

## Attachment 4 – Preliminary Soils Review (PSR)

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### Summary of March 14, 2012 PRC Amendments

The proposed amendments eliminate the requirement to submit a Preliminary Soils Review (PSR) with the Preliminary Subdivision Plat.

### Issues

A specific area of concern identified in the February 1, 2012 Board of Supervisors Action Item was that the PSR was viewed as potentially unnecessary given the preparation of geotechnical reports.

The PSR differs from a geotechnical report in that it is a spatial representation of the different soil mapping units present on a site. The geotechnical report does not provide a spatial analysis; it analyzes the soil profile at discrete boring locations located only within soil mapping units where improvements are proposed. In addition, the PSR guides the preparation of the geotechnical report and can significantly reduce the number of required geotechnical borings. In Willowsford, the correction a single soil mapping unit from Type IV soil to Type I soil as depicted in Attachment 4A will save the applicant approximately \$30-40,000 in geotechnical costs. As such, the PSR is a tool for identifying where to locate improvements and the geotechnical report is a tool for identifying how to construct improvements. Additional information regarding the differences between the PSR and the geotechnical report is provided in Attachment 4B.

The proposed amendments would eliminate the PSR such that the applicant and staff would have to rely on soils maps originally developed in 1938 at a larger scale, which do not account for all of the soils and drainage features present on the site, in designing and reviewing development applications. The PSR augments the existing Soil Survey by providing the field investigation necessary to appropriately use the information at a scale of 1:2400 (1"=200'). The most recent Soil Survey, published in 1999, is intended to be updated by field inspections per the USDA-NRCS due to the fact that "these updated soils maps rely heavily on the original soil survey" and the original soil mapping was done at a scale of 4"=1 mile, redrafted to a scale of 1" = 1666' (1:20000) and then redrafted to the current 1" = 200' (1:2400). (Interpretive Guide, Loudoun County, 2000)

It is staff's experience that the soil boundaries, mapping unit, and/or drainage features of the property change 99 percent of the time based upon the PSR. The PSR provides detailed soil mapping and drainage information for the site and identifies the suitability of an area for specific uses. For example, staff has successfully worked with applicants to modify the development layout to avoid the construction of dwellings located in drainage swales, hydric soils, and mapping units with extreme acidity (acid-sulfate soils).

There are many additional benefits to citizens and the County associated with the information derived from the PSRs, including the following:

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### *Customer Service*

Availability of PSR data for properties associated with over 55 percent of drainage/wetness complaints over the past four years has resulted in efficient application of County resources. The updated soils information provided early by the PSR allows staff to efficiently make specific recommendations without the need to conduct a field visit. Without this information, it would be necessary to hire additional professional staff to handle customer service operations.

### *Efficient review*

Staff is able to review plans and applications more quickly due to the confidence in the accuracy of the soils information and data applied to K-factors (which measure erodibility and affect the design of erosion and sediment controls), stormwater channel design, stormwater runoff/infiltration and stormwater management pond calculations, identification of seasonal high water tables, etc.

### *Zoning determinations*

Allows the Zoning Administrator, or his/her designee, to quickly determine whether steep slopes are man-made in the administration of the Steep Slope Standards and to identify the characteristics and boundaries associated with the MDOD and the LOD.

### *Ability to compete for grants, meet mandates (Phase II Watershed Implementation Plan), etc*

Competing for Federal Emergency Management Agency (FEMA) grants related to landslide hazards requires studies and knowledge of these areas, which are derived from the PSR data. (Reducing Landslide Hazards, USGS, 1996) Also, watershed modeling frameworks for stormwater regulations rely heavily on USDA soils data, derived from the PSR. (Chesapeake Bay TMDL Section 5.8.1)

The soils data provided in the PSR is publicly available and incorporated into the County's Geographic Information System (GIS). This study is mostly (more than 90 percent of the time) performed by the County for a minimal fee (\$1,425.00 for first 30 acres and \$25.00 per acre thereafter), which is typically one-half to one-third of the cost of a consultant-prepared study. Land development design and review based on the best available data ensures the orderly development of land and minimizes problems during the development process.

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If the requirement for PSRs were removed from the subdivision process, these benefits would be lost. In addition, the removal of the PSR could adversely affect the development review process (particularly in cases where the PSR is required by the Zoning Ordinance or the Director to meet building code requirements) and staff's ability to respond to citizen complaints, both of which could affect the County's underlying operating costs.

### Alternatives

1. Adopt the language that Joe Paciulli and Ryan Reed suggested to the FSM PRC on May 18, 2011 provided in Attachment 4C, which remove the requirement for a PSR when is not necessary or useful to the applicant, the citizen, or the County. The amendments eliminate the PSR requirement without a waiver when no useful data would result, specifically in commercial applications where the entire site will be disturbed or the parcel is only for infrastructure use.
2. Adopt Alternative #1 and provide the option for applicants to submit a combined PSR and Geotechnical Report with the CPAP. This option would not be available for projects located within MDOD or LOD. The delay from Preliminary Subdivision Plat to CPAP would require the applicant to assume the risk of critical information not being discovered until later in the process.

### Staff Recommendation

Staff recommends Alternative #1.

### Attachments

Attachment 4A – Willowsford Map

Attachment 4B – Comparison of PSR and Geotechnical Report

Attachment 4C – PSR Amendments

### Staff Contact: Ryan Reed

#### Sources

*Final Chesapeake Bay Total Maximum Daily Load (TMDL) Executive Summary*, USEPA, Dec 2010

*Interpretive Guide to the Use of Soils Maps*, Cooperative Extension Office, Loudoun County, VA, 2000

*National Soil Survey Handbook*, Soil Survey Staff, Natural Resources Conservation Service (formerly Soil Conservation Service) Washington D.C., 1993