

Architecture  
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**ROCKY MOUNTAIN GROUP  
EMPLOYEE OWNED**

Job No. 151364

May 29, 2020

COLA, LLC (Colorado Land Acquisition)  
555 Middle Creek Pkwy, Ste 500  
Colorado Springs, CO 80921

Re: Response to Review Comments  
Aspen Ranch Subdivision, Filing No. 1  
El Paso County, Colorado

Dear COLA:

As requested, RMG – Rocky Mountain Group completed a *Preliminary Subsurface Soil Investigation* report for the referenced project (RMG Job No. 151364, last revised October 31, 2019). The report was reviewed by the City of Fountain, and a copy of selected comments from this review were provided to RMG via electronic mail received from Jason Alwine of Matrix Design Group on April 22, 2020.

The purpose of this letter is to provide RMG's response to the provided review comments. For clarity and ease of review, we have reiterated the review comments below, followed by our response to each.

➤ **CGS Comment:** *"Groundwater concern at the southeast corner of the project by the adjacent homeowners must be addressed. Matrix Design Group and City staff was (sic) instructed by City Council to address this specific issue as a condition of approval. Mitigation of surface and groundwater must be provided in this report at this time."*

**RMG Response:** RMG was not present at the meeting where the concerns of the adjacent homeowners were presented. However, our understanding is that the concerns are related to periodic occurrences of FMIC (Fountain Mutual Irrigation Company) tailwater overtopping the roadways in the southwest corner of the property when nearby landowners flood their fields for agricultural purposes.

Based on a limited review of the Preliminary/Final Drainage Report for Aspen Ranch by Matrix Design Group dated March 2020, proposed drainage improvements (both off-site and on-site) include swales (open-channel), stormwater collection/conveyance systems (stormwater piping), improvements to the existing on-site detention basin, improvements to the existing detention basin outlet (including replacing the current outlet with a new 48-inch diameter RCP pipe), and installation of a controlled overflow structure.

The referenced drainage report indicates that the design was sized and analyzed based on a 100-year storm event plus the full estimated flow rate of this section of FMIC ditch during irrigation periods (25 cfs, provided in a letter from The Fountain Mutual Irrigation Company (FMIC) regarding the *Aspen Ranch Development Project, Fountain, Colorado*, dated April 25, 2019).

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**Southern Office:**  
Colorado Springs, CO 80918  
719.548.0600

**Central Office:**  
Englewood, CO 80112  
303.688.9475

**Northern Office:**  
Evans, CO 80620  
970.330.1071

**Fort Collins:** 970.616.4364  
**Monument:** 719.488.2145  
**Woodland Park:** 719.687.6077

Note, personnel of RMG have not performed detailed analyses, calculations, or an in-depth review of the drainage report referenced above, nor have we verified the adequacy of the system to accommodate the anticipated flows. These review/analysis services are beyond the scope of a typical geotechnical report such as the one provided by RMG, and should be the responsibility of the submitting designer. However, based on our limited review, it does appear that the design is intended to accommodate both anticipated stormwater flows and tailwaters from the FMIC ditch system.

Note, this does not guarantee that the drainage systems, once installed, will eliminate all potential for overtopping of the adjacent roads in the southeast corner of the property. As stated in the referenced drainage report, *"Emergency spillover for the pond will be a controlled overflow structure discharging to Link Rd, where it will spread and overtop following historic paths to Jimmy Camp Creek."*

However, it should be noted that the development is not required to mitigate all potential impacts of the FMIC tailwaters. As stated in a letter from The Fountain Mutual Irrigation Company (FMIC) regarding the *Aspen Ranch Rezoning & Overall Development Plan*, dated May 8, 2018, *"By law, both ditch seepage and tailwater are allowed to impact both adjacent and downstream property owners as this water(s) flows and/or follows its historic path to the natural stream, which in this area is Jimmy Camp Creek which lies approximately one half mile west of Link Road."*

Based on our review of the referenced documents, it is our opinion that Matrix Design Group has made a good-faith effort to address the concerns of the adjacent homeowners by providing a design that should reduce the frequency (and severity) of the periodic overtopping of adjacent roadways. This is anticipated to constitute an improvement over the existing (and historic) condition and reduce the impact to the adjacent property owners. The development should not be required to completely mitigate all impacts of a historically recurring condition that originates off-site and is generated by others, particularly since these impacts are allowed (by law) to continue to impact adjacent and downstream property owners.

- **CGS Comment:** *"Groundwater movement must be studied in this report from a geological formation assessment standpoint. There have been considerable issues around the City of Fountain with groundwater being present along areas of existing ditches which have compromised roadway pavement and building foundations."*

**RMG Response:** It is our understanding that some limited groundwater monitoring has been initiated. However, several months' worth (if not a full yearly cycle, or more) of data would be required to provide significant understanding of groundwater movement across the site. Such a study would be beyond the scope of a typical geotechnical report such as the one provided by RMG.

RMG did perform 45 test borings across the site to depths of 20 to 30 feet below the ground surface for the *Preliminary Subsurface Soil Investigation* report referenced above. Bedrock was encountered in only 1 of the 45 test borings, at a depth of approximately 20 feet. Groundwater was encountered in only 15 of the test borings, and none within 10 feet of the ground surface. Furthermore, in those 15 test borings where groundwater was encountered,

the groundwater did not align with notable geologic formations or geotechnical material interfaces.

Furthermore, it is anticipated that development of the site (particularly installation of the underdrain system below the streets), installation of the proposed drainage improvements, and installation of lot-specific foundation drains during construction will significantly alter the location and movement of water (both surface drainage and groundwater) across the site. Information and/or conclusions derived from a preliminary groundwater movement study (prior to development of the property) would likely be inaccurate and/or misleading with respect to groundwater movement across the site in the final, constructed condition.

Finally, the conditions described in the review comment ("*groundwater being present along areas of existing ditches which have compromised roadway pavement and building foundations.*") seems more indicative of surface drainage issues, rather than subsurface groundwater movement. Additionally, roadside ditches have historically been commonly utilized as the intended surface water drainage system in many (particularly older) neighborhoods. If these ditches are not properly maintained over time, the lack of maintenance can create an impediment to flow of the surface water drainage system, resulting in the types of issues described in the review comment. Proper installation and maintenance of the drainage improvements proposed for this development should alleviate the occurrence (and resulting impact) of surface water collecting in roadside ditches.

- **CGS Comment:** "*There is a "small detention pond" referenced in the report. Unless this has an outlet structure, it is to be considered a retention pond. Please revise accordingly if needed. Also, mitigation of this area of the site must be addressed (see comments 1 and 2 above).*"

**RMG Response:** Our report states that "*A smaller detention pond is present near the southeast corner of the property and at the time of the site reconnaissance water was not observed at the bottom of the detention pond.*" It is our understanding that this detention pond includes an outlet structure that consists of a crossroad pipe to convey the detained water below Link Road to the west, and that this crossroad pipe is currently either buried or silted over. Per the Preliminary/Final Drainage Report for Aspen Ranch by Matrix Design Group dated March 2020 in reference to this crossroad pipe, "*The proposed swale will restore the historic drainage pattern.*" Additionally, the crossroad pipe is to be replaced with a larger diameter pipe to accommodate the design flow. As such, our identification of the pond as a detention pond is accurate.

- **CGS Comment:** "*The City of Fountain has experienced groundwater issues in areas of passive underdrain placement. All streets in the development must have active systems.*"

**RMG Response:** It has been agreed that the development will be provided with an active system. This revision is reflected in the attached Appendix A.

- **CGS Comment:** "*Address the longitudinal slope of swales between the homes by either stating the minimum slope or referencing the International Residential Code (IRC).*"

**RMG Response:** In the **Surface Grading and Drainage** section of our report (page 10), we state that "*If a 10-foot zone is not possible on the upslope side of the structure, then a well-defined swale should be created a minimum 5 feet from the foundation and sloped parallel with the wall with a minimum slope of 2 percent to intercept the surface water and transport it around and away from the structure.*" This statement would apply to all cases where a

swale is required between two homes, and does provide the requested longitudinal slope recommendation (in this case, 2 percent).

- **CGS Comment:** *"On the map, show the right-of-way/property lines per the Matrix Design Group plat and include street names."*

**RMG Response:** The updated map is included in the attached Appendix A.

All findings, conclusions and recommendations presented in the report referenced above and not specifically addressed in this letter remain valid for the currently proposed structure.

Should you have questions, please do not hesitate to call.

Cordially,

RMG – Rocky Mountain Group

Tony Munger, P.E.  
Geotechnical Project Manager



# Appendix A

## *Preliminary Subsurface Soil Investigation*