival of larvae through metamorphosis is called into question, as is its overall contribution to the amphibian meta-population of the overall site. The fact that development is differentially concentrated near this pool, is the prudent planning alternative to encroachment on other nearby pools that are far more productive. Taken in an overall planning context, the proposed treatment of Pool 37 in the 02/11/11 revised plan is a prudent alternative as it results in the protection of other more highly-valued resources such as Pool 29.

Unfortunately, REMA and CFE selectively used my first report (2004) for their arguments in their January 5th letter as to the non-compliance of the current plans *vis a vis* the original approval in regard to Pools 16, 29, and 31. The entire vernal pool conservation plan (2004) was revised in my supplemental report (2005) in large part because of the conditions of the Old Saybrook Planning Commission. Specifically, the requirement of a higher intensity through road to The Preserve interior via Ingham Hill Road altered Pools 16 and 31 to "non-conserved" status(see my earlier discussion about this term) because a rebuilt and heavily travelled Ingham Hill Road posed an insurmountable barrier to amphibian movement, which could not be mitigated via tunnels and/or underpasses because of the topography. I had preferred that this access to The Preserve interior from Ingham Hill Road be restricted to emergency use, which would not have adversely impacted the portions of those pool envelopes and critical upland habitat zones that lay on the opposite side of the road from each of these pools. However, other site planning issues such as public safety and traffic flow concerns (ingress and egress), and the absence of a lesser impact access point from Ingham Hill Road, took precedence over the optimal "conservation" of those pools. Pool 29 was considered a "conserved" pool in my 2005 report, and remains so today with the proposed modifications. In evaluating the impacts of the proposed pods, I have used the Old Saybrook Planning Commission's approval as the benchmark to evaluate whether the current plan alters the overall operative conservation plan outlined in my 2005 report. I then conducted a second exercise to see if the stand alone pods were compliant with Calhoun and Klemens (2002) absent the overall build-out of the site, including minimal alterations to traffic intensity and footprint of Ingham Hill Road.

The plans submitted (sheets R-3 through R-6, revised through 02/11/11) conform to the vernal pool protection plan for the overall development as proposed and approved by the Commission. Specifically, the arrangement of "conserved" and "non- conserved" pools reported in my 2005 supplemental remains the same. While there is some development (17%) within the critical upland habitat zone of Pool 29, it falls well below the 25% build out threshold allowed in Calhoun and Klemens (2002) for a conserved pool. In summary, in the 2005 report that was based upon the Planning Commission's approvals, Pools 16, 30, 31, and 37 were "non-conserved" while Pools 10, 11, 29 were "conserved". The final revised plans maintain the conservation status of these seven pools in the same arrangement as your previous approval.

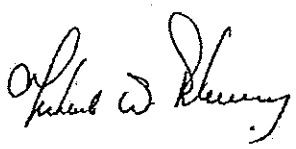
As there is no alteration from the original conservation plan, I do not see any reason why development of these pods independently, or as part of the original full development plan, will have an adverse impact on the plan for the interior core of the site. Using the 2005 conservation plan for vernal pools as the guidance document, there is ample flexibility within the interior of the site to achieve, at minimum, the vernal pool conservation goals outlined in my 2005 report, and it is possible that these goals could be surpassed if the development was further modified in the interior core of the site or if the golf course was eliminated to address issues raised in the Wetlands Commission denial.

In his letter of January 5th Mr. Logan discusses the lack of landscape level analysis. There was considerable attention given to this issue in the original studies conducted in 2003-2005. That ecological integrity (interconnectedness) through upland habitats between wetlands remains unaltered and functional today. To respond to Mr. Logan's question, the proposed development pods have been added to this map--and with the exception of a *diminimus* intrusion into the most eastern edge of one vernal pool upland habitat area (17% of Pool 29) the site's landscape-scale ecological connectivity remains as per the original approval. The development of the Pianta parcel was not part of the approved application submitted in 2005, but it was understood that there was to be some multi-family development on that parcel that would have altered it in some unspecified manner.

During the 600 or so person hours spent studying The Preserve a total of five box turtles were found. I can state with certainty that while there are undoubtedly some additional box turtles to be found, there is not, as stated by Mr. Logan," a substantially larger number of turtles in the Ingham Hill and West pods". I noted in my reports that the box turtle population at The Preserve was very low. Contrast this with sites I studied in Bethel and Glastonbury this year, where more than twenty box turtles were located on each with much less person-effort (4-6 days) than the time spent at The Preserve (measured in weeks over multiple years). In many areas of Connecticut, a skilled turtle biologist can find five or more box turtles in a single day, as opposed to five turtles over two intensive field seasons at The Preserve. This is not to diminish the importance of the box turtles at The Preserve, but to put in to a larger context and address the implication that there are large numbers of box turtles that will be impacted at the Ingham Hill Road pod, or at any other sites within The Preserve. None-the-less, box turtles will be conserved by using the DEP protocols for constructing within box turtle habitat, including pre-construction searches to remove turtles to a safe area, cordoning off the construction area with silt fence to keep turtles and other wildlife out of harm's way, as well as an education and reporting program for contractors. In addition, the proposed development pods do not impact any of the known localities within The Preserve for the State-listed ribbon snake. An exhaustive study of The Preserve's snake fauna did not document the presence of hognose snakes (see page 2 of REMA's January 5 comment letter).

In conclusion, the proposed development of the three pods as proposed is consistent with the approved plan for the site, and will not result in the unacceptable loss of biodiversity at The Preserve. From a conservation integrity standpoint, it is far preferable to develop those areas around the periphery of the site, where there already exist edge effect impacts caused by roads, residences, and other anthropogenic activities. In my professional opinion there is no reasonable likelihood that the modification to the plan as requested will cause pollution, impairment, or destruction of the public trust in the air, water, or other natural resources of the State, either independently or as part of the overall plan. If I can provide the Old Saybrook Planning Commission with any additional information, please do not hesitate to contact me.

Sincerely,



Michael W. Klemens, PhD