

## Critical Slope Analysis

### **Review of the request by Engineering staff:**

The critical slope waiver request has been reviewed. The applicant proposed design with 2:1 fill slopes across 0.79 acres of critical slopes. The engineering analysis of the request follows.

### **Description of critical slope area and proposed disturbance:**

The critical slopes proposed to be impacted are natural and for all intents, undisturbed stabilized wooded forest that descend to streams. The applicant proposes critical slope impacts to construct slopes to support a main building, parking, and associated improvements; proposed design does not include retaining walls.

Areas	Acres	
Total site	216.69	
Critical slopes disturbed	0.79 Acres	0.365% of total site

**Exemptions to critical slopes waivers for driveways, roads and utilities without reasonable alternative locations:** The proposed disturbance is not exempt as defined in County Code § 18-4.2.6.

### **Compliance with County Code § 18-4.2:**

“large-scale movement of soil and rock”

Existing critical slopes are stable. Proposed 2:1 fill slopes *steeper* than existing critical slopes may increase movement of soil *if* constructed without care. Reverse bench slopes and other steep slopes appropriate standards at 18-30.7.5 bring sound construction principles to bear. Applicant and VSMP /WPO design acknowledge this. Engineering notes design includes interim grading, temporary erosion and sediment control measures, and permanent grading or drainage elements. These revisions account for 0.19 Acres increased impact, while at the same time reducing potential erosion across critical slopes. WPO plan dated 4/17/20 includes: storm pipe; soil stabilization blanket (*all* 2:1 slopes below main building); vegetation hardier than grass on slopes steeper than 3:1; and reverse bench slope across portion of site. Engineering views increase (0.19 Acres) in critical slope impact and overall 0.79 Acres total impact as optimal among designs considered, a design that balances safety of children using the Boys & Girls Club (paramount concern) with resource-protection.

“excessive stormwater runoff”

Post-developed runoff will be detained and routed to base of slope. Critical slopes should see no increase in runoff, or excessive runoff.

“siltation of natural and man-made bodies of water”

Applicant explains role of geotechnical engineer, describes ‘keying in’ fill, and reverse benching (every 9’). Reverse benching is small-scale terracing to help prevent siltation. Design specifies soil blanket matting. ACDSM stipulates constructed slopes steeper than 3:1 require stabilization hardier than grass. Applicant intends to propose reforestation with canopy tree species. These stabilization measures have been evaluated with the VSMP /WPO plan to ensure that the final approved design promotes long-term stability to minimize risk of siltation.

“loss of aesthetic resource”

2:1 well-designed, benched, and reforested slopes should not disrupt existing aesthetic, whereas retaining walls might.

“a greater travel distance of septic effluent”

The proposed buildings and site rely on a pump station with force main connection to existing public sanitary sewer system. A bend in proposed force main lies approximately 15’-20’ from proposed 2:1 fill slopes (on critical slopes); effluent release to 2:1 fill slopes has potential to travel a greater distance

than it otherwise would on more gentle fill slopes, but since standards at 18-30.7.5 are incorporated into 4/17/20 WPO plan design, potential impact from septic effluent release is essentially neutral in the post-developed state, compared with existing condition, since reverse slope bench (grading) should intercept and mitigate the distance septic effluent release could travel.

Based on review, Engineering recommends waiver approval. VSMP /WPO plan and site plan design will or do include notes, specifications, linework and requirements for appropriate resource-protective measures.

**Review of the request by Planning staff:**

Under County Code § 18-4.2.5(a)(3), a modification or waiver may be granted upon a finding that the modification or waiver:

**would not be detrimental to the public health, safety or welfare,**

Staff finds that the modification or waiver would not be detrimental to the public health, safety or welfare, based upon the engineering and planning findings provided herein.

**would not be detrimental to the orderly development of the area, or to adjacent properties;**

Staff finds that the waiver would not be detrimental to the orderly development of the area or adjacent properties. The parcels are within the Rural Areas of the County, located on County property, and the proposed waiver does not impact adjacent parcels.

**would not be contrary to sound engineering practices;**

Staff finds that based on engineering findings provided herein, the waiver would not be contrary to sound engineering practices.

**and at least one of the following:**

- a. **Strict application of the requirements of County Code § 18-4.2 would not forward the purposes of this chapter or otherwise serve the public health, safety or welfare;** Staff finds that the strict application of the requirements of County Code § 18-4.2 would forward the purposes of this chapter and otherwise serve the public health, safety or welfare by prohibiting development on areas of critical slope. The zoning of the parcels is RA (Rural Areas) and the site is not located in the development area of the County. Increasing the development intensity of properties in the Rural Areas of the Comprehensive Plan is not advisable for the orderly development and growth of the area.
- b. **Alternatives proposed by the developer or subdivider would satisfy the intent and purposes of County Code § 18-4.2 to at least an equivalent degree;** Staff is unable to make this finding as the alternative designs provided by the applicant create additional critical slope disturbance.
- c. **Due to the property's unusual size, topography, shape, location or other unusual conditions, excluding the proprietary interest of the developer or subdivider, prohibiting the disturbance of critical slopes would effectively prohibit or unreasonably restrict the use of the property or would result in significant degradation of the property or adjacent properties; or** Staff is unable to make these findings as the site is currently being utilized for institutional uses (public schools). The property is typical for the County, there is nothing unusual about the property.

- d. **Granting the modification or waiver would serve a public purpose of greater import than would be served by strict application of the regulations sought to be modified or waived.**

It is staff's opinion that the proposed disturbance of critical slopes would favorably satisfy factor (d) above because the proposed disturbance would serve a public purpose of greater importance than would be served by strict application of the regulations sought to be modified or waived.

As proposed, a Boys and Girls Club will be developed on the subject property and used for before and after school care of students and summer care of students, as an accessory use to Jack Jouett Middle School. In order to avoid the critical slopes, significant retaining walls (between 20' – 30' tall in most areas) would be required along the southern borders of both playfields, as well as along the southern portion of the access road. These walls would create safety risks and fall hazards for hundreds of children attending the Boys and Girls Club each day. The impact of retaining walls on a youth club creates an attractive nuisance and operational safety concern for children's safety. The benefits of grading into the slopes onsite eliminates the retaining walls.

Additionally, by grading rather than constructing retaining walls, the natural aesthetics of the site and existing drainage patterns will be maintained to a larger extent than through the use of retaining walls. Most of the grading within the critical slopes areas will be fill, cutting will be minimal and will only occur during the erosion control phase to accommodate proposed sediment traps.

**Summary:** Based on Engineering and Planning's review above, there are no concerns that would cause staff to object to the approval of the critical slope disturbance request.

**RECOMMENDATION:**

Staff recommends approval of the applicant's request to disturb 0.79 acres of critical slopes as requested with the following condition:

1. The area of land disturbance on critical slopes may not exceed the 0.79 acres described in the request entitled "Boys & Girls Club – Northside, Critical Slopes Waiver - Special Exception Request" and shown on the plans entitled "Critical Slopes Waiver Request Exhibit 1," and "Critical Slopes Waiver Request Exhibit 2," which were prepared by Timmons Group and are dated April 24, 2020.