

**STORMWATER
DRAINAGE
ANALYSIS**

RECEIVED
Town of Durham
DEC -2 2014
Planning, Assessing
and Zoning

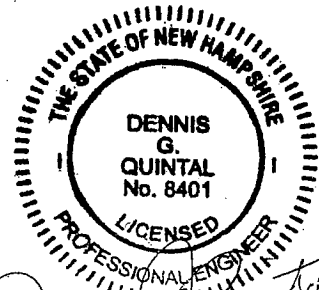
**257 Newmarket Road
Durham Assessor's Map 18, Lot 3-2**

**SITE IMPROVEMENTS
FOR**
Seacoast OPM Realty, LLC
Applicants: Christopher Meyer & Edward Marquardt

NOVEMBER 2014

by

CIVIL CONSTRUCTION MANAGEMENT, INC.
8 MERRIMAC ROAD PO BOX 475
NEWTON, N.H. 03858
Tel. 603-382-7650



Dennis G. Quintal
11-17-14

PROJECT NARRATIVE

257 Newmarket Road

INTRODUCTION

The site is located on the east side of Newmarket Road, in Durham, NH. The applicant, Seacoast OPM Realty, LLC, wishes to construct 2 apartment buildings (each having 3- 2 bedroom units), a paved parking lot, additional well, septic system, and drainage structures.

The site is approximately 5.2 acres on which exists an apartment building, garage, paved driveway, well, and septic system with a combination of lawn and wooded areas. The soils are level & moderately sloped group C soils, as determined by USDA NRCS web soil survey. The surface drainage from the project flows generally from south to north.

OVERVIEW

Treatment of stormwater runoff from the proposed paved parking lot will be handled by vegetated buffers and bio-retention ponds, and will be directed to an existing drainage swale at the north side of the property. A bio-retention pond on the southerly edge of the site will intercept stormwater from the southerly half of the proposed parking area before it is directed by ADS piping around the proposed septic system. Pre-treatment of the stormwater is provided by vegetative buffers, which will capture sediment and particulates. A small bio-retention pocket located east of the existing septic system will intercept runoff from the northerly portion of the proposed parking area. These best management practices will allow for the treatment of the stormwater, groundwater recharge and the attenuation of runoff rates.

Re-grading of the project site will result in diverting stormwater runoff in two main flow directions, which will ultimately converge at the northerly edge of the project site before approaching the abutting property. Runoff for the extreme westerly portion of the site (the front yard area) drains in a southerly direction through an existing roadside swale. Runoff from much of the extreme easterly portion of the project (which will remain undisturbed) drains to the northeast. Therefore, the stormwater analysis will focus on the middle portion of the project site where construction and subsequent re-grading will occur.

SUMMARY

The increased stormwater runoff inherent to any development is mitigated through the use of post-development Best Management Practices (BMPs). These changes influence the time and rate at which the majority of the increase post development runoff reaches the point of analysis. The calculations show no significant change in stormwater leaving the site during the modeled storm events, except for the 1" storm event (a slight increase of 0.03 cfs). The analysis omitted the exfiltration rates for both bio-retention areas. Further soil analysis should be performed to verify the exfiltration rates for the parent soils beneath each of the proposed areas for bio-retention. It is anticipated that the inclusion of exfiltration effects of the bio-retention areas will mitigate this slight increase in runoff for the 1" storm event.

RESULTS

Pre	1" Storm	2 Year	10 Year	25 Year	100 Year
A	0.04	1.92	3.71	5.25	8.43
B	0.01	2.13	4.49	6.57	10.98
C	0.00	1.40	3.18	4.80	8.27
D	0.00	0.86	2.14	3.33	6.01
TOTAL	0.04	5.44	11.86	17.58	29.83

Post	1" Storm	2 Year	10 Year	25 Year	100 Year
A	0.04	1.92	3.71	5.25	8.43
B	0.03	1.82	3.61	5.15	8.36
C	0.01	1.52	3.41	5.22	10.25
D	0.00	0.86	2.14	3.33	6.01
TOTAL	0.07	5.01	10.74	15.83	27.52