

Architecture
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ROCKY MOUNTAIN GROUP
EMPLOYEE OWNED

Job No. 173099

October 15, 2020

Brian Warner
17350 W. Goshawk Rd
El Paso County, CO 80908

Re: Wastewater Study
Warner 4-lot Minor Subdivision
Goshawk Rd
El Paso County, Colorado

Ref: *Development Plan*, prepared by Forsgren Associates, Inc., Project No. 04-18-0026, last dated June 1, 2020.

Dear Mr. Warner:

As requested, personnel of RMG – Rocky Mountain Group performed a preliminary investigation and site reconnaissance at the above referenced address. The parcel included in this study is:

- EPC Schedule No. 5123000037, currently addressed as 17350 Goshawk Road and is zoned *RR-5 - Residential Rural*.

It is our understanding the 40-acre parcel is to be subdivided into four lots of approximately 5.00 to 19.86 acres each. An existing single-family residence with a septic and well are to remain on Lot 3. The proposed site development is to consist of one single family residence with a well and an on-site wastewater treatment system on the remaining three lots. The Proposed Lot Layout (Figure 1) presents the general boundaries of our investigation.

This letter is to provide information per the On-Site Wastewater Treatment Systems (OWTS) Regulations of the El Paso County Board of Health pursuant to Chapter 8.

The following are 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

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

1. *Soils Report, 17350 Goshawk Road, El Paso County, Colorado*, prepared by Geoquest, LLC, Job #17-0410, dated June 8, 2017.

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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

2. *Profile Pit Evaluation, 17350 Goshawk Road, El Paso County, Colorado*, prepared by Geoquest, LLC, Job #17-0410, dated June 8, 2017.

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 September 24, 2020. The purpose of the reconnaissance visit was to evaluate the site surface characteristics including topography, vegetation, natural and cultural features, and current and historic land uses. Three 8-foot deep test pits were performed across the site, during our reconnaissance visit. The Test Pit Locations are presented in Figure 2.

The site surface characteristics were observed to consist of low lying grasses and weeds across the entire site. No deciduous trees are located on the property.

The following conditions were observed with regard to the 40-acre parcel:

- A well currently **does** exist on the 40-acre site.
- Runoff and irrigation features do not exist on the property.
- The entire site lies outside of areas designated as 100-year and 500-year floodway or floodplain.
- 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:

- The 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*, effective July 7, 2018;
- Prior to construction of an OWTS, an OWTS design prepared per *the Regulations of the El Paso County Board of Health, Chapter 8, OWTS Regulations* will need to be completed. A scaled site plan and engineered design will also be required prior to obtaining a building permit.
- 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 must also be located a minimum 50 feet from any spring, lake, water course, irrigation ditch, stream or wetland, and 25 feet from dry gulches.
- 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).
- Each new lot shall be laid out to insure that a minimum of 2 sites are appropriate for an OWTS and do not fall within any restricted areas, (e.g. utility easements, right of ways). Based on the test pit observations performed, each new lot has a minimum of two locations for the OWTS, as presented on the OWTS Suitability Map, Figure 3.

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.

DOCUMENT REVIEW

RMG has reviewed the above referenced site plan and identified the soil conditions anticipated to be encountered during construction of the proposed OWTS, which included a review of documented Natural Resource Conservation Service - NRCS data provided by websoilsurvey.nrcs.usda.gov. The results of our review are presented below. A review of FEMA Map No. 08041C0310G, 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 three 8-foot deep test pits on September 24, 2020 (Test Pits 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 construction.

The U.S. Soil Conservation Service along with USDA has identified the soils on the property as:

- 26 – Elbeth sandy loam, 8 to 15 percent slopes. Elbeth sandy loam was mapped by the USDA to encompass the majority of the site. Properties of the Elbeth sandy loam include, well-drained soil, depth of the water table is anticipated to be greater than 80 inches, runoff is anticipated to be low, frequency of flooding and ponding is none, and landforms are depressions. The hydrologic soil group of the unit is B. The USDA Soil Survey Map is presented in Figure 4.

Groundwater was not encountered in the test pits observed by RMG. However, bedrock/ limiting layers were encountered in TP-2 at a depth of 7 feet and in TP-3 at a depth of 5 feet.

An OWTS is proposed for each proposed new lot and should conform to the recommendations presented in an OWTS site evaluation, performed in accordance with the applicable health department codes prior to construction. This report may require additional test 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 not observed in the test pits observed by RMG. However, evidence of groundwater was observed by Geoquest, LLC as stated in their Profile Pit Evaluation letter, referenced above. Redoximorphic features were observed between 36 to 40 inches below the surface. The Test Pit Logs are presented in Figures 5 and 6.

Add as plat note
regarding engineered
systems required

CONCLUSIONS

In summary, it is our opinion the site is suitable for individual on-site wastewater treatment systems within the cited limitations. Due to encountering bedrock/limiting layers and the potential for redoximorphic features, it is anticipated the OWTS for each lot will need to be designed by a Colorado Licensed Engineering. There are no foreseeable or stated construction related issues or land use changes proposed at this time. The proposed new lots are each anticipated to be suitable for an individual OWTS.

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.

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 17350 Goshawk Road, 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



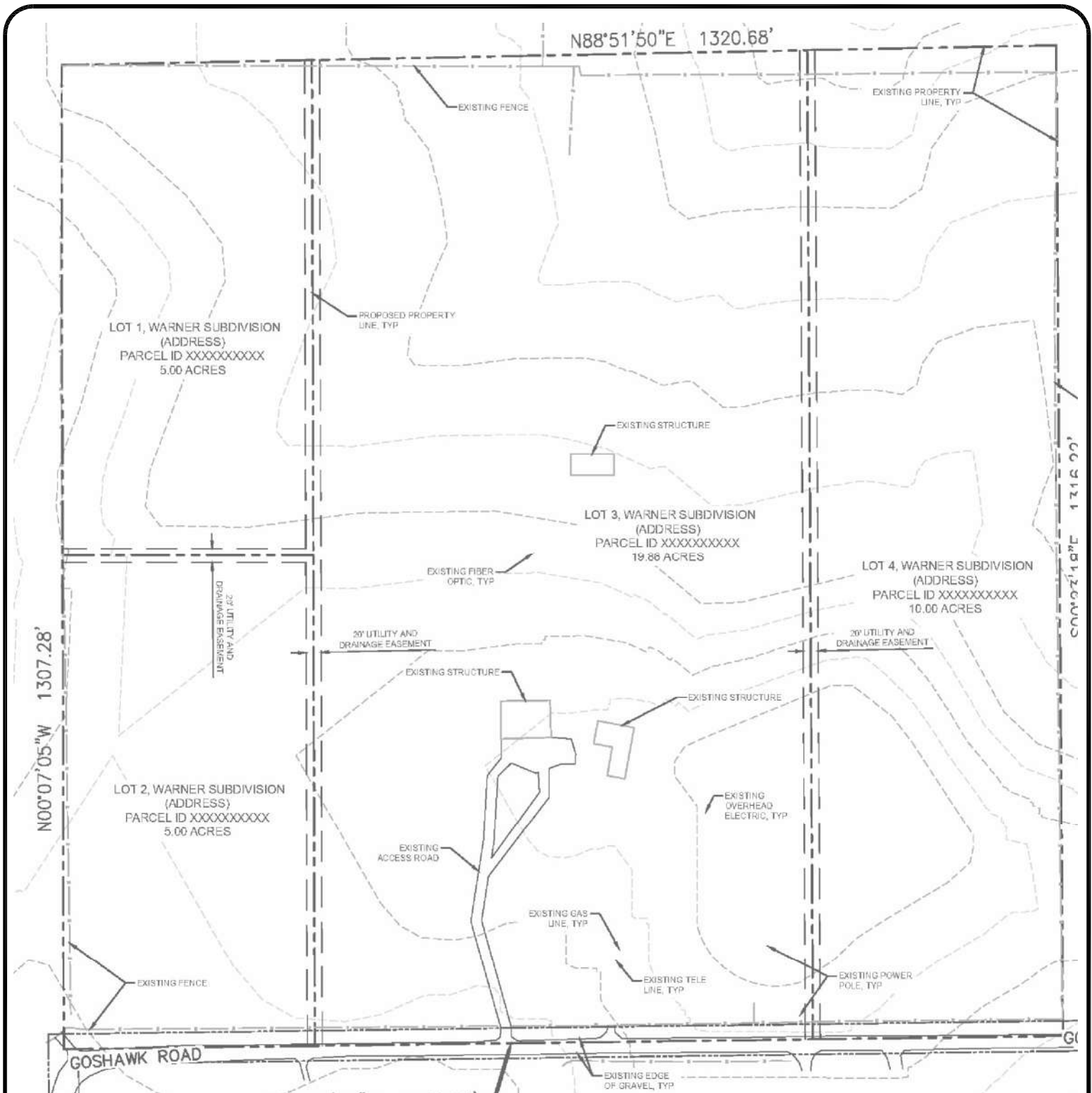
Kelli Zigler
Project Geologist

Reviewed by,

RMG – Rocky Mountain Group

Geoff Webster, P.E.
Sr. Geotechnical Project Engineer





NOT TO SCALE

Base map provided by Forsgren Associates, Inc.



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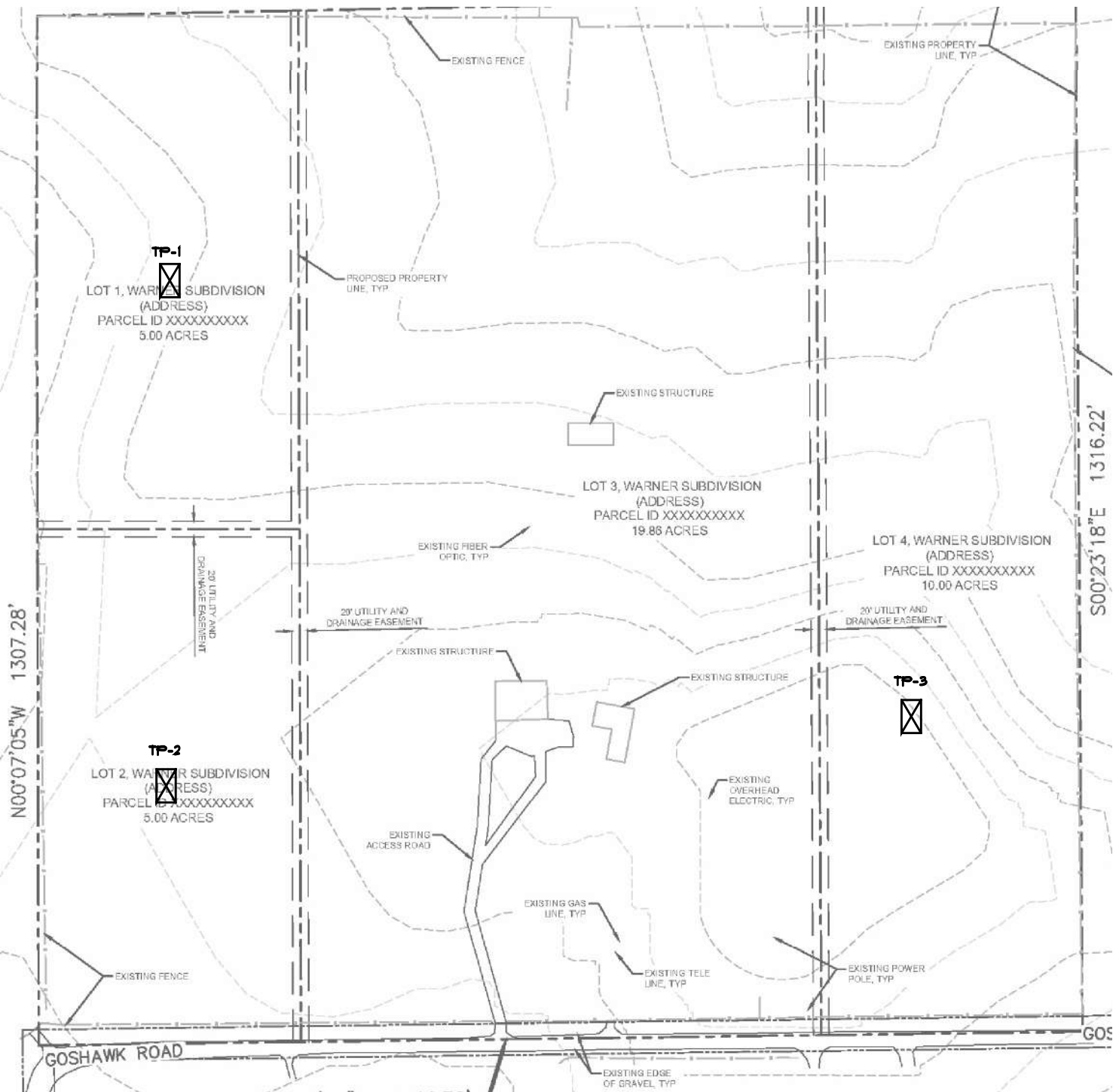
PROPOSED LOT LAYOUT

WARNER 4-LOT SUBDIVISION
 GOSHAWK ROAD
 EL PASO COUNTY, CO
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FIG No. 1

DATE 10-14-2020



NOT TO SCALE



DENOTES ANTICIPATED LOCATION OF HOUSE



DENOTES ANTICIPATED LOCATION(S) OF OWTS



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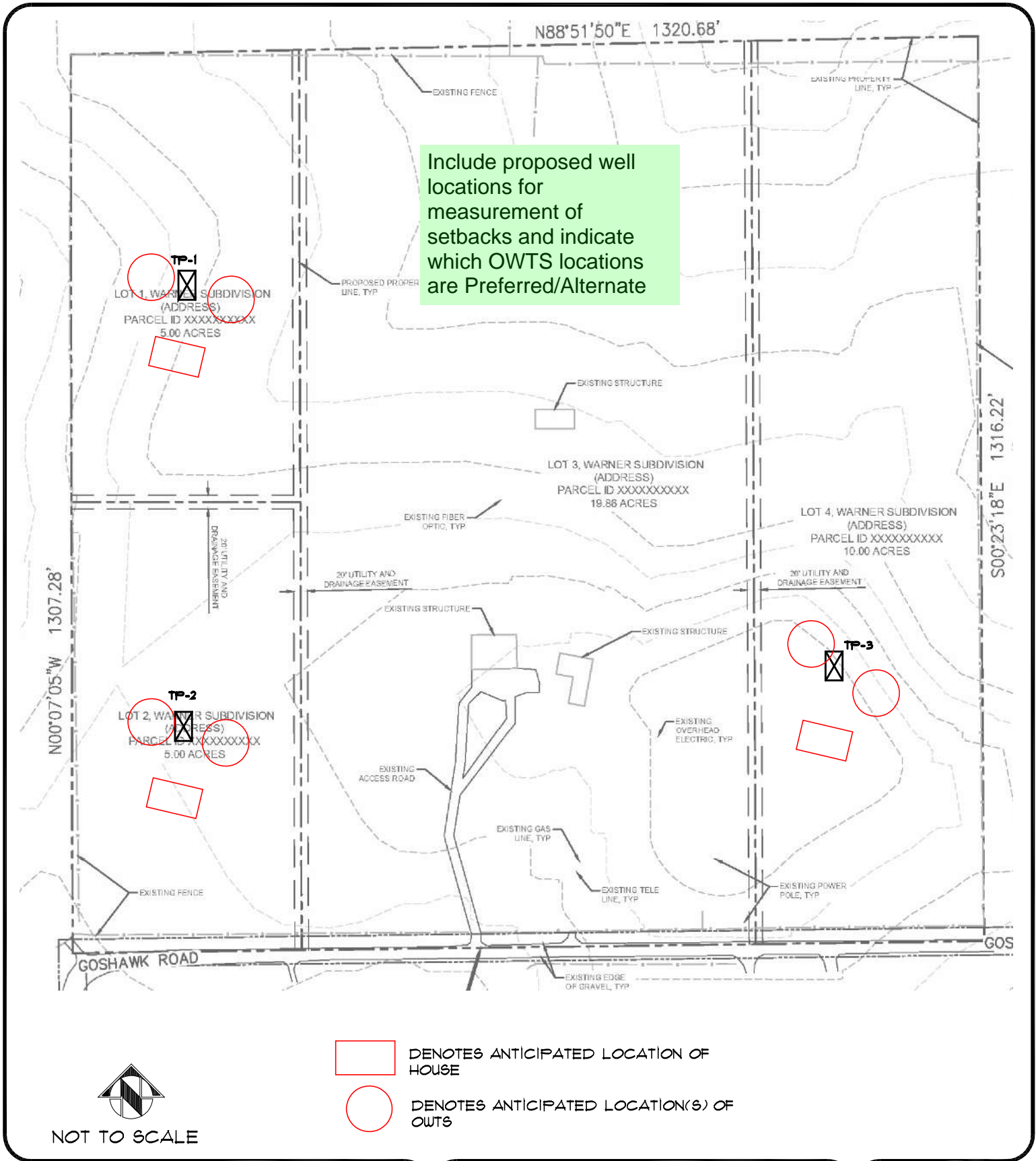
OWTS SUITABILITY MAP

WARNER 4-LOT SUBDIVISION
 GOSHAWK ROAD
 EL PASO COUNTY, CO
 BRIAN WARNER

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FIG No. 2

DATE 10-14-2020



NOT TO SCALE



DENOTES ANTICIPATED LOCATION OF HOUSE



DENOTES ANTICIPATED LOCATION(S) OF OWTS



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OWTS SUITABILITY MAP

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FIG No. 3

DATE 10-14-2020



71—Pring coarse sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369k
 Elevation: 6,800 to 7,800 feet
 Farmland classification: Not prime farmland

Map Unit Composition

Pring and similar soils: 85 percent
 Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pring

Setting

Landform: Hills
 Landform position (three-dimensional): Side slope
 Down-slope shape: Linear
 Across-slope shape: Linear
 Parent material: Arkosic alluvium derived from sedimentary rock

Typical profile

A - 0 to 14 inches: coarse sandy loam
 C - 14 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
 Depth to restrictive feature: More than 80 inches
 Drainage class: Well drained
 Runoff class: Low
 Capacity of the most limiting layer to transmit water (Ksat)
 (2.00 to 6.00 in/hr)
 Depth to water table: More than 80 inches
 Frequency of flooding: None
 Frequency of ponding: None
 Available water capacity: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
 Land capability classification (nonirrigated): 3e
 Hydrologic Soil Group: B
 Ecological site: R048AY222CO
 Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit:
 Landform: Depressions
 Hydric soil rating: Yes



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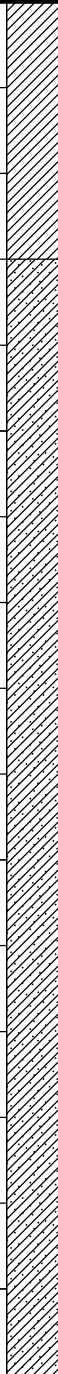
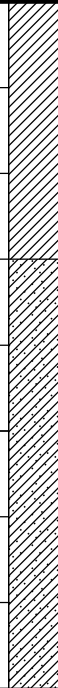
**USDA SOIL
 SURVEY MAP**

**WARNER 4-LOT SUBDIVISION
 GOSHAWK ROAD
 EL PASO COUNTY, CO
 BRIAN WARNER**

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FIG No. 4

DATE 10-14-2020

TEST PIT No.: TP-1 DATE DRILLED: 9/24/20 REMARKS: NO GROUNDWATER ON 9/24/20	DEPTH (FT)	SYMBOL	SAMPLES	WATER CONTENT %	SOIL TYPE	TEST PIT No.: TP-2 DATE DRILLED: 9/24/20 REMARKS: NO GROUNDWATER ON 9/24/20	DEPTH (FT)	SYMBOL	SAMPLES	WATER CONTENT %	SOIL TYPE
USDA Soil Texture: Sandy Loam USDA Soil Type: 2 USD Structure Shape: Moderate USDA Structure Grade: Strong						USDA Soil Texture: Sandy Loam USDA Soil Type: 2 USD Structure Shape: Granular USDA Structure Grade: Strong					
USDA Soil Texture: Sandy Clay USDA Soil Type: 4 USD Structure Shape: Blocky USDA Structure Grade: Moderate	2.5		USDA Soil Texture: Sandy Clay USDA Soil Type: 4 USD Structure Shape: Blocky USDA Structure Grade: Moderate	2.5							
	5.0		USDA Soil Texture: Sand USDA Soil Type: R-0 USD Structure Shape: Single-Grain USDA Structure Grade: Structureless	5.0							
	7.5		Limiting Layer at 7 feet - 44% > 2mm	7.5							

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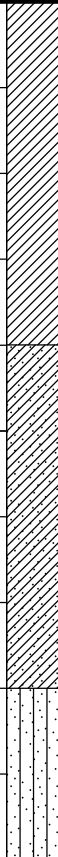
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

TEST PIT LOGS

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FIGURE No. 5

DATE 10/15/20

TEST PIT No.: TP-3 DATE DRILLED: 9/24/20 REMARKS: NO GROUNDWATER ON 9/24/20	DEPTH (FT)	SYMBOL	SAMPLES	WATER CONTENT %	SOIL TYPE
USDA Soil Texture: Sandy Laom USDA Soil Type: 2 USD Structure Shape: Blocky USDA Structure Grade: Moderate					
USDA Soil Texture: Sandy Clay USDA Soil Type: 4 USD Structure Shape: Blocky USDA Structure Grade: Moderate	2.5				
USDA Soil Texture: Sandy Clay USDA Soil Type: R-1 USD Structure Shape: Granular USDA Structure Grade: Moderate	5.0				
Limiting Layer at 5 feet - 45% > 2mm	7.5				

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

TEST PIT LOGS

JOB No. 173099

FIGURE No. 6

DATE 10/15/20