

DRIFTWOOD TOWNHOMES

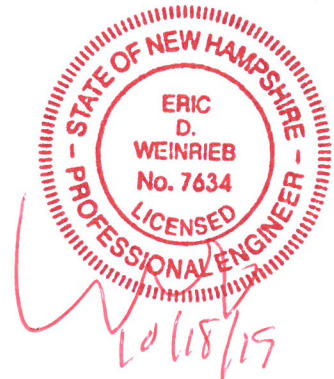
1215 Ocean Boulevard
Rye, NH 03870
Assessor's Parcel 17.3, Lot 06

EXECUTIVE SUMMARY DRAINAGE COMPUTATIONS

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Prepared for:
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PROJECT DESCRIPTION (REVISED 3-26-19)

Site Overview

Samonas Realty Trust and John Samonas, Trustee, are proposing to re-develop the 2.25-acre site located at 1215 Ocean Boulevard in Rye, NH. The current property is home to seasonal and year-round residential rental units along with commercial units. The parcel has frontage on both Wallis Road and Ocean Boulevard. The rear of the lot abuts the Parsons Creek tidal marsh. The majority of the site is within the 100-foot tidal wetland buffer. The existing septic systems and most of the built infrastructure are within 75-feet of the resource. Mr. Samonas is proposing to raze all of the existing built improvements on the site and replace them with a 6-residential townhouse unit development and associated improvements. The existing septic system will be replaced with a state of the art “Clean Solutions Septic System” which enable the removal of two elevated leach fields on site and within the wetlands buffer. The improvements will include a porous driveway to further reduce the net impervious area of the site and minimize impacts to the adjacent wetlands and tidal marsh.

Pre-Development (Existing Conditions)

The pre-development site conditions reflect the existing conditions of the site, which include seasonal and year-round cottages and a commercial building. The remainder of the site is predominantly undeveloped wetlands and tidal marsh. The current site discharges to the tidal marsh located to the back (west) of the lot primarily sheet flow. There is an existing catch basin at the corner of Wallis Road and Ocean Boulevard that collects the surface flows from the north-east portion of the site and discharges to the tidal marsh.

The drainage analysis identifies three Points of Analysis (POA) on the plans along the tidal marsh. The Pre-Development analysis models the existing conditions for each point of analysis. All three POA’s drain to the tidal marsh and are combined in the analysis results to show the net impact of the development. The parcel lies within the existing 100-year flood plain as Zone AE, elevation 9.0. The soil data is from the Site-Specific Soil Survey completed by Joseph Noel, New Hampshire Certified Soil Scientist No. 017, in November of 2018. The grades and elevations shown on the plans are based on the site survey completed by James Verra Associates, (JVA) in March-April 2018.

Site topography, existing features, proposed site improvements, proposed grading, drainage and erosion control measures are shown on the accompanying plans. Recommended erosion control measures are based upon the December 2008 edition of the “*New Hampshire Stormwater Manual Volumes 1 through 3*” prepared by NHDES and Comprehensive Environmental, Inc. as amended.

Site Soils

A Site-Specific Soils Survey was conducted by Joseph Noel, New Hampshire Certified Soil Scientist No. 017, in November of 2018 to delineate the soils on site. The proposed project area was found to have soils that are predominantly poorly drained, with the majority of the site being a hydrologic soil group (HSG) D. The following soils were identified on site:

<u>NUMERICAL SYMBOL</u>	<u>SOIL MAP UNIT NAME</u>	<u>HSG</u>
299	Udorthents, smoothed	D/B
397	Ipswich, frequently flooded	D
997	Ipswich, low salt, frequently flooded	D

Post-Development (Proposed Site Design)

Samonas Realty Trust is proposing to re-develop the 2.25-acre site located at 1215 Ocean Boulevard in Rye, NH. The proposed project will demolish eleven (11) existing cottages and a commercial building for the construction of 6 new townhouses. There are 3 cottages, 2 leach fields, 2 propane tanks, and sewer facilities that will be removed from the 50-foot buffer, which will be re-established as part of this project.

The existing septic system will be replaced with a state of the art “Clean Solutions Septic System” which enable the removal of two elevated leach fields on site and within the wetlands buffer. The improvements will include a porous driveway to further reduce the net impervious area of the site and minimize impacts to the adjacent wetlands and tidal marsh. The project will result in a reduction of over 10,000 square feet of impervious area. The stormwater will be managed by reducing impervious, installing a porous driveway, and directing surface flows to the vegetated buffer.

The Town of Rye, NH Vulnerability Assessment Report, September 2015 identified three scenarios for sea level rise (SLR) and storm surge. As a conservative measure, the buildings were initially designed to have finished floors for the garages set at elevation 12.0 and one building at 10.7. This approach will keep the slabs above the projected 100-year flood elevation. Following the February 5th Planning Board meeting, the design team decided to lower the buildings to reduce the visual impact of the site. In October 2019, the owner removed one of the proposed buildings, going from four to three proposed buildings, each set at elevation 10.0. Each first floor is also designed as “open space” for flood passage in the event of a major storm event. The changes in the design have reduced the impervious areas by over 2,000 square feet. The computations have not been adjusted to reflect this change but will provide and additional decreases to the post development storm water flows and volumes.

Drainage Analysis

The following table compares pre- and post-development peak rates of runoff for all analyzed storm events. *At present, the computations have not been updated to reflect the reductions in impervious areas to the proposed development.*

Stormwater Modeling Summary (January 25, 2019 site design) Peak Q (cfs) for Type III 24-Hour Storm Events

	2-Yr Storm (3.73 inch)	10-Yr Storm (5.66 inch)	25-Yr Storm (7.18 inch)	50-Yr Storm (8.59 inch)
POA #1 – North Wetlands				
Pre	2.29	3.79	4.97	6.06
Post	1.62	2.77	3.92	4.64
Change at POA#1	-0.67	-1.02	-1.05	-1.42
POA #2 – Middle Wetlands				
Pre	1.24	2.37	3.28	4.14
Post	0.35	0.89	1.38	1.85
Change at POA#2	-0.89	-1.48	-1.90	-2.29
POA #3 - South Wetlands				
Pre	1.51	2.67	3.59	4.44
Post	1.17	2.16	2.97	3.73
Change at POA #3	-0.34	-0.51	-0.62	-0.71
Net Pre-Post Development Change	-1.90	-3.01	-3.57	-4.42

Notes: 1) Rainfall data include 15% increase from NRCC Extreme Precipitation Tables for Seacoast communities.
2) 25-Year results provided for the town of Rye. Summary calculations not provided but are available upon request.

As the above table demonstrates, the proposed peak rates of runoff will be decreased from the existing conditions at all locations and for all analyzed storm events.

CONCLUSION

This proposed Driftwood Townhouses re-development project located at 1215 Ocean Boulevard in Rye, NH will not have an adverse effect on abutting properties and infrastructure as a result of the proposed site improvements and stormwater runoff. Post-construction peak rates of runoff from the site will be significantly lower than the existing conditions for all analyzed storm events. The reduction of over 10,000 square feet of impervious surface through the construction of a porous driveway as well as re-vegetating the 50-foot tidal buffer will provide the required treatment and management of the stormwater runoff from the site. Appropriate steps will be taken to properly mitigate erosion and sedimentation through the use of temporary and permanent Best Management Practices for sediment and erosion control.

CALCULATION METHODS

The drainage study was completed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. Reservoir routing was performed with the Dynamic Storage Indication method which automates the calculation of Tailwater conditions. A Type III 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10, 25, and 50 Year - 24-hour storm events using rainfall data provided by Northeast Regional Climate Center – Extreme Precipitation Tables.

Disclaimer

Altus Engineering, Inc. notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (k_e), velocity factors (k_v) and times of concentration (T_c) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (C_n) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.