

PROJECT DESCRIPTION

The proposed project is to expand the Barrington Shores seasonal campground, including new campsites and septic system. There is an existing gravel access road that is intended to be upgraded and expanded to access the camp sites. In total there will be 1,050 +/- lf of new or improved gravel road. We are proposing to detain the increase in flow from the additional gravel surface by building a detention pond with an outlet control structure.

CALCULATION METHODS

The drainage study was completed using HydroCAD. The program generates runoff hydrographs for specified storm distributions, and performs reservoir routing using the storage indication method. The criteria used for this drainage analysis is the 2, 5, and 50 24-hour Type III frequency storm events. Flow depths are based on extreme precipitation data.

The accuracy of stormwater management modeling is limited. The peak flow rates and flood elevations provided herein should not be considered absolute due to the number of variables involved in their determination. Surface roughness coefficient (n), entrance loss coefficients (k_e), velocity factors (k_v), time of concentration (T_c) and tail water conditions are subjective to field observation and engineering judgment. Curve Numbers (CN) describes the average conditions useful for design purposes. Modeling to simulate an actual storm event requires additional knowledge of antecedent runoff conditions (ARC). Curve numbers will vary from storm to storm dependent on the ARC.

SUMMARY

Site Soils

Soils on site are based on NRCS soil mapping. GsB- Gloucester 3-8% slopes – Hydrologic Group A. GsC- Gloucester 8-15% slopes Hydrologic group A. GtD- Gloucester 8-25% slopes Hydrologic Group A. Wa – Whitman Hydrologic group C/D.

Pre- and Post-Development

All runoff from the developed area of the site flows to Swain Lake. This project abuts tax map 121 Lot 37 on 2 sides. We have provided a swale to intercept runoff to this site and routed the runoff to the detention pond.

Study Point 1: Study point 1 is the area closest to the lake.

Study Point 2: Study point 2 is the common property line of lot 37 on the north east side. Once flow leaves the site it follows the road and eventually goes to the lake.

Drainage Analysis

A complete summary of the flow conditions is included in Appendix A. The following compares pre- and post-development peak flow rates of runoff leaving the site.

2-year Storm Event (3.07 inches)

	Pre- Development	Post Development	
Point of Analysis	Peak Flow(cfs)	Peak Flow(cfs)	Difference (cfs)
SP-1	0.00	0.06	+0.06
SP-2	0	0	0

5-year Storm Event (4.63 inches)

	Pre- Development	Post Development	
Point of Analysis	Peak Flow(cfs)	Peak Flow(cfs)	Difference (cfs)
SP-1	0.18	0.18	0
SP-2	0	0	0

50-year Storm Event (6.99 inches)

	Pre- Development	Post Development	
Point of Analysis	Peak Flow(cfs)	Peak Flow(cfs)	Difference (cfs)
SP-1	2.76	2.29	-0.47
SP-2	0.02	0.02	0.0

Conclusion

Given the soil types and ground cover there is very little flow from this site. There is a very small increase in the 2 year event. This is a flow from a 2" orifice and is a very small increase. The peak rate of runoff from the 50 year event is reduced.