

Job No. 186500

February 8, 2022

Chris Boyd
6238 Gilmer Way
Westerville, OH 43081

Re: Wastewater Study
18735 Brown Rd
Lots 1-3, Boyd Minor Subdivision
El Paso County, Colorado

Ref: *Land Survey Plat Map, 18735 Brown Road, El Paso County, Colorado*, prepared by SMH Consultants, Job No. 2010CS4032, last dated October 30, 2020

Dear Chris:

As requested, personnel of RMG – Rocky Mountain Group has performed a preliminary investigation and site reconnaissance at the above referenced address. It is our understanding the parcels included in this study are:

- EPC Schedule No. 5100000433: addressed as 18735 Brown Road, consisting of approximately 35 acres zoned RR-5

Project Description:

The site consists of approximately 35 acres and is vacant, undeveloped land. It is our understanding the existing 35 acres is to be subdivided into a total of three lots consisting of one 15- acres lot and two 10-acre lots.

Each new lot is to be serviced by an on-site wastewater treatment system (OWTS) and an individual water supply well. The site is to be accessed from Brown Road. A Site Vicinity Map is included as Figure 1.

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.

Previous Studies and Field Investigation

One report of previous geotechnical engineering for this site by RMG was considered in the preparation of this report and listed below:

1. *Soils and Geology Study, 18735 Brown Road, Lots 1-3, Boyd Minor Subdivision, El Paso County, Colorado*, prepared by RMG-Rocky Mountain Group, Job No. 186500, dated February 8, 2022

SITE CONDITIONS

Personnel of RMG performed a reconnaissance visit on December 1, 2021. 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. Three 8-foot deep test pits were observed on December 3, 2021. The test pit locations are presented on the Test Pit Location Map, Figure 2.

The site vegetation primarily consists of native grasses and other prairie-type vegetation. No deciduous trees are located on the property. A drainage channel with a retention pond traverses the site from the southwest moving down-gradient to the north and east. The site generally slopes downward from the northwest and southeast corners to the drainage channel, with a total elevation difference of approximately 85 feet.

The following conditions were observed with regard to the 35-acre parcel:

- A well currently does not exist on the existing 35-acre site;
- No runoff or irrigation features anticipated to cause deleterious effects to treatment systems on the site were observed;
- No major waterways exist on the property. The entire site lies outside the designated floodway or floodplain;
- A minor, seasonally wet drainageway traverses the site from the southwest moving down-gradient to the north and east. However, these features are outside of the proposed building area;
- Slopes greater than 20 percent do not exist on the site; and
- Significant man-made cuts do not exist on the site.

Treatment Areas

Treatment areas at a minimum must achieve the following:

- Treatment areas must be 4 feet above groundwater or bedrock as defined by the Definitions 8.3.4 of the Regulations of the El Paso County Board of Health, Chapter 8, *OWTS Regulations*, amended May 23, 2018;
- Each lot (after purchase but prior to construction of an OWTS) will require an OWTS Site Evaluation report prepared per *the Regulations of the El Paso County Board of Health, Chapter 8 OWTS Regulations*. During the site reconnaissance, a minimum of two 8-foot deep test pits will need to be excavated in the vicinity of the proposed treatment area;

- Comply with any physical setback requirements of Table 7-1 of the El Paso County Department of Health and Environment (EPCHDE);
- Treatment areas are to be located a minimum 100 feet from any well (existing or proposed), including those located on adjacent properties per Table 7-2 per the EPCHDE;

Treatment areas are to be located a minimum distance of 100 feet from any well location. Treatment areas are also to be located a minimum of 50 feet from any spring, lake, water course, irrigation ditch, stream or wetland. Other setbacks for the treatment area include, but are not limited to, a minimum of 10 feet from property lines, dry gulches, cut banks and fill areas (from the crest).

DOCUMENT REVIEW

RMG has reviewed the provided site plan (prepared by SMH Consultants) and identified the soil conditions anticipated to be encountered during construction of the proposed OWTS for 18735 Brown Road, based on our site observations and a review of documented Natural Resource Conservation Service - NRCS Web Soil Survey data provided at websoilsurvey.nrcs.usda.gov. The Web Soil Survey Descriptions are presented below. A review of FEMA Map No. 08041C0305G, effective December 7, 2018 indicates that the proposed treatment areas are not located within an identified floodplain.

SOIL EVALUATION

Personnel of RMG observed three 8-foot deep test pits, on December 3, 2021 (Test Pit TP-1, TP-2, and TP-3), utilizing the visual and tactile method for the evaluation of the site soils. The test pits were excavated in areas that appeared most likely to be used for residential wastewater treatment areas. The Test Pit Logs are presented in Figure 3. The Septic Suitability Map shows proposed primary and alternate septic suitability locations for each lot, and is presented in Figure 4

The soil conditions as indicated by the NRCS data are anticipated to consist of Brussett loam with 3 to 5 percent slopes. The Brussett loam was mapped by the USDA to encompass the northern portion of the property. Properties of the loam include well drained soils, depth of the water table is anticipated to be greater than 80 inches, runoff is anticipated to be low, frequency of flooding and/or ponding is anticipated to be none, and landforms include hills. Peyton sandy loam with 5 to 9 percent slopes was mapped to encompass a small portion of the southeast corner of the property. Properties of the sandy loam include well drained soils, depth of the water table is anticipated to be greater than 80 inches, runoff is anticipated to be medium, frequency of flooding and/or ponding is anticipated to be none, and landforms include hills. Peyton-Pring complex with 8 to 15 percent slopes was mapped to encompass the majority of the property. Properties of the complex include well drained soils, depth of the water table is anticipated to be greater than 80 inches, runoff is anticipated to be medium, frequency of flooding and/or ponding is anticipated to be none, and landforms include hills.

The USDA Soil Survey Map is presented in Figure 5.

Bedrock was not encountered in the test pits performed by RMG. Neither groundwater nor redoximorphic features (indicating the fluctuation of groundwater or higher groundwater levels) were observed in the test pits.

CONCLUSIONS

In summary, it is our opinion the site is suitable for individual on-site wastewater treatment systems within the cited limitations. 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 test pit excavations and accepted engineering procedures. The subsurface conditions encountered in the excavation for the treatment area may vary from those encountered in the test pit excavations. Therefore, depth to limiting or restrictive conditions, bedrock, and groundwater may be different from the results reported in this letter. The proposed residences and OWTS should be located outside of the existing drainage channels and retention pond.

Individual wastewater treatment systems are proposed for each new lot. Additional OWTS site evaluations for the proposed lots 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.

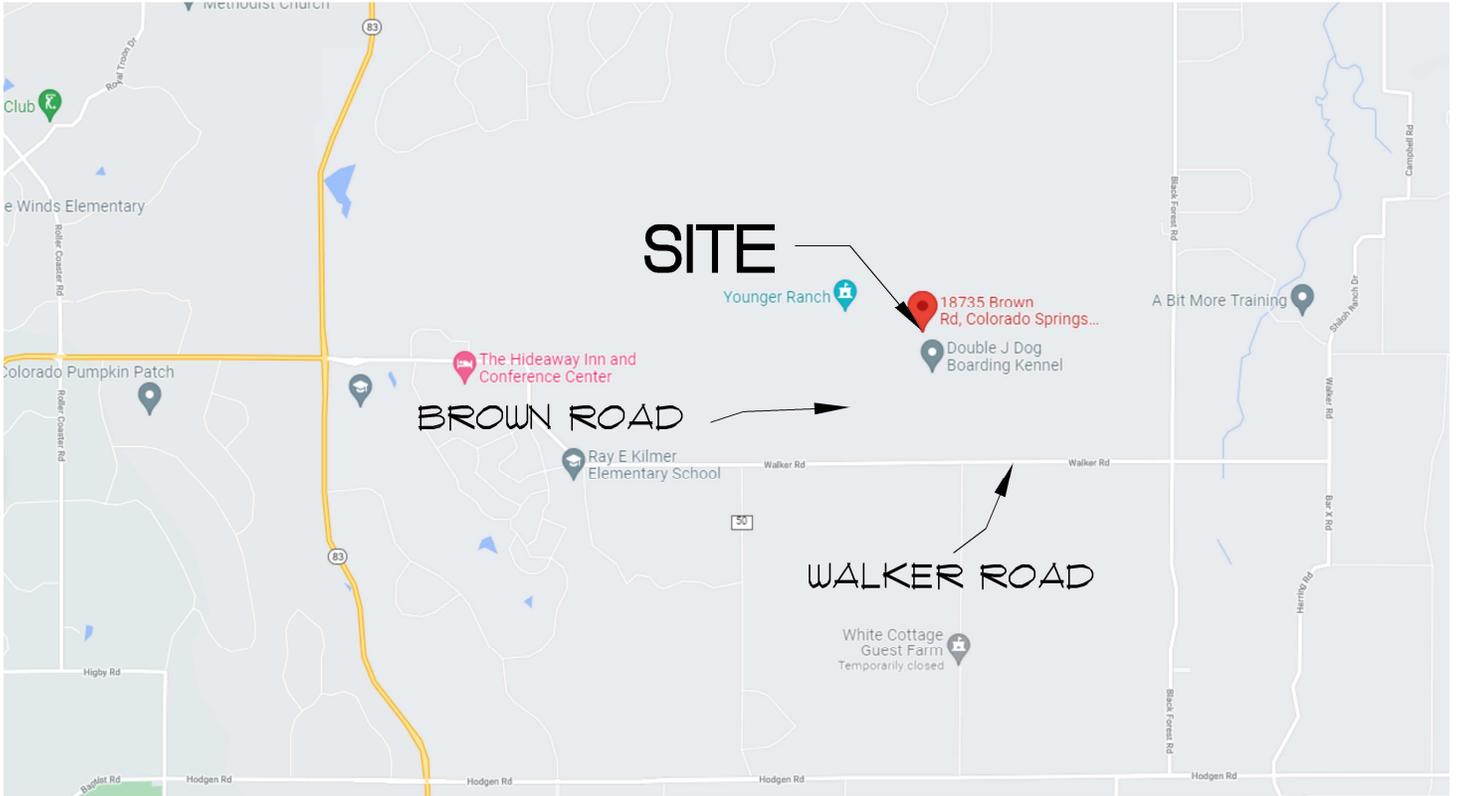
Cordially,
RMG – Rocky Mountain Group

Reviewed by,
RMG – Rocky Mountain Group

Kelli Zigler
Project Geologist

Tony Munger, P.E.
Geotechnical Project Manager





NOT TO SCALE



ROCKY MOUNTAIN GROUP

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

SITE VICINITY MAP

18735 BROWN ROAD
 LOTS 1-3, BOYD MINOR SUBDIVISION
 EL PASO COUNTY, COLORADO
 CHRIS BOYD

JOB No. 186500

FIG No. 1

DATE 2-8-2022



APPROXIMATE PROPERTY BOUNDARY

PROPOSED LOT LINES

PROPOSED LOT LINES



NOT TO SCALE



DENOTES APPROXIMATE LOCATION OF TEST PITS



ROCKY MOUNTAIN GROUP

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

TEST PIT LOCATION MAP

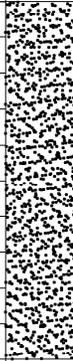
18735 BROWN ROAD
 LOTS 1-3, BOYD MINOR SUBDIVISION
 EL PASO COUNTY, COLORADO
 CHRIS BOYD

JOB No. 186500

FIG No. 2

DATE 2-8-2022

TEST PIT TP-1			
DATE OBSERVED: 12/3/21			
SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 8.0 FT SILTY CLAY (STRONG, BLOCKY)	2ft 4ft 6ft 8ft		4

TEST PIT TP-2			
DATE OBSERVED: 12/3/21			
SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 3.0 FT SILTY CLAY LOAM (STRONG, BLOCKY)	2ft		R-1
3.0 - 8.0 FT SANDY CLAY LOAM (MODERATE)	4ft 6ft 8ft		3

SOIL DESCRIPTIONS



SILTY CLAY LOAM



SILTY CLAY



SANDY CLAY LOAM



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

TEST PIT LOGS

18735 BROWN ROAD
LOTS 1-3, BOYD MINOR SUBDIVISION
EL PASO COUNTY, COLORADO
CHRIS BOYD

JOB No. 186500

FIGURE No. 3

PAGE 1 OF 2

DATE 2-8-2022

TEST PIT TP-3			
DATE OBSERVED: 12/3/21			
SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 7.0 FT SILTY CLAY (STRONG, BLOCKY) (MODERATE)	2ft 4ft 6ft		4
7.0 FT - 8.0 FT CLAY (MODERATE)	8ft		4

SOIL DESCRIPTIONS



SILTY CLAY



CLAY

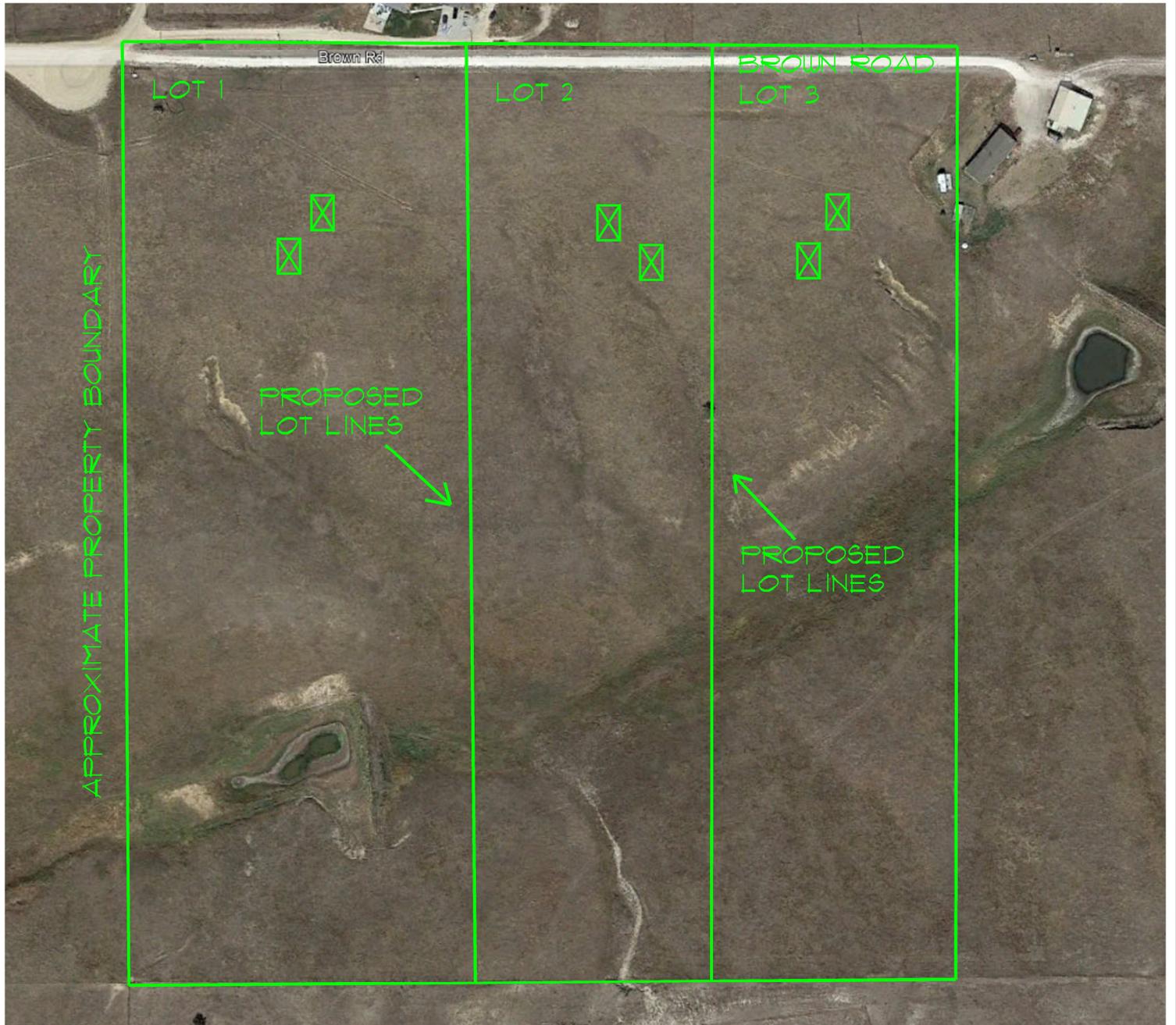


Southern Office
Colorado Springs, CO
80918
(719) 548-0600
Central Office:
Englewood, CO 80112
(303) 688-9475
Northern Office:
Greeley / Evans, CO 80620
(970) 330-1071

TEST PIT LOGS

18735 BROWN ROAD
LOTS 1-3, BOYD MINOR SUBDIVISION
EL PASO COUNTY, COLORADO
CHRIS BOYD

JOB No. 186500
FIGURE No. 3
PAGE 2 OF 2
DATE 2-8-2022



NOT TO SCALE



DENOTES PRIMARY AND ALTERNATE SEPTIC LOCATIONS



ROCKY MOUNTAIN GROUP

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

SEPTIC SUITABILITY MAP

18735 BROWN ROAD
 LOTS 1-3, BOYD MINOR SUBDIVISION
 EL PASO COUNTY, COLORADO
 CHRIS BOYD

JOB No. 186500

FIG No. 4

DATE 2-8-2022



- 15 - Brussett loam, 3 to 5 percent slopes
- 67 - Peyton sandy loam, 5 to 9 percent slopes
- 69 - Peyton-Pring complex, 8 to 15 percent slopes



NOT TO SCALE



ROCKY MOUNTAIN GROUP

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

USDA SOIL SURVEY MAP

18735 BROWN ROAD
 LOTS 1-3, BOYD MINOR SUBDIVISION
 EL PASO COUNTY, COLORADO
 CHRIS BOYD

JOB No. 186500

FIG No. 5

DATE 2-8-2022