

Architecture  
Structural  
Geotechnical



Materials Testing  
Forensic  
Civil/Planning

**ROCKY MOUNTAIN GROUP**  
**EMPLOYEE OWNED**

Job No. 177316

July 24, 2020

Perry Mose  
12752 Mount Oxford Place  
Falcon, CO 80831

Re: Wastewater Study  
Halleluiah Tr – Jeanette Mose Subdivision  
EPC Schedule No. 4208000013  
El Paso County, Colorado

Dear Perry Mose:

Ref: Site Plan, Jeanette Mose Subdivision, prepared by Alessi and Associates, Inc., Job No. 201005, dated February 14, 2020.

Dear Perry Mose:

As requested, personnel of RMG – Rocky Mountain Group has performed a preliminary investigation and site reconnaissance at the above referenced subdivision. It is our understanding the 6.12-acre parcel is to be subdivided into two parcels. Per the site plan, referenced above, Lot 1 is to consist of 3.12 acres and Lot 2 is to consist of 3.00 acres. Each lot is to contain a single-family residence with a well and a septic system.

The 6.12-acre parcel is currently vacant land without an existing on-site wastewater treatment system or a well. As such, this letter is to provide information for the on-site wastewater report per the On-Site Wastewater Treatment Systems (OWTS) Regulations of the El Paso County Board of Health pursuant to Chapter 8.

The following are also excluded from the scope of this report including but not limited to foundation recommendations, site grading/surface drainage recommendations, subsurface drainage recommendations, geologic, natural and environmental hazards such as landslides, unstable slopes, seismicity, snow avalanches, water flooding, corrosive soils, erosion, radon, wild fire protection, hazardous waste and natural resources.

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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

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## Previous Studies and Field Investigation

Reports reviewed in conjunction with this site were available for our review and are listed below:

1. *Soils and Geology Study, Jeanette Mose Subdivision, 0 Halleluiah Trail, EPC Schedule No. 4208000013, El Paso County, Colorado*, prepared by RMG – Rocky Mountain Group, Job No. 177316, last dated July 24, 2020.
2. *Profile Pit Evaluation for Perry Mose, 0 Halleluiah Trail, El Paso County, Colorado*, prepared by Geoquest, LLC, Job #20-0429, dated May 27, 2020.
3. *Soils Report for Perry Mose, 0 Halleluiah Trail, El Paso County, Colorado*, prepared by Geoquest, LLC, Job #20-0429, dated May 27, 2020.

The findings, conclusions and recommendations contained in this reports were considered during the preparation of this report.

## SITE CONDITIONS

Personnel of RMG performed a reconnaissance visit on June 26, 2020. The purpose of the reconnaissance visit was to evaluate the site surface characteristics including landscape position, topography, vegetation, natural and cultural features, and current and historic land uses. One 8-foot deep profile pit was performed on proposed Lot 2 during our reconnaissance visit. Two profile pits were observed by Geoquest, LLC for Lot 1. A Profile Pit Location Plan is presented in Fig 1.

The site surface characteristics were observed to consist of low lying grasses and weeds across the entire site. Very few deciduous trees are located near Black Squirrel Creek. Black Squirrel Creek parallels the southern property line.

The following conditions were observed with regard to the 6.12-acre parcel:

- A well currently **does not** exist on the existing 6.12-acre site.
- No runoff or irrigation features anticipated to cause deleterious effects to treatment systems on the site were observed;
- Black Squirrel Creek parallels the southern portion of the site. The entire site lies outside the designated floodway or floodplain. However, a minimum separation of 50 feet shall be maintained between any proposed treatment area and this creek;
- Slopes greater than 20 percent **do not** exist on the site; and
- Significant man-made cuts **do not** exist on the site.

Treatment areas are to be located a minimum distance of 100 feet from any well location. Treatment areas must also be located a minimum of 50 feet from any spring, lake, water course, irrigation ditch, stream or wetland. Other setbacks include the treatment area to be located a minimum 10 feet from property lines, dry gulches, cut banks and fill areas (from the crest).

## DOCUMENT REVIEW

RMG has reviewed the above referenced site plan, identified the soil conditions anticipated to be encountered during construction of the proposed OWTS for Lot 2, and included a review of documented Natural Resource Conservation Service - NRCS data provided by [websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov). The Soil Survey Descriptions are presented below. The proposed OWTS for Lot 1 was provided by Geoquest,

LLC and their Profile Pit Evaluation is attached with this report. A review of FEMA Map No. 08041C0339G, effective December 7, 2018 indicates that the proposed treatment areas are not located within an identified floodplain.

## SOIL EVALUATION

Personnel of RMG performed a soil evaluation to include one 8-foot deep profile pit on Lot 2, on June 26, 2020 (Profile Pit PP-1), utilizing the visual and tactile method for the evaluation of the site soils. The profile pit was excavated in an area that appeared most likely to be used for residential construction.

The soil conditions as indicated by the NRCS data are anticipated to consist of Columbine gravelly sandy loam with 0 to 3 percent slopes. The Columbine gravelly sandy loam was mapped by the USDA to encompass the majority of the property. Properties of the sandy loam include well-drained soils, depth of the water table is anticipated to be greater than 6.5 feet, runoff is anticipated to be low, frequency of flooding and/or ponding is none, and landforms include fans, floodplain, and fan terraces. A sliver of Tomah-Crowfoot loamy sand was mapped near the very northwest corner of the property. This soil condition is located outside of the proposed OWTS locations and has been eliminated from this study. A USDA Soil Survey Map and full Map Unit Description are attached in Figures 2 and 3.

Groundwater was not encountered in the profile pits performed by RMG or Geoquest, LLC. However, it was noted in the *Profile Pit Evaluation* by Geoquest that seasonal and saturated conditions were encountered at 85". Bedrock were encountered in the profile pits performed by RMG and Geoquest, LLC at depths ranging between 4 to 6 feet. The *Profile Pit Evaluation* by Geoquest is presented in Appendix A

An OWTS is proposed for Lot 1 and should conform to the recommendations in the *Profile Pit Evaluation* by Geoquest, LLC, referenced above. If an OWTS is proposed for Lot 2, an additional OWTS site evaluation will need to be performed in accordance with the applicable health department codes prior to construction. This report may require additional profile pits in the vicinity of the proposed treatment field. A minimum separation of 4 feet shall be maintained from groundwater and bedrock to the infiltrative surface.

Redoximorphic features indicating the fluctuation of groundwater or higher ground water levels were observed in the profile pits on Lot 1 by Geoquest, LLC at 85". Redoximorphic were not observed in the profile pit on Lot 2 by RMG. The Profile Pit Log is presented in Figure 4.

## CONCLUSIONS

Please provide updated report with findings and recommendations for both proposed lots.

In summary, it is our opinion that there are no foreseeable or stated construction related issues or land use changes proposed at this time. The two lots are each suitable for an individual OWTS. Contamination of surface and subsurface water resources should not occur if the treatment areas are evaluated and installed according to El Paso County Health Department and State Guidelines in conjunction with proper maintenance.

## LIMITATIONS

The information provided in this report is based upon the subsurface conditions observed in the profile pit excavations and accepted engineering procedures. The subsurface conditions encountered in the

excavation for the treatment area may vary from those encountered in the profile pit excavations. Therefore, depth to limiting or restrictive conditions, bedrock, and groundwater may be different from the results reported in this letter.

Additional test pits will be required if the treatment areas are not located in the locations assumed for the purpose of this report. If an OWTS is proposed for Lot 2, an additional OWTS site evaluation will need to be performed in accordance with the applicable health department codes prior to construction.

I hope this provides the information you have requested. Should you have questions, please feel free to contact our office.

Cordially,

RMG – Rocky Mountain Group



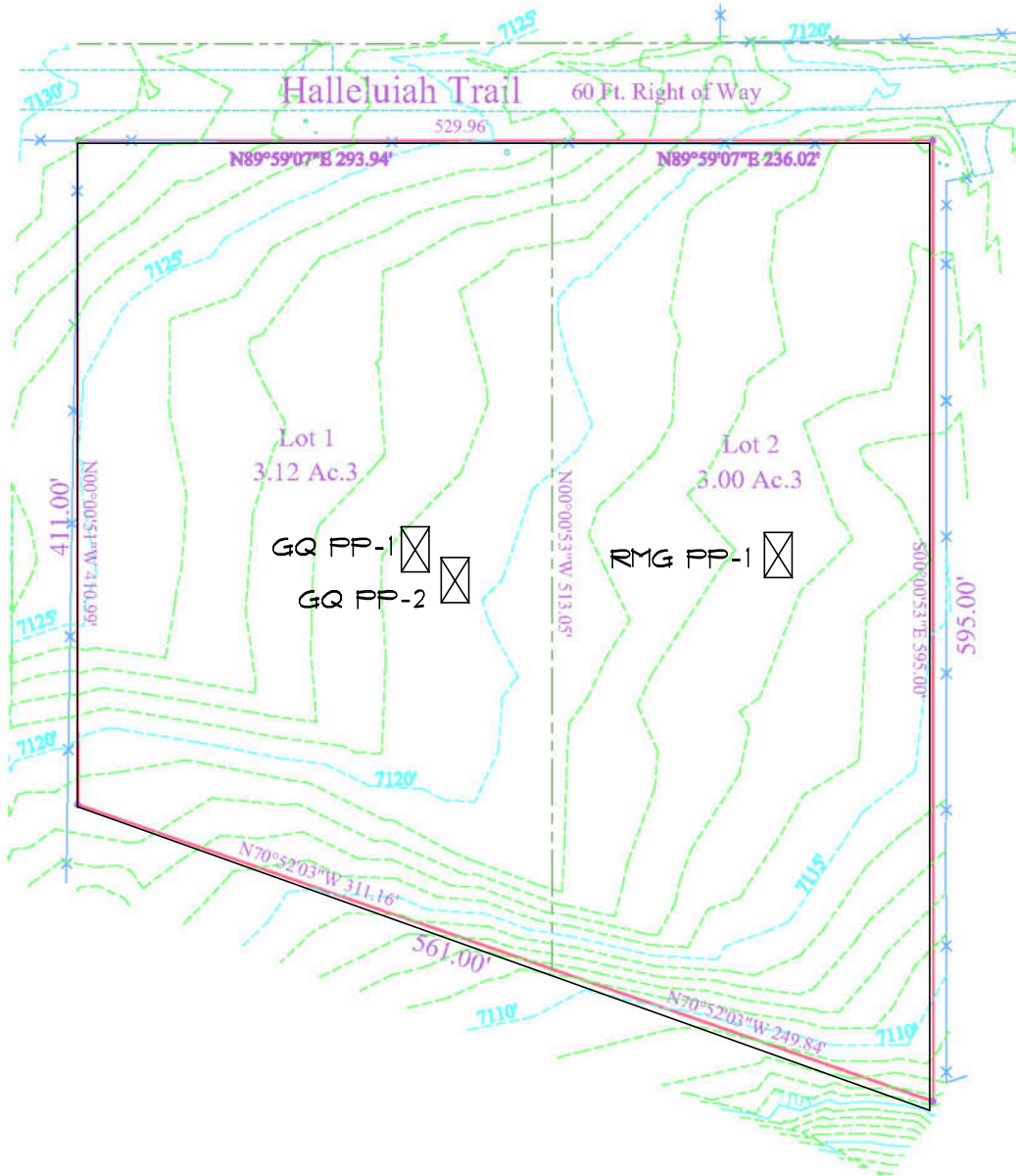
Kelli Zigler  
Project Geologist

Reviewed by,

RMG – Rocky Mountain Group

Tony Munger, P.E.  
Geotechnical Project Manager





RMG PP - APPROXIMATE LOCATION OF PROFILE PIT PERFORMED BY RMG - ROCKY MOUNTAIN GROUP FOR THIS INVESTIGATION

GQ PP - APPROXIMATE LOCATION OF PROFILE PITS PERFORMED BY GEOQUEST, LLC FOR THE PROFILE PIT EVALUATION, JOB# 20-0429, DATED MAY 27, 2020



NOT TO SCALE  
BASE MAP PROVIDED BY: ALESSI AND ASSOCIATES, INC.



Southern Office  
Colorado Springs, CO  
80918  
(719) 548-0600  
Central Office:  
Englewood, CO 80112  
(303) 688-9475  
Northern Office:  
Greeley / Evans, CO 80620  
(970) 330-1071

## PROFILE PIT LOCATON PLAN

HALLELUIAH TRAIL  
JEANETTE MOSE SUBD  
EL PASO COUNTY, CO  
PERRY MOSE

JOB No. 177316

FIG No. 1

DATE 7-24-2020



- 19 - Columbine gravelly sandy loam, 0 to 3 percent slopes.
- 92 - Tomah-Crowfoot loamy sands, 3 to 8 percent slopes.



NOT TO SCALE  
BASE MAP PROVIDED BY: USDA



ROCKY MOUNTAIN GROUP

*Southern Office*  
Colorado Springs, CO  
80918  
(719) 548-0600  
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(970) 330-1071

## USDA SOIL SURVEY MAP

HALLELUIAH TRAIL  
JEANETTE MOSE SUBD  
EL PASO COUNTY, CO  
PERRY MOSE

JOB No. 177316

FIG No. 2

DATE 7-24-2020

## 19—Columbine gravelly sandy loam, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* 367p  
*Elevation:* 6,500 to 7,300 feet  
*Mean annual precipitation:* 14 to 16 inches  
*Mean annual air temperature:* 46 to 50 degrees F  
*Frost-free period:* 125 to 145 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Columbine and similar soils:* 97 percent  
*Minor components:* 3 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Columbine

#### Setting

*Landform:* Fans, flood plains, fan terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 14 inches:* gravelly sandy loam  
*C - 14 to 60 inches:* very gravelly loamy sand

#### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Well drained  
*Runoff class:* Very low  
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (6.96 to 19.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Very low (about 2.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* A  
*Ecological site:* Gravelly Foothill (R049XB215C0)  
*Hydric soil rating:* No

### Minor Components

#### Pleasant

*Percent of map unit:* 1 percent

*Landform:* Depressions  
*Hydric soil rating:* Yes

#### Other soils

*Percent of map unit:* 1 percent  
*Hydric soil rating:* No

#### Fluvaquentic haplaquolls

*Percent of map unit:* 1 percent  
*Landform:* Swales  
*Hydric soil rating:* Yes



ROCKY MOUNTAIN GROUP

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Colorado Springs, CO  
80918  
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*Central Office:*  
Englewood, CO 80112  
(303) 688-9475  
*Northern Office:*  
Greeley / Evans, CO 80620  
(970) 330-1071


## MAP UNIT DESCRIPTION

HALLELUJAH TRAIL  
JEANETTE MOSE SUBD  
EL PASO COUNTY, CO  
PERRY MOSE

JOB No. 177316

FIG No. 3

DATE 7-24-2020

TEST PIT No.: <b>PP-1</b> DATE DRILLED: 6/26/20 REMARKS: NO GROUNDWATER ON 6/26/20	DEPTH (FT)	SYMBOL	SAMPLES	WATER CONTENT %	SOIL TYPE
USDA SOIL TRYPE: SAND USDA SOIL TYPE: 1 USDA STRUCUTRE/GRADE: SINGLE GRAIN/STRUCTURELESS LTAR: 0.8  USDA SOIL TRYPE: SANDY CLAY USDA SOIL TYPE: R-1 USDA STRUCUTRE/GRADE: >35% ROCK (APPROXIMATELY 61%) PRESSURE DISTRIBUTION  USDA SOIL TRYPE: SAND USDA SOIL TYPE: R0 USDA STRUCUTRE/GRADE: >35% ROCK (APPROXIMATELY 36%) PRESSURE DISTRIBUTION	5				

ROCKY MOUNTAIN GROUP

Architectural  
Structural  
Forensics



Geotechnical  
Materials Testing  
Civil, Planning

Colorado Springs - (Corporate Office)  
2910 Austin Bluffs Parkway  
Colorado Springs, CO 80918  
(719) 548-0600

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

# PROFILE PIT LOG

JOB No. 177316

FIGURE No. 1

DATE 7/24/20



**APPENDIX A**  
*Profile Pit Evaluation by Geoquest*



6825 Silver Ponds Heights #101  
Colorado Springs, CO 80908  
(719) 481-4560

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**PROFILE PIT EVALUATION**

**FOR**

**PERRY MOSE**

**JOB #20-0429**

O Halleluiah Trail,  
El Paso County,  
Colorado

Sincerely,

  
Charles E. Milligan, P.E.  
Civil Engineer



## PROFILE PIT FINDINGS

Enclosed are the results of the profile pit for the septic system to be installed at **0 Halleluiah Trail, El Paso County, Colorado**. The location of the test pit was determined by Perry Mose. The residence will not be on a public water system. The number of bedrooms in the design for the residence is unknown. Due to the natural slope of the property, the entire system will feed to the southeast at approximately 4% at least 20 feet. All applicable portions of the El Paso County Health Department Onsite Wastewater Treatment System Regulations (OWTS) must be complied with for the installation of the treatment system.

The inspection was performed on May 12, 2020, in accordance with Table 10-1 of the **E.P.C.P.H. OWTS Regulations**.

### Soil Profile #1:

- 0 to 6"** - Topsoil - loam, organic composition.
- 6" to 34"** - USDA soil texture sandy loam, soil type 2A, structure shape granular, structure grade 1, non-cemented, LTAR 0.50, light brownish grey in color, 10 YR 6/2.
- 34" to 8'** - USDA soil texture sandy loam, soil type 2A, structure shape massive, structure grade 0, moderately cemented, LTAR 0.50, pale brown in color, 2.5 Y 7/4, sandstone.

### Soil Profile #2:

- 0 to 6"** - Topsoil - loam, organic composition.
- 6" to 48"** - USDA soil texture sandy loam, soil type 2, structure shape granular, structure grade 2, non-cemented, LTAR 0.60, light brownish grey in color, 10 YR 6/2.
- 48" to 8'** - USDA soil texture sandy loam, soil type 2A, structure shape massive, structure grade 0, moderately cemented, LTAR 0.50, light yellowish brown in color, 2.5 Y 6/4, redoximorphic features and saturation at 85 inches, sandstone.

Groundwater was encountered at the depth of 85 inches in Profile Pit #2 during the inspection. Bedrock was encountered at the depth of 34 inches in Profile Pit #1 and 48 inches in Profile Pit #2 during the inspection. No known wells were observed within 100 feet of the proposed system. **All setbacks shall conform to county regulations.**

**Due to encountering bedrock, the septic system to be installed on this site shall be designed by a Colorado Licensed Engineer. Based on the observed conditions, we feel a design based on an LTAR of 0.50 GPD/SF (USDA 2A, treatment soil, treatment level 1) is reasonable. An above grade uniformly pressure dosed soil treatment area is required.**

If during construction of the field itself, subsurface conditions change considerably or if the location of the proposed field changes, this office shall be notified to determine whether the conditions are adequate for the system as designed or whether a new system needs to be designed.

Weather conditions at the time of the test consisted of partly cloudy skies with moderate temperatures.

# PROFILE PIT LOG - Profile Pit #1

JOB#: 20-0429  
 DATE EVALUATED: 12 May 2020  
 EQUIPMENT USED: MINI-EXCAVATOR

DEPTH (in ft.)	SYMBOL	SAMPLES	WATER %	SOIL TYPE
0-6"	<b>TOPSOIL</b>			
	Loam Organic Composition			2A
6"-34"	<b>Sand</b>			
	Fine-coarse Grained Moderate Density Moderate Moisture Content Low-moderate Clay Content Low-moderate Cohesion Low-moderate Plasticity Light Brownish Grey Color 10YR 6/2			2A
	USDA Soil Texture: Sandy Loam USDA Soil Type: 2A USDA Structure Shape: Granular USDA Structure Grade: 1 Cementation Class: Non-cemented Long Term Acceptance Rate (LTAR, Treatment Level 1): 0.50			
34"-8'	<b>Sandstone</b>			
	Fine-coarse Grained High Density High Moisture Content Low-moderate Clay Content Low-moderate Cohesion Low-moderate Plasticity Pale Brown Color 2.5Y 7/4			
	USDA Soil Texture: Sandy Loam USDA Soil Type: 2A USDA Structure Shape: Massive USDA Structure Grade: 0 Cementation Class: Moderately Long Term Acceptance Rate (LTAR, Treatment Level 1): 0.50			

**LTAR to be Used for OWTS Sizing: 0.50GPD/SF (USDA Type 2A, Treatment soil, Treatment Level 1)**  
**Depth to Groundwater (Permanent or Seasonal):** Not Encountered; Seasonal & Saturated @ 85" in Profile Pit 2  
**Depth to Bedrock and Type:** Sandstone @ 34"  
**Depth to Proposed Infiltrative Surface from Ground Surface:** Above Grade (Uniformly pressure dosed STA)  
**Soil Treatment Area Slope and Direction:** SE @ 4%

Note: See El Paso County Board of Health Regulation Chapter 8: On-Site Wastewater Treatments Systems (OWTS) Regulations for Additional Information. Refer to Table 10-1 for Corresponding LTAR if Treatment Level 2, 2N, 3, or 3N will be Implemented in the Design of the OWTS. System Sizing Depends on a Number of Factors (i.e. LTAR, # of Bedrooms, Type of Soil Treatment Area (STA), Method of Transfer to the STA (Gravity, Dosed, or Pressure Dosed), and Type of Storage / Distribution Media Used in the STA)

Project: 20-0429	<b>Project Name and Address</b>  <b>Perry Mose</b>  0 Halleluiah Trail Sch. No. 4208000013 El Paso County, Colorado
Sheet: 1 of 2	
Date: 19 May 2020	
Scale: 1/4" = 1'	
Drawn by: mtj	
Checked by: cem	

<b>GEOQUEST, LLC.</b>	
6825 SILVER PONDS HEIGHTS SUITE 101 COLORADO SPRINGS, CO 80908	
OFFICE: (719) 481-4560 FAX: (719) 481-9204	

# PROFILE PIT LOG - Profile Pit #2

JOB#: 20-0429  
 DATE EVALUATED: 12 May 2020  
 EQUIPMENT USED: MINI-EXCAVATOR

DEPTH (in ft.)	SYMBOL	SAMPLES	WATER %	SOIL TYPE
0-6"				
<b>TOPSOIL</b>				
Loam Organic Composition				
6"-48"				
<b>Sand</b>				
Fine-coarse Grained                      USDA Soil Texture: Sandy Loam Moderate Density                        USDA Soil Type: 2 Moderate Moisture Content            USDA Structure Shape: Granular Low-moderate Clay Content            USDA Structure Grade: 2 Low Cohesion                              Cementation Class: Non-cemented Low Plasticity                              Long Term Acceptance Rate (LTAR, Treatment Level 1): 0.60 Light Brownish Grey Color 10YR 6/2				
48"-8'				
<b>Sandstone</b>				
Fine-coarse Grained                      USDA Soil Texture: Sandy Loam High Density                                USDA Soil Type: 2A High Moisture Content                    USDA Structure Shape: Massive Low-moderate Clay Content            USDA Structure Grade: 0 Low-moderate Cohesion                Cementation Class: Moderately Low-moderate Plasticity                Long Term Acceptance Rate (LTAR, Treatment Level 1): 0.50 Light Yellowish Brown Color 2.5Y 6/4 Redox & Saturated @ 85"				

**LTAR to be Used for OWTS Sizing: 0.50GPD/SF (USDA Type 2A, Treatment soil, Treatment Level 1)**  
**Depth to Groundwater (Permanent or Seasonal): Seasonal & Saturated @ 85"**  
**Depth to Bedrock and Type: Sandstone @ 48"**  
**Depth to Proposed Infiltrative Surface from Ground Surface: Above Grade (Uniformly pressure dosed STA)**  
**Soil Treatment Area Slope and Direction: SE @ 4%**

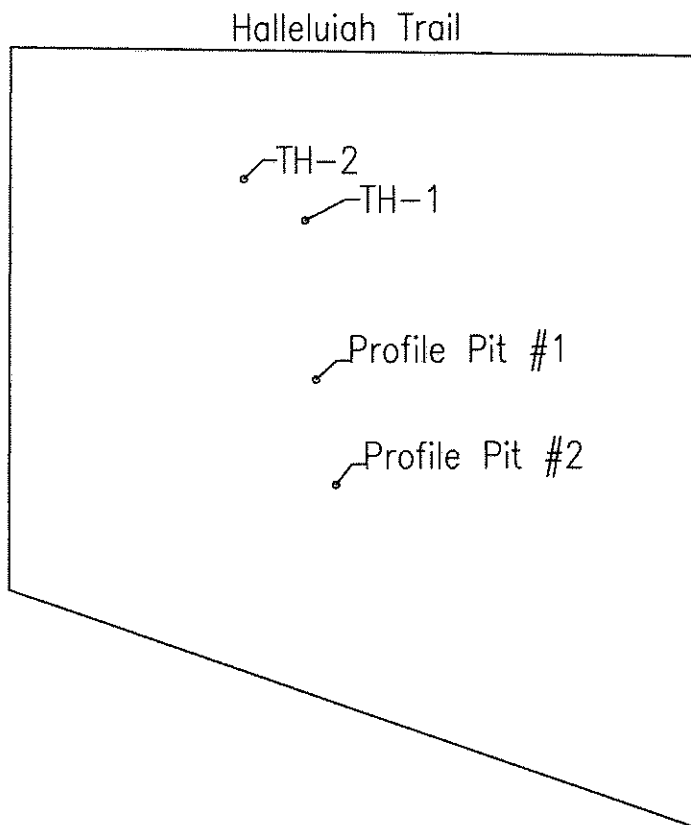
Note: See El Paso County Board of Health Regulation Chapter 8: On-Site Wastewater Treatments Systems (OWTS) Regulations for Additional Information. Refer to Table 10-1 for Corresponding LTAR if Treatment Level 2, 2N, 3, or 3N will be Implemented in the Design of the OWTS. System Sizing Depends on a Number of Factors (i.e. LTAR, # of Bedrooms, Type of Soil Treatment Area (STA), Method of Transfer to the STA (Gravity, Dosed, or Pressure Dosed), and Type of Storage / Distribution Media Used in the STA)

Project: 20-0429	<b>Project Name and Address</b>  <b>Perry Mose</b>  0 Halleluiah Trail Sch. No. 4208000013 El Paso County, Colorado
Sheet: 2 of 2	
Date: 19 May 2020	
Scale: 1/4" = 1'	
Drawn by: mtj	
Checked by: cem	

<b>GEOQUEST, LLC.</b>	
6825 SILVER PONDS HEIGHTS SUITE 101 COLORADO SPRINGS, CO 80908	
OFFICE: (719) 481-4560 FAX: (719) 481-9204	

GEOQUEST LLC  
SITE MAP

0 Halleluiah Trail  
El Paso County  
Colorado  
Job #20-0429



Location from Southeast Lot Corner to Profile Pit #1:

N. 40° W. - 451'

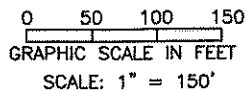
Location from Profile Pit #1 to Profile Pit #2:

S. 10° E. - 82'

GPS Coordinates:

Pit 1; N. 39° 01' 04.50" W. 104° 34' 41.20"

Pit 2; N. 39° 01' 03.70" W. 104° 34' 41.00"



# OWTS Report\_v1.pdf Markup Summary

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## Cloud+ (1)

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**Subject:** Cloud+  
**Page Label:** 3  
**Author:** John Green  
**Date:** 12/17/2020 10:27:17 AM  
**Status:**  
**Color:** ■  
**Layer:**  
**Space:**

Please provide updated report with findings and recommendations for both proposed lots.

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## Placed Image (2)

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**Subject:** Placed Image  
**Page Label:** 4  
**Author:** kmzigler  
**Date:** 7/27/2020 8:41:02 AM  
**Status:**  
**Color:** ■  
**Layer:**  
**Space:**

Cordially,  
RMG - Rocky Mountain Group



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**Subject:** Placed Image  
**Page Label:** 4  
**Author:** kmzigler  
**Date:** 7/27/2020 8:41:18 AM  
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**Color:** ■  
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