



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: January 31, 2011

FROM: Geoffrey L. Jacobson P.E.

PROJECT No.: 0719-0014

SUBJECT: The Preserve – Preliminary Open Space Subdivision Plan Modification (2nd Review)

COPIES: C. Costa, S. Prisloe, M. Branse, Esq., B. Hillson, P.E., D. Royston, Esq.,
R. Doane, P.E., L.S.

This memorandum summarizes our engineering review of the additional information submitted by the applicant through January 19, 2011 in response to our December 30 2010 review of the proposed Preliminary Open Space Subdivision Plan Modification. In addition to our review of this additional information, we also met with the applicant's engineer.

We have the following comments regarding the same numbered comments in our last review memorandum to you dated December 30, 2010:

A. Pianta Parcel – Conceptual Standard Plan

1. Roadway Layout

- a. While the subdivision layout has been revised to include provisions for the future extension of the proposed cul-de-sac into the "Preserve" property, which was a condition of the original Special Exception approval for the Preliminary Open Space Subdivision Plan, we have the following comments in this regard:
 - i. The locations of the proposed turnaround and the crossing of the railroad line appear to be consistent with the locations shown on the approved Preliminary Open Space Subdivision Plan. However, the horizontal alignment of the proposed roadway between these two locations has been shifted approximately 100-feet to the southwest towards the highest elevation on the Pianta Parcel. Without this shift in horizontal alignment, the roadway

extension would have cut through the southern corner of lot #3 and the midpoint of lot #4, which would have resulted in the elimination of this lot.

- ii. The shift in the horizontal alignment noted above will result in roadway cuts adjacent to the proposed house and MABL on proposed lot #4 in the range of twenty-six to thirty feet. This compares to maximum roadway cuts along the centerline of the previously approved roadway centerline in this area in the range of twelve feet. It is therefore quite apparent that future construction economies are being sacrificed at the expense of developing lot #4 in this initial development phase.
 - iii. Given the aforementioned roadway cuts, it is safe to say that a considerable amount of work would be required on lot #4 to develop it in a manner that would be consistent with the proposed grading necessary to accommodate the future roadway extension.
 - iv. The horizontal alignment of the roadway extension off the end of the existing turnaround does not conform to town standards. In order to conform, the centerline of the roadway extension would need to be tangent with the centerline of the horizontal curve in the vicinity of proposed roadway station 8+00. It is not clear how this realignment and reconfiguration of the turnaround would impact access to lot #4. In addition, the horizontal curve of the proposed roadway extension located just to the northeast of the railroad crossing does not meet the minimum 200-foot radius as required in Section 70E.1 in the Regulations for Public Improvements. However, it would appear that that this radius could be adjusted to conform.
- b. As requested, we have received a drawing that shows the required spot elevations along the centerline of the proposed cul-de-sac, as well as individual driveways. In addition, we have also received a copy of a conceptual roadway profile. This profile demonstrates that a proposed roadway conforming to town vertical geometric standards would be constructed with a maximum fill of approximately sixteen feet at roadway station 3+75 and a maximum cut of ten feet at roadway station 7+75. Based on the profile and spot elevations, driveways conforming to maximum permitted grades could be provided, although cuts and fills exceeding ten feet would be required to initially develop the lot #4 driveway. However, as noted in A.1.a.iii above, the deep cut that would be required to construct the roadway extension adjacent to the lot #4 driveway would be problematic with respect to maintaining access to this lot during construction unless the driveway were constructed at a grade that compliments the future roadway extension or an alternative means of access is provided through lot #3. In addition, we note that the driveway serving lot #4 is located within the Snow Storage Reserve Area as defined in Section 70H.3 of the Regulations for Public Improvements, which is an area where the placement of driveways is not permitted. While it would appear that a portion of the driveway serving lot #3 may also be within this same restricted

area, the location of this driveway could quite easily be adjusted whereas there is no area to adjust the location of the lot #4 driveway due to its configuration as a rear lot.

- c. Because there is no formal storm drainage system in the vicinity of the proposed Bokum Road intersection, we previously recommended that the subdivision layout be revised to include a schematic storm drainage system layout with provisions for storm water detention measures. While a schematic storm drainage system layout has not been provided, the location of a proposed storm water detention basin has been shown in the vicinity of lot #9. It would appear as though the elevation of this basin would be low enough in relation to proposed road grades such that most of any roadway drainage system could be directed to discharge into this basin.
- d. The recommended offset type turnaround has been incorporated into the proposed design.

2. Individual Lots

- a. The MABL for lot #1 has been reconfigured such that it no longer includes designated inland wetlands. With regard to the existing dwelling on this lot, based on a note on the drawing, it will be removed or modified so as to eliminate the nonconforming front yard setback that would be created by the proposed roadway location.
- b. The lot lines have been reconfigured and the MABL repositioned so that slopes greater than 20% do not appear to comprise more than 20% of the MABL. In this regard, while the MABL Table on sheet RS-5 indicates that there are no slopes exceeding 20% within the MABL on any of the lots, the MABL on lot #1 is actually very close to having the maximum permitted area of slopes greater than 20%. This area should be checked and the MABL adjusted if need be.
- c. As previously noted, while development should be able to occur on lot #9 without compromising the 100-foot envelope for vernal pool #34, it would severely limit the useable area available for development of a rear yard area and associated uses. However, it would appear that it may be possible to address this to some extent by rotating the house ninety degrees and reconfiguring the northern portion of lot #8 to provide more useable area on lot #9. As also previously noted, developed portions of lots #6, #7, #8 and #9 are located within the contributing drainage area to vernal pool #34 and have the potential to impact water quality. The use of low impact development techniques and careful attention to erosion control measures during construction could serve to limit water quality impacts. Vernal pool #37 continues to be the most vulnerable due to its centralized location, although data provided with the original Preliminary Open Space Subdivision Application indicated that this was the least productive of all the vernal pools on the Preserve property. Due to the reconfiguration of the lots, the majority of lot #2 is now

located within the 100-foot envelope of this vernal pool, which is shown to be protected with a conservation easement. While the development of this lot is shown to occur outside of the 100-foot envelope, the remaining useable area available on this lot is quite limited in size and would severely limit its development.

- d. Based on the reconfiguration of the lot lines and the repositioning of the MABL, the test pit data provided indicates that soils conforming to the required depths to ledge and groundwater exist within the MABL on all of the lots.

Based on the above, we would recommend that the commission careful review lot's #2 and #4 to determine if they should be included in the final lot count.

B. Pianta Parcel – Preliminary Open Space Subdivision Plan (Modified)

1. Since the area previously identified as lot #5 on the Conceptual Standard Plan has been eliminated, the inconsistency that we pointed out with regard to the original Special Exception approval for the Preliminary Open Space Subdivision Plan no longer exists.
2. As previously recommended, the proposed conservation easements at the rear of lots #2 and #3 have been eliminated. As such, our concerns regarding connectivity, size and lack of public access no longer apply.
3. As previously recommended, the Conceptual Standard Plan has been modified to reduce the lot areas to the minimum required area and include the balance as part of the permanent open space area, including vernal pool #37 and the associated 100-foot envelope east of the proposed roadway.
4. Based on the reconfiguration of the lot lines and the repositioning of the MABL, the test pit data provided indicates that soils conforming to the required depths to ledge and groundwater exist within the MABL on all of the lots.
5. Because there is no formal storm drainage system in the vicinity of the proposed Bokum Road intersection, we previously recommended that the subdivision layout be revised to include a schematic storm drainage system layout with provisions for storm water detention measures. While a schematic storm drainage system layout has not been shown, the location of a proposed storm water detention basin has been shown in the vicinity of lot #9. As noted above, it would appear as though the elevation of this basin would be low enough in relation to proposed road grades such that most of any roadway drainage system could be directed to discharge into this basin.
6. The recommended offset type turnaround has been incorporated into the proposed design.

7. As previously noted, the location of individual residential lots along the frontage of one of the three major access roads is somewhat inconsistent with the overall planning objective of the "Preserve", which was to locate individual lots in clusters off dead end or short private roads. This has been addressed to some extent through the proposed use of common driveways for lots 5/6 and 7/8/9.
8. As previously noted, the lack of connection to a public water supply and centralized wastewater collection, treatment and disposal system is also inconsistent with the overall planning objective of the "Preserve".
9. We have the following additional comments based on the reconfigured lot layout:
 - a. The right-of-way provided for the future extension of the cul-de-sac in to the "Preserve" property does not have the required fifty foot width at the end of the cul-de-sac where access strips are provided to lots #3 and #4.
 - b. As noted in A.1.a.i and A.1.a.ii above, the horizontal alignment of the roadway has been shifted such that future construction economies are being sacrificed at the expense of developing lot #4 in this initial development phase.
 - c. As noted in A.1.a.iii above, given the aforementioned roadway cuts, it is safe to say that a considerable amount of work would be required on lot #4 to develop it in a manner that would be consistent with the proposed grading necessary to accommodate the future roadway extension.
 - d. As noted in A.1.a.iv above, the horizontal curve of the proposed roadway extension located just to the northeast of the railroad crossing does not meet the minimum 200-foot radius as required in Section 70E.1 in the Regulations for Public Improvements. However, it would appear that that this radius could be adjusted to conform.
 - e. The driveways serving lots #3 and #4 are located within the Snow Storage Reserve Area as defined in Section 70H.3 of the Regulations for Public Improvements, which is an area where the placement of driveways is not permitted. While it would appear that the location of the driveway serving lot #3 could be made to conform by adjusting the lot line adjacent to the Open Space Area, there is no area to adjust the location of the lot #4 driveway due to its configuration as a rear lot.
 - f. It should be noted that while the MABL Table on sheet RS-6 indicates that there are no slopes exceeding 20% within the MABL on any of the lots, the MABL on lot #2 does include some slopes greater than 20%, although the total area is well under the maximum permitted.
 - g. The proposed right-of-way to be reserved for future connection into the adjacent Piontkowski property should be further refined at some point in time so that it

minimizes impacts to the subdivision that has already been approved for this property. As proposed, the alignment of this right-of-way and future extension to the approved roadway on the Piontkowski property would appear to result in the elimination of a lot. Every effort should be made to work out an alignment that would permit an extension with modification, but not elimination of a lot.

Based on the above, we would recommend that the commission careful review the proposed realignment of the roadway and the inclusion of lot #4 in the Modified Preliminary Open Space Subdivision Plan.

C. Ingham Hill Road Lots – Preliminary Open Space Subdivision Plan (Modified)

1. The drawings have been revised to include additional Open Space Area, which in combination with a portion of adjacent town owned property, will accommodate the same number of recreation fields (two baseball fields, two soccer fields and one basketball court) as provided for on the approved Preliminary Open Space Subdivision Plan. While the same numbers of fields are being proposed in the same general area as shown on the Preliminary Open Space Subdivision Plan, they have been shifted further to the south and west in areas of steeper topography in order to accommodate development of proposed lots #3, #4, #5 and #6. While the existing topography on the aforementioned lots is much more suitable to the development of these recreation fields, note #5 on drawing RS-3 indicates that "...the developer shall have the obligation to do clearing, rough grading and stabilization", which given the nearly thirty foot elevation drop across one of the baseball fields will involve considerable work. It is apparent in reviewing the locations of these fields that further adjustments in the layout will be required in order to deal with the existing topographic conditions. In addition, it is also apparent that elevation drops necessary to gain access to some of these fields may not be easy for elderly spectators (there is a nearly a fifty foot drop in elevation from the midpoint of the proposed 27 car parking area to the westerly playing field. As such, the Old Saybrook Parks & Recreation Commission should carefully review this plan to ensure that it will fulfill their long term objectives.
2. The proposed trailhead parking has been reconfigured to provide a safer off street parking area. The Conservation Commission should review both the proposed location and number of parking spaces to be provided to ensure that they are suitable. While this area is currently shown to be located on "Other Land of River Sound Development, LLC", it should be located within designated Open Space.
3. As previously noted, the approved plan included a nature center pavilion, which was shown on both the drawings and specifically mentioned in the Statement of Use. It should be noted that the modified Statement of Use has deleted the text regarding the pavilion. As such, it appears as though the applicant is now proposing to delete this feature.

4. As previously recommended, the Preliminary Open Space Subdivision Plan has been further modified to reduce the lot areas to the minimum required area with the balance included within the permanent Open Space Area. This, along with the inclusion of previously proposed conservation easement areas within the permanent Open Space Area, addresses our prior concerns regarding connectivity, size and lack of public access, and reserves these areas in a way that is more consistent with the objectives in Section 56.2 of the Zoning Regulations.
5. While based on the applicant's analysis there is only one small area where slopes exceeding 20% are located within a MABL (lot #8), based on our review, there would appear to be some areas within the MABL on lots #7 and #8 where 20% slopes occur, but were not delineated as such. These lots should be carefully reviewed, and if possible, the MABL adjusted such that slopes exceeding 20% do comprise more than 20% of the MABL.
6. Based on the reconfiguration of the lot lines and the repositioning of the MABL, the test pit data provided indicates that soils conforming to the required depths to ledge and groundwater exist within the MABL on all of the lots except for #6, #7 and #8. With regard to lots #6 and #8, there are no test pits located within the MABL on either of these lots which, as noted in our prior review memorandum, are not required at this stage in the application process. Given the close proximity of acceptable test pits located on lot #5, with regard to the MABL on lot #6, it would be our opinion that suitable soils are likely to be found within the MABL on lot #6. Based on the NRCS soils classifications, it would appear to be possible that at least a portion of the MABL on lot #8 would have suitable soils. While test pits are shown within the MABL on lot #7, data was not provided. This information should be submitted.
7. As recommended, the 100-foot envelopes for vernal pools #16 and #18 are now located within Open Space Areas.
8. As requested, we have received a drawing that shows the required spot elevations along the centerline of the longer of the two proposed cul-de-sacs, as well as the individual driveways that gain access from it. In addition, we have also received a copy of a conceptual roadway profile for this cul-de-sac. This profile demonstrates that a proposed roadway conforming to town vertical geometric standards would be constructed with a maximum fill of approximately twenty-five feet at roadway station 2+00 and a maximum cut of three feet at roadway station 5+00. Based on the profile and spot elevations, driveways conforming to town standards regarding maximum permitted grades could be provided, although the driveway serving lot #8 is located within the Snow Storage Reserve Area as defined in Section 70H.3 of the Regulations for Public Improvements, which is an area where the placement of driveways is not permitted. Based on the current configuration of this lot with limited frontage, there is no area to adjust the location of this driveway.

9. We previously recommended that the subdivision layout be revised to include a schematic storm drainage system layout with provisions for storm water detention measures. While a schematic storm drainage system layout has not been shown, the location of one proposed storm water detention basin has been shown. We have the following comments in this regard:
 - a. A detention basin has been shown for the longer of the two proposed cul-de-sacs at the base of the deep fill embankment in the vicinity of roadway Sta. 2+75. This basin is located within both a proposed Open Space Area and within the 100-foot regulated area of an inland wetland. While it is not clear if it is intended to direct the 400-foot section of roadway beyond the high point to this basin, if it is, it would appear to require construction of a drainage pipe at depths approaching twenty feet.
 - b. To be consistent with the original Preliminary Open Space Subdivision Plan, the storm drainage system for the short cul-de-sac should discharge into a storm water detention basin located on the east side of the roadway just to the north of vernal pool #31.
10. As requested, we have received a drawing that shows the required spot elevations along the centerline of the shorter of the two proposed cul-de-sacs, as well as the two individual driveways that gain access from it. We have the following comments in this regard:
 - a. Construction of the proposed cul-de-sac (less than 300-feet in length) that is required to provide access to these two lots will require a cut of more than 20-feet in depth in order to conform to maximum permitted road grade requirements.
 - b. While the spot elevations now demonstrate, along with the reconfigured house and driveway locations, that driveways conforming to town standards could be provided, it should be noted that the lot #13 driveway will begin with a cut in excess of twenty feet, and while ascending at a grade of 10%, it will require a distance of 200-feet before it emerges at the existing ground elevation. A similar situation will occur for the lot #12 driveway, although it will begin with a cut of approximately twelve feet.
11. The location of individual residential lots along the frontage one of the three major access roads is somewhat inconsistent with the overall planning objective of the "Preserve", which was to locate individual lots in clusters off dead end or short private roads.
12. As previously noted, the lack of connection to a public water supply and centralized wastewater collection, treatment and disposal system is also inconsistent with the overall planning objective of the "Preserve".

13. We have the following additional comments:

- a. The current configuration of lot #10 will not permit the realignment of Ingham Hill Road as shown on both the original Preliminary Open Space Subdivision Plan (sheet RS-1) and the Modified Preliminary Open Space Subdivision Plan (sheet RS-2).
- b. Land should be reserved for the realignment of Ingham Hill Road as shown on both the original Preliminary Open Space Subdivision Plan (sheet RS-1) and the Modified Preliminary Open Space Subdivision Plan (sheet RS-2) to the east of lot #10 and to the west of lot #12 on the opposite side of the proposed cul-de-sac.
- c. The Commission should determine if the aforementioned improvements along the frontage of the new proposed lots on Ingham Hill Road should be included as part of this initial development phase.

D. West PRD -- Preliminary Open Space Subdivision Plan (Modified)

1. As previously noted, while the horizontal alignment of the proposed cul-de-sac appears to be similar to that which was previously proposed for this section of Road "A", we note that it slightly exceeds the maximum permitted length of 1,000 feet as measured from the gutter line of Route 153 to the center of the turnaround as required in Section 70H.4 of the Regulations for Public Improvements. This inconsistency should be easy to address. The commission should also be aware that a private PRD roadway extends out beyond the end of this turnaround for an additional 1,300 feet with grades up to 12% in a 300-foot long section.
2. As requested, we have received a drawing that shows the required spot elevations along the centerline of the proposed cul-de-sac. In addition, we have also received a copy of a conceptual roadway profile, which with the exception of the circular turnaround, matches the grades previously proposed for this section of Road "A". This profile demonstrates that a proposed roadway conforming to town vertical geometric standards would be constructed with a maximum fill of approximately five feet at roadway station 10+20 and a maximum cut of eight feet at roadway station 8+70. Based on the spot elevations shown for the driveways proposed to provide access to the PRD units, maximum grades ranging from 10% to 12% will occur over a distance of 700-feet, with a maximum cut of seven feet in depth and a maximum fill of approximately twenty-two feet in depth (occurring near the three way intersection with the interior island). Of particular concern is how the driveway to the PRD units would connect to Road "A" when it is extended in the future. At the point where the PRD access drive departs from the extended right-of-way for Road "A", there is a proposed spot elevation of 110, whereas the proposed Road "A" profile indicates that the grade at this location is proposed to be elevation 96. Given that the PRD access drive will be ascending from the aforementioned spot elevation at a grade ranging from 10% to 12% for an additional 400-feet, it will be very difficult at best to provide a future connection at any

reasonable grade without significant changes to the horizontal and vertical geometry of the PRD access drive (which would be problematic with respect to maintaining access to the PRD units during construction), and/or the re-design of Road "A", which as noted above, is already proposed with a 22-foot fill at this location. This situation would appear to me to be another clear indicator, similar to what we pointed out with regard to the proposed development of the Pianta parcel, that future construction economies are being sacrificed at the expense of the initial development phases. This certainly raises the question whether there is really any intent for the proposed modifications to become part of a fully integrated Open Space Subdivision Plan for the entire property.

3. The PRD layout has been revised so that the plant identified as a Species of Special Concern (*Optunia Humifusa*) is now located within the proposed Open Space Area.
4. As previously noted, while the West PRD will be served by a public water supply, the lack of connection to a centralized wastewater collection, treatment and disposal system is inconsistent with the overall planning objective of the "Preserve". With regard to providing evidence that suitable area exists to support the construction of subsurface sewage disposal systems, the applicant has submitted a document entitled "Sanitary System Schematics" which should be referred to the Health District for comment. In this regard the Health District should be aware that the location of the proposed systems for units #1, #2 and #3 are in areas where roadway fills of between 10 and 20 feet will be required.
5. We have the following additional comments:
 - a. The proposed Trailhead parking area that requires backing out into the PRD access drive should be avoided for obvious safety reasons, and an off street parking area provided.

END OF MEMORANDUM