Niyati Realty, LLC
289 Pinewood Road
Allenstown, New Hampshire

PROJECT NARRATIVE

EXISTING CONDITIONS

Niyati Realty, LLC proposes the development of the existing property located at 289 Pinewood Road (Route 28) in Allenstown, NH. The property is identified on tax map 409 as lot 32. The property has 243' of frontage along the east side of Pinewood Road. The primary access is through an existing driveway easement over the Gelinas property, tax map 409 lot 32.1. The subject property consists of 8.28 acres of land with the majority of the property being wooded and sloping from east to west.

The predominant soil type on the property is classified as Canton, consisting of very deep, well drained soils formed in a loamy mantle underlain by sandy till. Existing soil conditions were identified by Gove Environmental Services, Inc. using *Site-Specific Soil Mapping Standards for New Hampshire and Vermont*. SSSNNE Special Publication No. 3, Version 4.0, February 2011.

This parcel has previously housed cabin like buildings along the frontage of Pinewood Road (in the area of proposed development) but have been removed. The remainder of the property is wooded with primarily hard wood trees and slopes from 2 to 20%. To the north the property abuts an existing gravel pit and residential dwelling owned by William Gelinas. To the south and east the subject property abuts Catamount Hill Cooperative mobile home park.

The Catamount Hill Cooperative property will be used as the primary access for the proposed development. The Catamount property has existing driveway access on Pinewood Road (Route 28) as this state highway is a limited access road. The frontage of the property is relatively flat but immediately slopes up at a 10 to 12%. Between Presidential Drive and southerly property line of the subject lot are two existing leaching fields that services 10 mobile homes.

PROPOSED DEVELOPMENT

The proposed development on lot 32 will encompass just over 2 acres of the 8.28 acre lot. This project proposes to construct a 3,600 SF convenience store with drive through services, three gasoline and one diesel pump islands, 25 paved parking spaces and stormwater management features. The site will be constructed in an approximate cut of 10 feet and is boarded by three retaining walls. Grading at the rear of the site will only extend approximately 450 feet from Route 28.

Proposed Access is provided with a shared driveway through the southerly Catamount Hill Cooperative (lot 33) and existing driveway entrance. The proposed driveway modification will require grading and other disturbances on lot 33. All proposed grading on this lot are within areas previously disturbed.

The proposed improvements on the Catamount lot will include an updated driveway entrance configuration, realignment of presidential Drive and an expanded school bus turnaround. This portion of development will encompass 1.5 acres, with a total of 155,000 sf of disturbance.

Stormwater management for the proposed development will be managed through three types of best management practices. An infiltration Basin at the rear of the property will capture and infiltrate uncontaminated runoff to satisfy ground water recharge requirements as there is no opportunity post development to infiltrate runoff within the developed site. This is due to the large cut required to access the site and location of the development close to Route 28.

Proposed impervious areas will be captured and filtered through 4 Filterra Tree Box filters before entering lined underground Cultec Recharger 150XLHD heavy duty retention chamber systems.

WETLAND IMPACTS

There are no wetland impacts proposed for this project.

FLOOD PLAIN IMPACTS

No portion of the project area is within a special flood hazard area designated by the Federal Emergency Management Agency on community panel number 33013C0569E, effective date: April 19, 2010.

HYDROLOGY

This site is located along the easterly banks of the Suncook River drainage basin. Stormwater from this site flows to Suncook River through an existing 18" RCP traversing under Route 28 and discharges to a woodland channel before entering the Suncook River.

The 18" RCP was constructed in the 50's during the reconstruction of Route 28 and impounds a catchment approximately 22 acres in size. This includes the majority of the subject and dwelling lot to the north and a portion of the Catamount Hill Cooperative development.

STORMWATER MANAGEMENT

METHODOLOGY

The SCS TR-20 Method was used to determine peak flow rates as well as the open and closed conduit drainage system. The analysis is based on runoff flows generated from the 2, 10, 25 and 50-year storm events. HydroCAD™ Version 10.0 software was used to perform drainage calculations. Drainage pipe sizes and peak flow rates and are detailed and summarized in the analysis section of the report. A comparison of pre and post development peak runoff flow rates is summarized below.

EXISTING DRAINAGE

Pre-development stormwater runoff is defined in seven subcatchment areas which all flow into the 18" RCP and eventually to the Suncook River, as explained above.

- Subcatchment 1E is the largest area with the majority being wooded and undeveloped. This flows east to west into the existing ditch along Route 28 and into catch basin 1264 and through a 12" RCP outleting in a shallow swale on the south side of Presidential Drive approximately 150' north of the 18" RCP.
- Subcatchment 2E, 3E, 4E, 5E, 6E and 7E include flows from the developed area of Catamount Hill Cooperative mobile home park. These areas flow over grassed and paved surfaces into closed and open drainage channels. Eventually collecting in an existing wooded drainage swale before entering the 18" RCP under Route 28.

PROPOSED DRAINAGE

Under the post-development conditions twenty subcatchment areas are identified. In all storm events the proposed stormwater design peak runoff rates are less than the pre development runoff rates. The post 2 year stormwater volume has increased by 4,423 cf or 0.101 acre feet.

- Subcatchment 1P is a smaller version of 1E and flows a similar path into the road side ditch and into catch basin 1264 and 12" CMP before reaching the 18" RCP.
- Subcatchment 2P includes the remainder of undeveloped area on the subject lot and introduces an infiltration basin to satisfy groundwater requirements and to reduce the amount of runoff introduced to the developed site.
- Subcatchment 3P, 13P, 14P, 15P and 16P are the same as existing that include flows from the developed area of Catamount Hill Cooperative mobile home park. These areas flow over grassed and paved surfaces into closed and open drainage channels. Eventually collecting in an existing wooded drainage swale before entering the 18" RCP under Route 28.
- Subcatchment 4P is the area of the proposed 3600 SF building that discharges through a roof drain into a 4'x8' Filterra unit "A".
- Subcatchment 5P includes the northwest portion of the developed site and is collected and filtered through a 6'x8' Filterra unit "B".
- Subcatchment 6P includes the northeast portion of the developed site and is collected and filtered through a 4'x8' Filterra unit "A".

Filterra units A and B collect into an 85'x 18' Cultec-150XLHD (CT-1) subsurface detention system. These systems are lined by an impermeable liner as they will be within the S.W.H.T. and not able to infiltrate stormwater.

- Subcatchment 7P is the graded area around the east and southeast portion of the site. This subcatchment is collected in an interceptor under-drain to divert surface and groundwater away from the developed site.
- Subcatchment 8P includes the southeast portion of the developed site and is collected and filtered through a 4'x8' Filterra unit "C".
- Subcatchment 9P includes the southwest portion of the paved parking area and is collected and filtered through a 4'x8' Filterra unit "D".
  Filterra unit C and D is then connected to a 64'x 28' Cultec-150XLHD (CT-2) subsurface detention system that works in conjunctions with CT-1 to detain the developed sites stormwater to reduce off site peaks.
- Subcatchment 10.1P area covers half the access drive from Route 28 to the proposed site and includes a grass lined swale witch discharge to deep sump catch basin "A".
- Subcatchment 10.2P area covers the other half the access drive from Route 28 to the proposed site and is discharge into deep sump catch basin "B".
- Subcatchment 11P includes the remained of the original subcatchment 1E and is collected into deep sump catch basin "C".
  Catch basin A, B and C combine flows with the Cultec detention system flow and are discharged through an 18" HDPE culvert onto a rip rap apron. This apron is designed to handle flows from the 18" HDPE. The rip rap apron opens to the grassed channel leading to the 18" RCP culvert under Route 28.
- Subcatchment 12c though 12e are similar to existing 4E and includes the realignment of Presidential Drive and the improved school bus turnaround. These flows are collected into three deep sump catch basins before discharging into an 85'x28' Cultec-150XLHD (CT-3) subsurface detention system. This is then connected to DMH "C" and discharged through the 18" HDPE.
- Subcatchment 12f is the remaining area flowing into catch basin 1547.
  The existing drainage system in this area is severely under sizes and in poor condition. The proposed reconstruction will improve water quality and increase detention before being released.

COMPARISON OF PRE & POST DEVELOPMENT PEAK RUNOFF RATES

Storm (years)	Discharge Point - 1		
	Pre	Post	**Change**
2-(2.85")	3.7	3.7	-0.0 (cfs)
10-(4.25")	10.6	10.3	-0.3 (cfs)
25-(5.33")	14.7	13.9	-0.8 (cfs)
50-(6.33")	23.4	19.4	-4.0 (cfs)

This table demonstrates that the Post peak flow rates to the 18" RCP culvert are equal or less than Pre flow rates in all storm events, 2-year, 10, 25 and 50-year storms. It is concluded that this project will not create any adverse effects to the existing stormwater infrastructure.