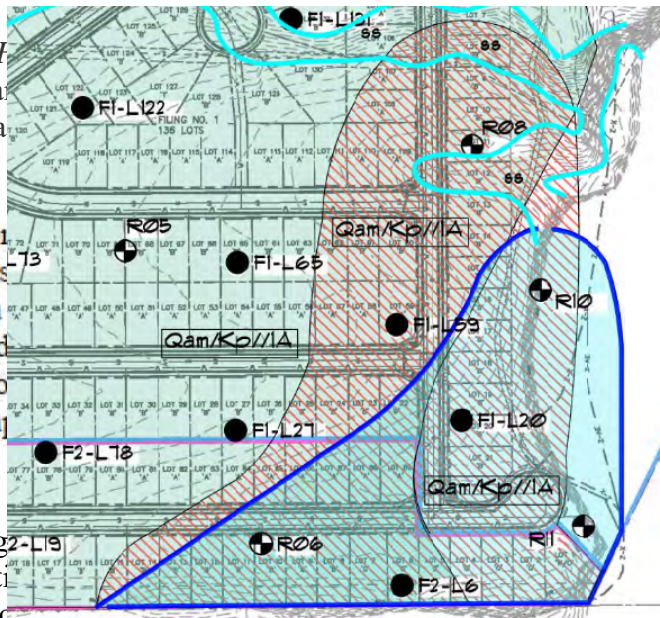


on the slopes to reduce the potential for erosion of the banks of Fountain Creek. Vegetative cover to be placed along the bank of Sand Creek may require recommendations from a qualified landscape architect and/or drainage engineer who may be familiar with special erosion control features that should be implemented in conjunction with newly placed vegetation.

Further, as stated in the *Preliminary/* dated September 2018, page 11, Chapter 10, the UDFCD design methodology for channel erosion protection was provided:

protection in the form of 12" soil riprap on the side slopes. Assuming the channel is constructed with a 5:1 slope, the protection will be constructed with a 5:1 slope will be based on the FIS flow design approach since the model revealed local scour criteria recommendations. Refer to Appendix A for more information.



g No. 1 and 2, show depths, the The following

5:1 toe in the tive per

RMG would also offer the following: water around the proposed construction. Significant deposits of sediment deposits representative of RMG prior to placing construction that result in either water flow into the area or destabilization of the soils, stabilization techniques should be implemented. If required, stabilization methods should be determined based on the conditions encountered at the time of construction. However, methods that may potentially reduce the amount of overexcavation (versus other methods) and provide increased performance under moderately to severely unstable conditions are: the use of rip-rap (a.k.a. shot rock) and/or layered geogrid and structural fill system. Provided that appropriate mitigations are implemented, potential scour of erosive flows along Fountain Creek is not considered to pose a risk to the proposed structures.

7.5 Groundwater

Update the specific lots where basements should be avoided. The reference lots does not match the current subdivision lot layout.

Groundwater was encountered in this study and in the PSSI performed after this study, during the field exploration or when checked five days subsequent to drilling. Based on review of the test borings from the previous reports referenced above, the depth of groundwater below the proposed development is anticipated to range between 6 and 19 feet below the ground surface.

Mitigation

A figure of Anticipated Areas of Potential Groundwater is included in Appendix C. The figure presents the approximate areas where basements should be avoided. The lots included are: Lots 15-22 and 86-89 and Lots 1-13, Filing No. 2. It is our understanding the builder may opt for all crawlspace foundations for the entire subdivision.

In general, if groundwater was encountered within 4 to 6 feet of the proposed basement slab elevation, an underslab drain should be anticipated in conjunction with the perimeter drain. Perimeter drains are anticipated for each individual lot to prevent the infiltration of water and to help control wetting of potentially expansive and hydrocompactive soils in the immediate vicinity of foundation elements. It

GEOLOGIC

- Qam - Middle alluvium (early Holocene and late Pleistocene) - poorly sorted silty to clayey sand with estimated thicknesses up to 30 feet.
- Qay - Young alluvium (late Holocene) - poorly sorted sand, silty sand that underlies flood plains; exposed thickness is approximately 1 to 7 feet. The young alluvium is difficult to visually differentiate from the middle alluvium Qam. The entire site is underlain by alluvium of varying thickness. The alluvium was encountered in the test borings at depths ranging from the ground surface to 20 feet.
- Kp - Pierre Shale Formation - (Upper Cretaceous) - gray to dark-gray shale that weathers to brown and olive-green clay; medium-to coarse-grained sandstone. Thickness is about 5,000 feet in the area. Claystone bedrock was encountered underlying the alluvium in the test borings at depths ranging between 4.5 to 16 feet below the ground surface.
- ss - isolated steep slopes across the site, areas that are to be "leveled out" during development

ENGINEERING

- 1A - Stable alluvium, colluvium and bedrock on flat to gentle slopes (0 to 5%).



Update the Figure. The subdivision and lot layout has changed. The impacted lot numbers are different.

JOB No. 161921

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RIVERBEND CROSSING
FILING NO. 1 & 2
FOUNTAIN, COLORADO
AVATAR FOUNTAIN, LP

ENGINEER: GGIW

DRAWN BY: KMZ

CHECKED BY: GGIW

ISSUED: 12-29-2020

REVISION:

REVISION:

ENGINEERING
GEOLOGY MAP

SHEET No.

FIG-7