MARCH 6, 2023

OWTS FEASABILITY REPORT

PREPARED FOR: GINGER SPENCE

JOB #23-060
14090 DAVIS ROAD,
SCHEDULE NUMBER: 4333000016
EL PASO COUNTY,
COLORADO

PREPARED BY: D&D ENGINEERING, LLC

317 OAK PLACE
MANITOU SPRINGS, CO 80829

OFFICE PHONE #: (719) 375-1779
EMAIL: OFFICE@DDENGINEERINGLLC.COM

Sincerely,

Douglas J Pretzer

Douglas J. Pretzer, P.E.
Principal Engineer

PROJECT DESCRIPTION

The project boundaries are described as Southeast ¼ of Southwest ¼ of Section 33, Township 13 South, Range 64 West of the 6th Prime Meridian in El Paso County, Colorado. The property address is 14090 Davis Road. The El Paso County tax assessor, schedule number is 4333000016 (Reference 1).

The address is currently occupied with a single-family residence, detached garage, and shed. The existing lot is 37.134 acres. The proposed development includes subdividing the property into 4 lots. Three new vacant lots will be divided along the north side of the property. Each of the three lots will be 5.00 acres. The existing residence, garage, and shed will be located on the new Lot 4 which will be 21.320 acres. Lot 4 is served by an existing well and On-Site Wastewater Treatment System (OWTS). The three new lots will be served by new individual wells and OWTS's. The proposed development is shown in the attached plot plan (Reference 2, Appendix A).

NRCS SOIL SURVEY

The USDA soil survey indicates the majority of the proposed development is located in the Blakeland loamy sand formation (Reference 3, Appendix B). The formation typically has slopes of 1 to 9 percent. The typical profile is loamy sand with underlying sand. No restrictive features or water table are expected within 80 inches. Other formations exist at the southeast and southwest corners of Lot 4, outside the proposed development. The USDA describes the site a very limited for Septic Tank Absorption Fields. See the soil investigation, soil descriptions, and conclusions below.

SOIL INVESTIAGIONS

Profile Pit Evaluations were performed on the three new lots by Geoquest, LLC. The evaluations for lots 1, 2, and 3 are job numbers 22-0890, 22-0889, and 22-0662, respectively. Each evaluation consisted of visual and tactile evaluation of two pits located on each of the proposed lots, in the vicinity of the proposed soil treatment areas (References 4, 5, and 6, Appendix C).

A Soils Report was performed on Lot 3 by Geoquest, LLC, job number 22-0662. The investigation included drilling two test borings to a depth of 15' in the proposed building footprint (Reference 7). This report is included in Appendix C by reference of the below Entech report.

A Soil, Geology, and Geologic Hazard Study was prepared by Entech Engineering, Inc. job number 221987, dated November 10, 2022. The study included drilling two test borings to a depth of 20'. One boring was drilled on Lot 1 and the second boring was drilled on Lot 3 (Reference 8, Appendix D). This study also incorporates the existing OWTS for the existing residence by attachment.

SOIL DESCRIPTIONS

The visual and tactile evaluation on the three lots by Geoquest, LLC show sandy loam to sandy clay loam. Lot 1 was described as sandy loam (2A) in the two pits with overlaying sandy clay (4) in the second test pit to a depth of 3'. Lot 2 was described as sandy loam (2A) to completion in both pits. Lot 3 was described as sandy clay loam (3) to completion in both pits.

The Soils Report by Geoquest, LLC described the soil in both borings as clayey sand with low to moderate density.

The Soil, Geology, and Geologic Hazard Study by Entech Engineering, Inc. described the soil in both borings as sand, silty, medium dense to loose.

None of the studies indicate the presence of groundwater or bedrock. Entech Engineering, Inc did note a low laying area along the southern portion of Lot 4 that is subject to potential seasonal shallow groundwater. This area would not affect the proposed development of Lots 1 through 3.

CENTRAL SEWER

The property is not located within an organized or municipal sewage district. Based on the Colorado Springs Utilities mapping tool (Reference 9), the closest sewer main is located at the intersection of Highway 94 and Highway 24, approximately 8.75 miles from the site address via public right-of-way.

Therefore, the property is not subject to inclusion in a municipal sewage district and is not reasonable to tie to an existing municipal sewage main.

CONCLUSIONS

The profile pit evaluations performed by Geoquest, LLC do not indicate any bedrock or groundwater in the area of the proposed soil treatment areas. One limiting layer (USDA soil type 4) was encountered on Lot 1 in pit #2 from 6" to 36". With a proposed depth of the infiltrative surface between 3 feet to 4 feet below native grade, this layer can easily be mitigated.

The profiles revealed generally favorable soil conditions that should allow for conventional On-Site Wastewater Treatment Systems. The depth to infiltrative surface should not exceed 4 feet below native grade. Acceptable LTAR's range from 0.35 gpd/sf to 0.50 gpd/sf. These values are for the specific areas as reported by Geoquest, LLC. If the proposed soil treatment area varies from these test sites, new profile pits should be evaluated in the new location. If LTAR below 0.35 gpd/sf or limiting layers are encountered, then an engineered On-Site Wastewater Treatment system will be required.

All new On-Site Wastewater Treatment Systems shall comply with any physical setback requirements in Table 7-1 of EPCPH regulations, Chapter 8. Soil treatment areas should be located a minimum of 100 feet from any well (existing or proposed) on the subject lot or adjacent lots.

The attached site plan shows potential build sites and well locations (Appendix E). The plan also shows possible soil treatment areas as well as possible alternate areas.

It is our opinion that the proposed development can be completed in accordance with EPCPH Chapter 8 and there are no restrictions on the individual On-Site Wastewater Treatment Systems.

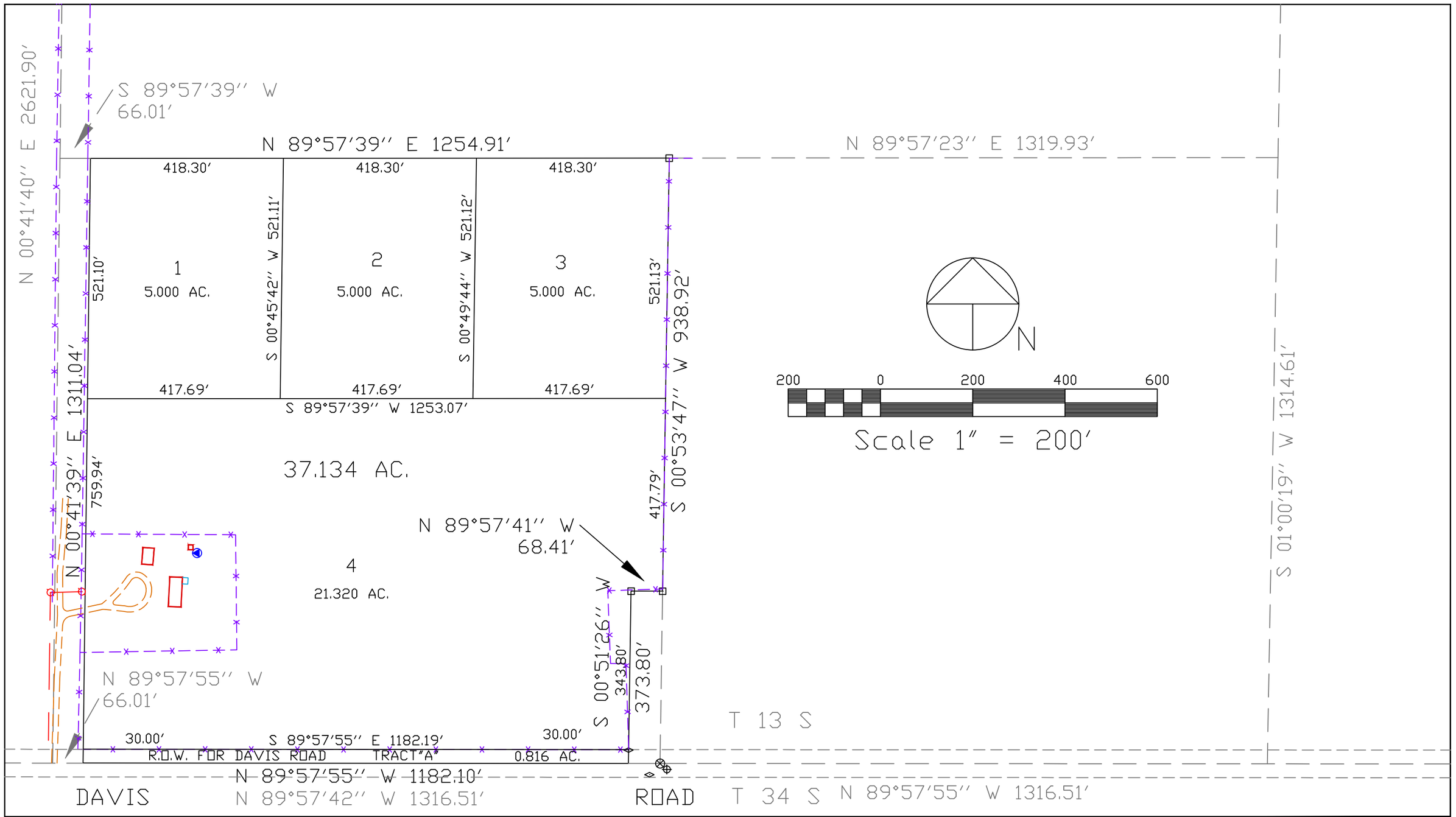
LIMITATIONS

This report is prepared in accordance with Colorado Department of Public Health and Environment, Regulation 43, El Paso County Board of Health, Chapter 8: OWTS regulations, and El Paso County Land Development Code section 8.4.8, as well as generally accepted engineering standards and methods. Soil conditions can vary between pits and beyond the location of the pits. Even with proper design and installation, there remain uncertainties in the function of the STA and difficulties may arise. D&D Engineering, LLC provides no warranty, express or implied, regarding the contents of this report or the designs or installation of the OWTS based on the recommendations of this report. The Limits of Liability extend only to the fee rendered for the professional services provided.

References

1. El Paso County Assessor, https://property.spatialest.com/co/elpaso/#/property/4333000016
2. Site Plan, Oliver E Watts Consulting Engineers, DWG No. 21-5660-01, dated 10-19-21
3. Custom Soil Resource Report, USDA Web Soil Survey, https://websoilsurvey.nrcs.usda.gov/app/
4. Profile Pit Evaluation, Geoquest LLC, Job #22-0890, dated 10/19/22
5. Profile Pit Evaluation, Geoquest LLC, Job #22-0889, dated 10/19/22
6. Profile Pit Evaluation, Geoquest LLC, Job #22-0662, dated 8/22/22
7. Soils Report, Geoquest LLC, Job #22-0662, dated 19 August 2022
8. Soil, Geology, and Geologic Hazard Study, Entech Engineering Inc., Job No. 221987, dated November 10, 2022
9. Utility Mapping, Colorado Springs Utilities, https://maps.csu.org/

APPENDIX A: SITE PLAN



DRAWN BY: O.E. WATTS DATE: 10-19-21 DWG. NO.: 21-5660-01 SURVEYED BY: OEW, ESW, 10-20-21	REVISIONS	OLIVER E. WATTS CONSULTING ENGINEER COLORADO SPRINGS	PROJECT MURR PROPERTY PART SE SW 33-13-64 EL PASO COUNTY	SHT. NAME SITE PLAN	SHT. NO. 1 OF 1

APPENDIX B: USDA WEB SOIL SURVEY

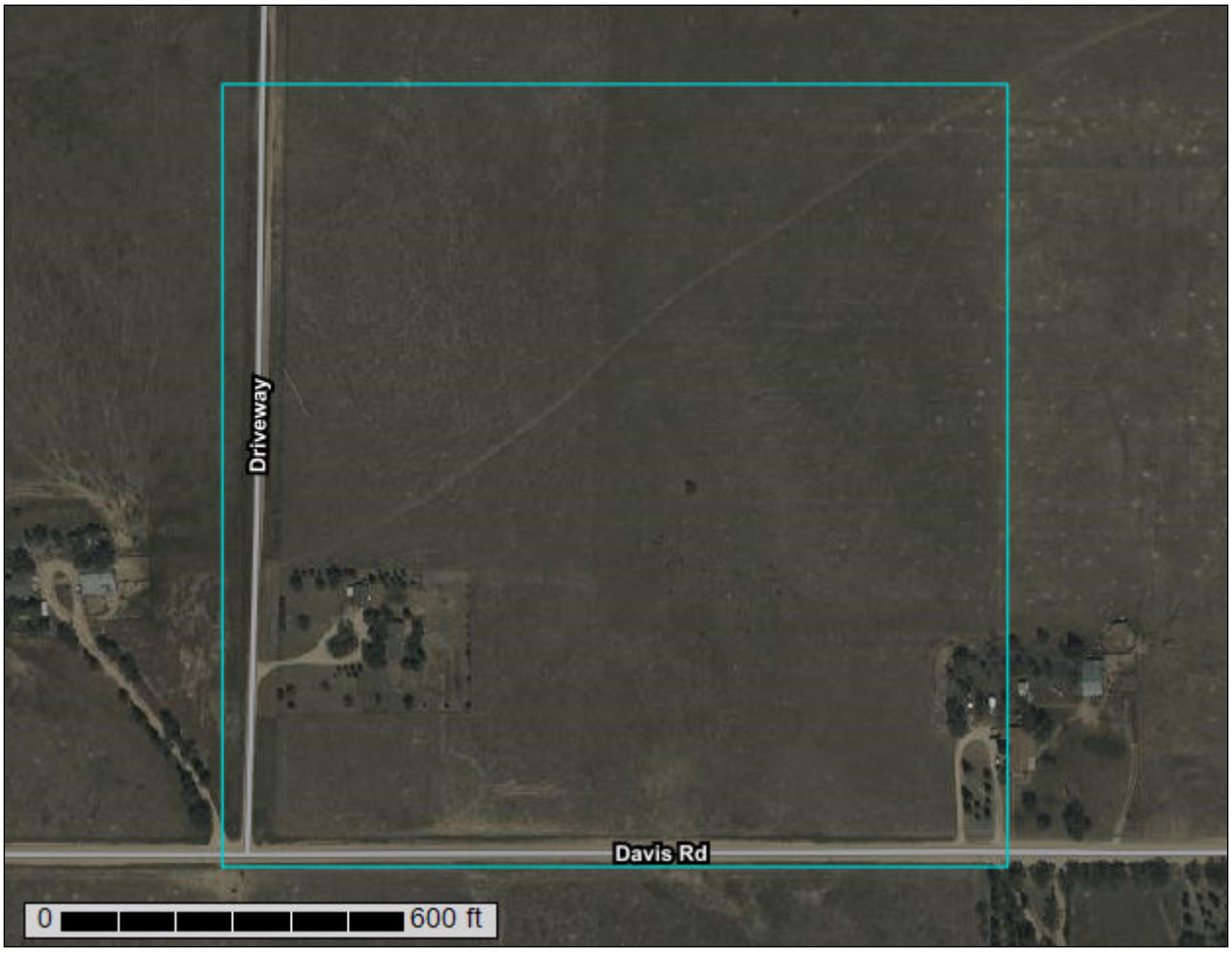
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for El Paso County Area, Colorado



March 5, 2023

Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:3,530 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 11, 2018—Oct 20, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	42.0	96.9%
86	Stoneham sandy loam, 3 to 8 percent slopes	0.5	1.2%
97	Truckton sandy loam, 3 to 9 percent slopes	0.8	1.9%
Totals for Area of Interest		**43.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

El Paso County Area, Colorado

8—Blakeland loamy sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369v
Elevation: 4,600 to 5,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Flats, hills
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock and/or eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 11 inches: loamy sand
AC - 11 to 27 inches: loamy sand
C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 1 percent

Hydric soil rating: No

Pleasant

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

86—Stoneham sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 36b2
Elevation: 5,100 to 6,500 feet
Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Stoneham and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stoneham

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Typical profile

A - 0 to 4 inches: sandy loam
Bt - 4 to 8 inches: sandy clay loam
Btk - 8 to 11 inches: sandy clay loam
Ck - 11 to 60 inches: loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R067BY024CO - Sandy Plains
Other vegetative classification: SANDY PLAINS (069AY026CO)
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 4 percent
Hydric soil rating: No

Pleasant

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

97—Truckton sandy loam, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2x0j2
Elevation: 5,300 to 6,850 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 85 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Truckton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Truckton

Setting

Landform: Hillslopes, interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Re-worked alluvium derived from arkose

Typical profile

A - 0 to 4 inches: sandy loam
Bt1 - 4 to 12 inches: sandy loam
Bt2 - 12 to 19 inches: sandy loam
C - 19 to 80 inches: sandy loam

Properties and qualities

Slope: 3 to 9 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): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.1 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Blakeland

Percent of map unit: 8 percent
Landform: Hillslopes, interfluves
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Bresser

Percent of map unit: 7 percent
Landform: Low hills, interfluves
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Sanitary Facilities

Sanitary Facilities interpretations are tools designed to guide the user in site selection for the safe disposal of sewage and solid waste. Example interpretations include septic tank absorption fields, sewage lagoons, and sanitary landfills.

Septic Tank Absorption Fields

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 60 inches is evaluated. The ratings are based on the soil properties that affect absorption of the effluent, construction and maintenance of the system, and public health. Saturated hydraulic conductivity (Ksat), depth to a water table, ponding, depth to bedrock or a cemented pan, and flooding affect absorption of the effluent. Stones and boulders, ice, and bedrock or a cemented pan interfere with installation. Subsidence interferes with installation and maintenance. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas.

Some soils are underlain by loose sand and gravel or fractured bedrock at a depth of less than 4 feet below the distribution lines. In these soils the absorption field may not adequately filter the effluent, particularly when the system is new. As a result, the ground water may become contaminated.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately

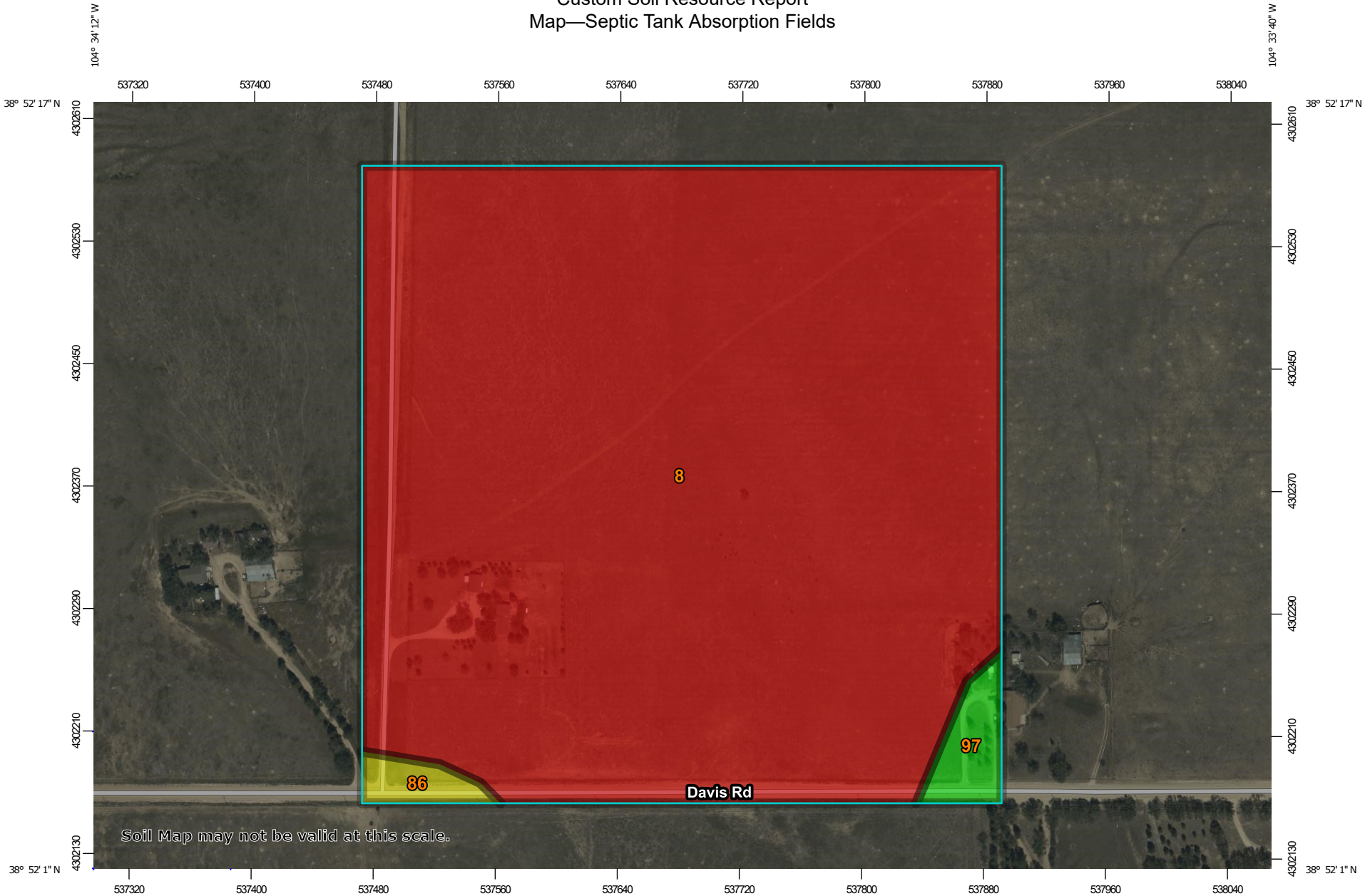
favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Septic Tank Absorption Fields



Map Scale: 1:3,530 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 11, 2018—Oct 20, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables—Septic Tank Absorption Fields

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	Very limited	Blakeland (98%)	Seepage, bottom layer (1.00)	42.0	96.9%
				Filtering capacity (1.00)		
86	Stoneham sandy loam, 3 to 8 percent slopes	Somewhat limited	Stoneham (95%)	Slow water movement (0.50)	0.5	1.2%
97	Truckton sandy loam, 3 to 9 percent slopes	Not limited	Truckton (85%)		0.8	1.9%
Totals for Area of Interest					**43.3**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Very limited	42.0	96.9%
Not limited	0.8	1.9%
Somewhat limited	0.5	1.2%
Totals for Area of Interest	**43.3**	**100.0%**

Rating Options—Septic Tank Absorption Fields

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX C: GEOQUEST REPORTS

GEOQUEST, LLC
5072 List Drive
Colorado Springs, CO 80919
(719) 481-4560

PROFILE PIT EVALUATION

FOR

GINGER SPENCE

JOB #22-0890

Lot 1
0 Davis Road,
El Paso County,
Colorado

Sincerely,

Douglas J Pretzer

Douglas J. Pretzer, P.E.
Civil Engineer

PROFILE PIT FINDINGS

Enclosed are the results of the profile pit for the septic system to be installed at **Site A, 0 Davis Road, El Paso County, Colorado.** The location of the test pits was determined by Ginger Spence. 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 2% at least 20 feet. All applicable portions of the El Paso County Public Health Department Onsite Wastewater Treatment System Regulations (OWTS) must be complied with for the installation of the treatment system.

The inspection was performed on October 3, 2022, 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 8' - USDA soil texture sandy loam, soil type 2A, structure shape blocky, structure grade 1, non-cemented, LTAR 0.50, yellowish brown in color, 10 YR 5/4, 0% rock.

Soil Profile #2:

0 to 6" - Topsoil - loam, organic composition.

6" to 36" - USDA soil texture sandy clay, soil type 4, structure shape blocky, structure grade 2, non-cemented, LTAR 0.20, light yellowish brown in color, 10 YR 6/4, 0% rock, calcification.

36" to 8' - USDA soil texture sandy loam, soil type 2A, structure shape massive, structure grade 0, non-cemented, LTAR 0.50, yellowish brown in color, 10 YR 5/4, 0% rock.

Groundwater was not encountered during the inspection. Bedrock was not encountered 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 USDA soil type 2A, the septic system to be installed on this site need not be designed by a Colorado Licensed Engineer. A conventional septic system is approved for this site. Based on the observed conditions, we feel a design based on an LTAR of 0.50 GPD/SF (USDA soil type 2A, treatment soil, treatment level 1) is reasonable. Maximum depth of the installation shall not be deeper than 4 feet below the existing grade. Minimum depth of the installation shall be deeper than 3 feet below the existing grade.

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 overcast skies with moderate temperatures.

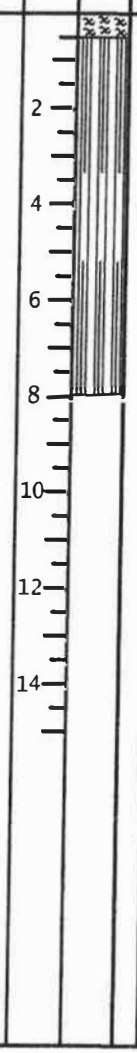
PROFILE PIT LOG - Profile Pit #1

JOB#: 22-0890
DATE EVALUATED: 3 October 2022
EQUIPMENT USED: MINI EX

0"-6" **TOPSOIL**
Loam
Organic Composition

6"- 8' **Sand**
Fine-coarse Grained
Moderate Density
Low Moisture Content
Low Clay Content
Low Cohesion
Low Plasticity
Yellowish Brown Color
10YR 5/4

USDA Soil Texture: Sandy Loam
USDA Soil Type: 2A
USDA Structure Shape: Blocky
USDA Structure Grade: 1
Cementation Class: Non-cemented
Long Term Acceptance Rate (LTAR, Treatment Level 1):0.50
0% Rock



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
Depth to Bedrock and Type: Not Encountered
Depth to Proposed Infiltrative Surface from Ground Surface: Min. 36" Deep, Max. 48" Deep
Soil Treatment Area Slope and Direction: West/Southwest @ 7%

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: 22-0890
Sheet: 1 of 2
Date: 13 Oct 2022
Scale: 1/4" = 1'
Drawn by: rah
Checked by: djp

Project Name and Address

Ginger Spence

0 Davis Road- A
Sch. No. Unknown
El Paso County, Colorado

GEOQUEST, LLC.
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#: 22-0890
DATE EVALUATED: 3 October 2022
EQUIPMENT USED: MINI EX

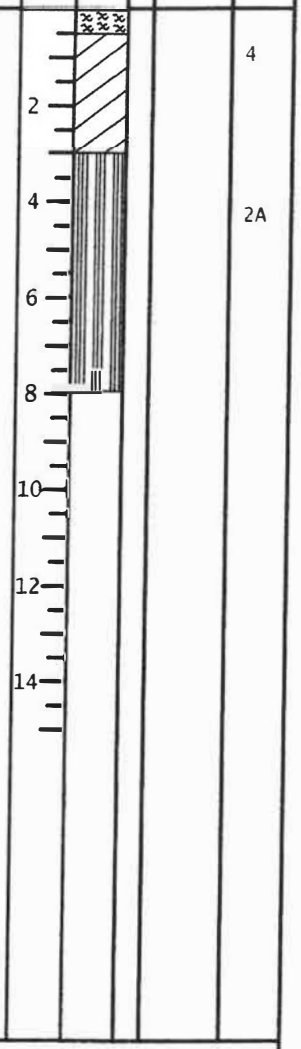
0"-6" **TOPSOIL**
Loam
Organic Composition

6"- 36" **Clay**

Fine-coarse Grained	USDA Soil Texture: Sandy Clay
High Density	USDA Soil Type: 4
Low Moisture Content	USDA Structure Shape: Blocky
Moderate-high Clay Content	USDA Structure Grade: 2
Moderate-high Cohesion	Cementation Class: Non-cemented
Moderate-high Plasticity	Long Term Acceptance Rate (LTAR, Treatment Level 1):0.20
Light Yellowish Brown Color	0% Rock
10YR 6/4	Calcification

36"- 8' **Sand**

Fine-coarse Grained	USDA Soil Texture: Sandy Loam
Moderate-high Density	USDA Soil Type: 2A
Low Moisture Content	USDA Structure Shape: Massive
Low Clay Content	USDA Structure Grade: 0
Low Cohesion	Cementation Class: Non-cemented
Low Plasticity	Long Term Acceptance Rate (LTAR, Treatment Level 1):0.50
Yellowish Brown Color	0% Rock
10YR 5/4	



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
Depth to Bedrock and Type: Not Encountered
Depth to Proposed Infiltrative Surface from Ground Surface: Min. 36" Deep, Max. 48" Deep
Soil Treatment Area Slope and Direction: West/Southwest @ 7%

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: 22-0890
Sheet: 2 of 2
Date: 13 Oct 2022
Scale: 1/4" = 1'
Drawn by: rah
Checked by: djp

Project Name and Address

Ginger Spence

0 Davis Road- A
Sch. No. Unknown
El Paso County, Colorado

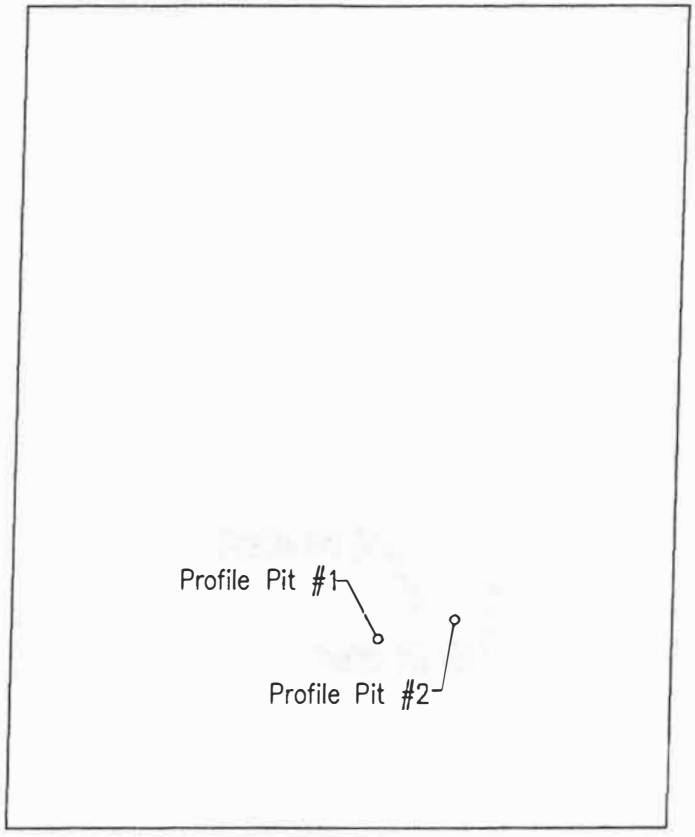
GEOQUEST, LLC.
6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204

GEOQUEST LLC

SITE MAP

14090 Davis Road
Lot 1
El Paso County
Colorado
Job #22-0890



To Davis Road

N

0 25 50 75 100 125

GRAPHIC SCALE IN FEET
SCALE: 1" = 125'

Location from Southeast Lot Corner to Profile Pit #1: N. 48° W. - 212'
Location from Profile Pit #1 to Profile Pit #2: N. 76° E. -50'
GPS Coordinates Profile Pit #1: N. 38° 52' 12.42" , W. 104° 34' 1.01"
GPS Coordinates Profile Pit #2: N. 38° 52' 12.67" , W. 104° 34' 0.31"

GEOQUEST, LLC
5072 List Drive
Colorado Springs, CO 80919
(719) 481-4560

PROFILE PIT EVALUATION

FOR

GINGER SPENCE

JOB #22-0889

Lot 2
0 Davis Road,
El Paso County,
Colorado

Sincerely,

Douglas J Pretzer

Douglas J. Pretzer, P.E.
Civil Engineer

PROFILE PIT FINDINGS

Enclosed are the results of the profile pit for the septic system to be installed at **Site B, 0 Davis Road, El Paso County, Colorado.** The location of the test pits was determined by Ginger Spence. 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 2% at least 20 feet. All applicable portions of the El Paso County Public Health Department Onsite Wastewater Treatment System Regulations (OWTS) must be complied with for the installation of the treatment system.

The inspection was performed on October 3, 2022, 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 8' - USDA soil texture sandy loam, soil type 2A, structure shape blocky, structure grade 1, non-cemented, LTAR 0.50, yellowish brown in color, 10 YR 5/4, 0% rock.

Soil Profile #2:

0 to 6" - Topsoil - loam, organic composition.

6" to 8' - USDA soil texture sandy loam, soil type 2A, structure shape blocky, structure grade 1, non-cemented, LTAR 0.50, yellowish brown in color, 10 YR 5/4, 0% rock.

Groundwater was not encountered during the inspection. Bedrock was not encountered 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 USDA soil type 2A, the septic system to be installed on this site need not be designed by a Colorado Licensed Engineer. A conventional septic system is approved for this site. Based on the observed conditions, we feel a design based on an LTAR of 0.50 GPD/SF (USDA soil type 2A, treatment soil, treatment level 1) is reasonable. Maximum depth of the installation shall not be deeper than 4 feet below the existing grade.

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 overcast skies with moderate temperatures.

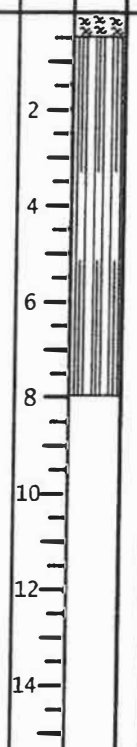
PROFILE PIT LOG - Profile Pit #1

JOB#: 22-0889
DATE EVALUATED: 3 October 2022
EQUIPMENT USED: MINI EX

0"-6" **TOPSOIL**
Loam
Organic Composition

6"- 8' **Sand**
Fine-coarse Grained
Moderate-high Density
Low Moisture Content
Low Clay Content
Low Cohesion
Low Plasticity
Yellowish Brown Color
10YR 5/4

USDA Soil Texture: Sandy Loam
USDA Soil Type: 2A
USDA Structure Shape: Blocky
USDA Structure Grade: 1
Cementation Class: Non-cemented
Long Term Acceptance Rate (LTAR, Treatment Level 1):0.50
0% Rock



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
Depth to Bedrock and Type: Not Encountered
Depth to Proposed Infiltrative Surface from Ground Surface: Maximum 4ft Below Existing Ground Surface
Soil Treatment Area Slope and Direction: Southeast @ 2%

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: 22-0889
Sheet: 1 of 2
Date: 13 Oct 2022
Scale: 1/4" = 1'
Drawn by: rah
Checked by: djp

Project Name and Address

Ginger Spence

0 Davis Road- B
Sch. No. Unknown
El Paso County, Colorado

GEOQUEST, LLC.
6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204

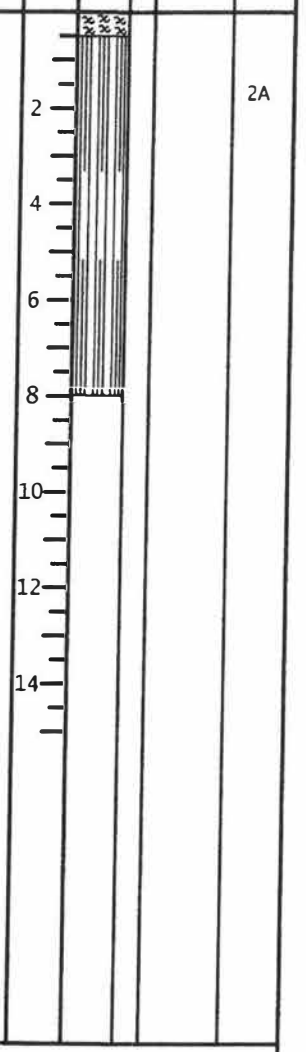
PROFILE PIT LOG - Profile Pit #2

JOB#: 22-0889
DATE EVALUATED: 3 October 2022
EQUIPMENT USED: MINI EX

0"-6" **TOPSOIL**
Loam
Organic Composition

6"- 8' **Sand**
Fine-coarse Grained
Moderate-high Density
Low Moisture Content
Low Clay Content
Low Cohesion
Low Plasticity
Yellowish Brown Color
10YR 5/4

USDA Soil Texture: Sandy Loam
USDA Soil Type: 2A
USDA Structure Shape: Blocky
USDA Structure Grade: 1
Cementation Class: Non-cemented
Long Term Acceptance Rate (LTAR, Treatment Level 1):0.50
0% Rock



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
Depth to Bedrock and Type: Not Encountered
Depth to Proposed Infiltrative Surface from Ground Surface: Maximum 4ft Below Existing Ground Surface
Soil Treatment Area Slope and Direction: Southeast @ 2%

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: 22-0889
Sheet: 2 of 2
Date: 13 Oct 2022
Scale: 1/4" = 1'
Drawn by: rah
Checked by: djp

Project Name and Address

Ginger Spence

0 Davis Road- B
Sch. No. Unknown
El Paso County, Colorado

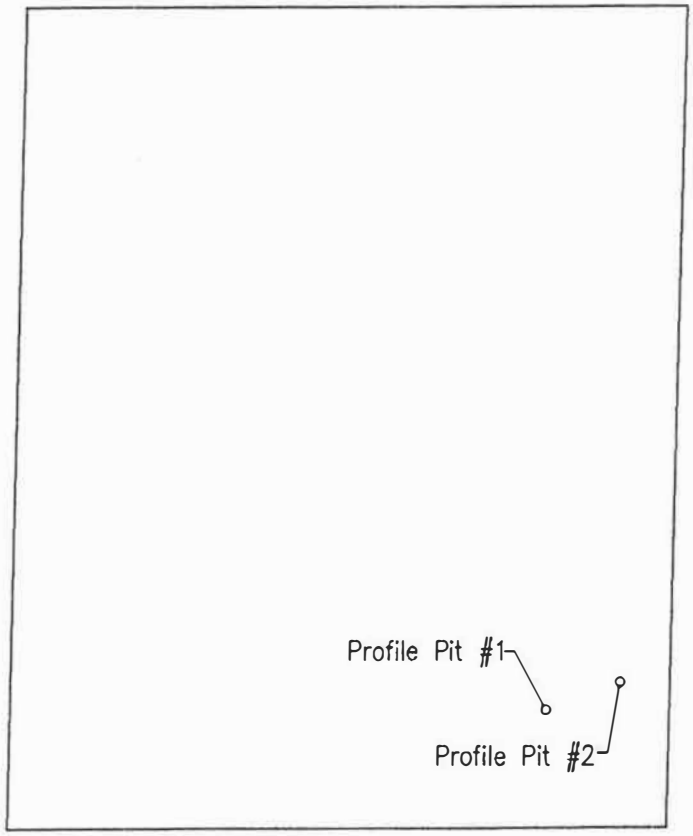
GEOQUEST, LLC.
6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204

GEOQUEST LLC

SITE MAP

14090 Davis Road
Lot 2
El Paso County
Colorado
Job #22-0889



To Davis Road

N

0 25 50 75 100 125
GRAPHIC SCALE IN FEET
SCALE: 1" = 125'

Location from Southeast Lot Corner to Profile Pit #1: N. 45° W. - 108'
Location from Profile Pit #1 to Profile Pit #2: N. 70° E. - 50'
GPS Coordinates Profile Pit #1: N. 38° 52' 11.88" , W. 104° 33' 54.71"
GPS Coordinates Profile Pit #2: N. 38° 52' 12.04" , W. 104° 33' 54.09"

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

PROFILE PIT EVALUATION

FOR

GINGER SPENCE

JOB #22-0662

Lot 3
0 Davis Road,
El Paso County,
Colorado

Sincerely,

Douglas J. Pretzer, P.E.
Civil Engineer

COLORADO LICENSED
DOUGLAS J PRETZER
55147
8/22/22
PROFESSIONAL ENGINEER

PROFILE PIT FINDINGS

Enclosed are the results of the profile pit for the septic system to be installed at **0 Davis Road, El Paso County, Colorado.** The location of the test pits was determined by Ginger Spence. 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 east at approximately 4% at least 20 feet. All applicable portions of the El Paso County Public Health Department Onsite Wastewater Treatment System Regulations (OWTS) must be complied with for the installation of the treatment system.

The inspection was performed on August 3, 2022, in accordance with Table 10-1 of the **E.P.C.P.H. OWTS Regulations.**

Soil Profile #1:

0 to 4" - Topsoil - loam, organic composition.

4" to 8" - USDA soil texture sandy clay loam, soil type 3, structure shape blocky, structure grade 2, non-cemented, LTAR 0.35, dark yellowish brown in color, 10 YR 4/4, 0% rock.

Soil Profile #2:

0 to 4" - Topsoil - loam, organic composition.

4" to 8" - USDA soil texture sandy clay loam, soil type 3, structure shape blocky, structure grade 2, non-cemented, LTAR 0.35, dark yellowish brown in color, 10 YR 4/4, 0% rock.

Groundwater was not encountered during the inspection. Bedrock was not encountered 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 USDA soil type 3, the septic system to be installed on this site need not be designed by a Colorado Licensed Engineer. A conventional septic system is approved for this site. Based on the observed conditions, we feel a design based on an LTAR of 0.35 GPD/SF (USDA 3, treatment soil, treatment level 1) is reasonable. Maximum depth of the installation shall not be deeper than 4 feet below the existing grade.

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 hot temperatures.

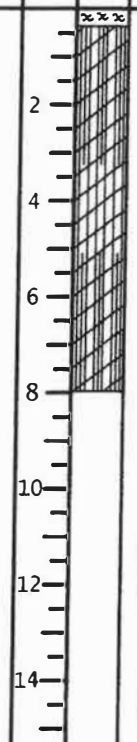
PROFILE PIT LOG - Profile Pit #1

JOB#: 22-0662
DATE EVALUATED: 3 August 2022
EQUIPMENT USED: MINI EX

0"-4" **TOPSOIL**
Loam
Organic Composition

4"- 8' **Clayey Sand**
Fine-coarse Grained
High Density
Low Moisture Content
Moderate Clay Content
Low-moderate Cohesion
Low-moderate Plasticity
Dark Yellowish Brown Color
10YR 4/4

USDA Soil Texture: Sandy Clay Loam
USDA Soil Type: 3
USDA Structure Shape: Blocky
USDA Structure Grade: 2
Cementation Class: Non-cemented
Long Term Acceptance Rate (LTAR, Treatment Level 1):0.35
0% Rock



LTAR to be Used for OWTS Sizing: **0.35GPD/SF (USDA Type 3, Treatment soil, Treatment Level 1)**
Depth to Groundwater (Permanent or Seasonal): Not Encountered
Depth to Bedrock and Type: Not Encountered
Depth to Proposed Infiltrative Surface from Ground Surface: Unknown (Maximum 4ft Below Existing Ground Surface)
Soil Treatment Area Slope and Direction: East @ 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: 22-0662	Project Name and Address
Sheet: 1 of 2	Ginger Spence
Date: 10 Aug 2022	0 Davis Road
	Sch. No. Unknown
	El Paso County, Colorado
Scale: 1/4" = 1'	
Drawn by: rah	
Checked by: djp	

GEOQUEST, LLC.
6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204

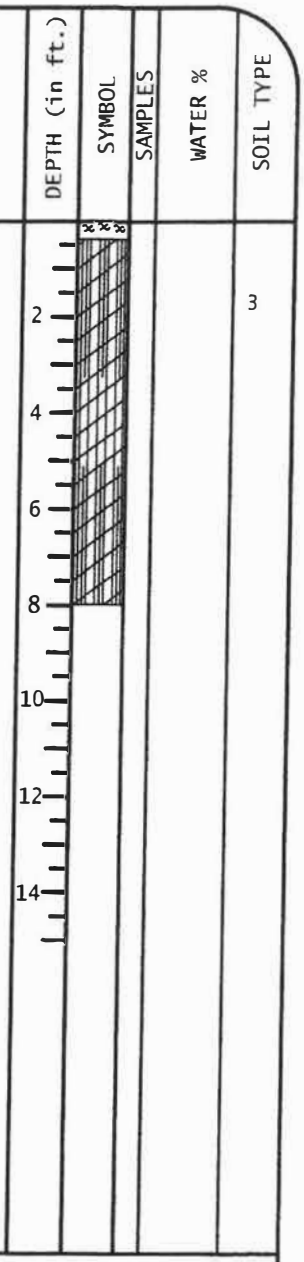
PROFILE PIT LOG - Profile Pit #2

JOB#: 22-0662
DATE EVALUATED: 3 August 2022
EQUIPMENT USED: MINI EX

0"-4" **TOPSOIL**
Loam
Organic Composition

4"- 8' **Clayey Sand**
Fine-coarse Grained
High Density
Low Moisture Content
Low-moderate Clay Content
Low-moderate Cohesion
Low-moderate Plasticity
Dark Yellowish Brown Color
10YR 4/4

USDA Soil Texture: Sandy Clay Loam
USDA Soil Type: 3
USDA Structure Shape: Blocky
USDA Structure Grade: 2
Cementation Class: Non-cemented
Long Term Acceptance Rate (LTAR, Treatment Level 1):0.35
0% Rock



LTAR to be Used for OWTS Sizing: **0.35GPD/SF (USDA Type 3, Treatment soil, Treatment Level 1)**
Depth to Groundwater (Permanent or Seasonal): Not Encountered
Depth to Bedrock and Type: Not Encountered
Depth to Proposed Infiltrative Surface from Ground Surface: Unknown (Maximum 4ft Below Existing Ground Surface)
Soil Treatment Area Slope and Direction: East @ 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: 22-0662
Sheet: 2 of 2
Date: 10 Aug 2022
Scale: 1/4" = 1'
Drawn by: rah
Checked by: djp

Project Name and Address

Ginger Spence

0 Davis Road
Sch. No. Unknown
El Paso County, Colorado

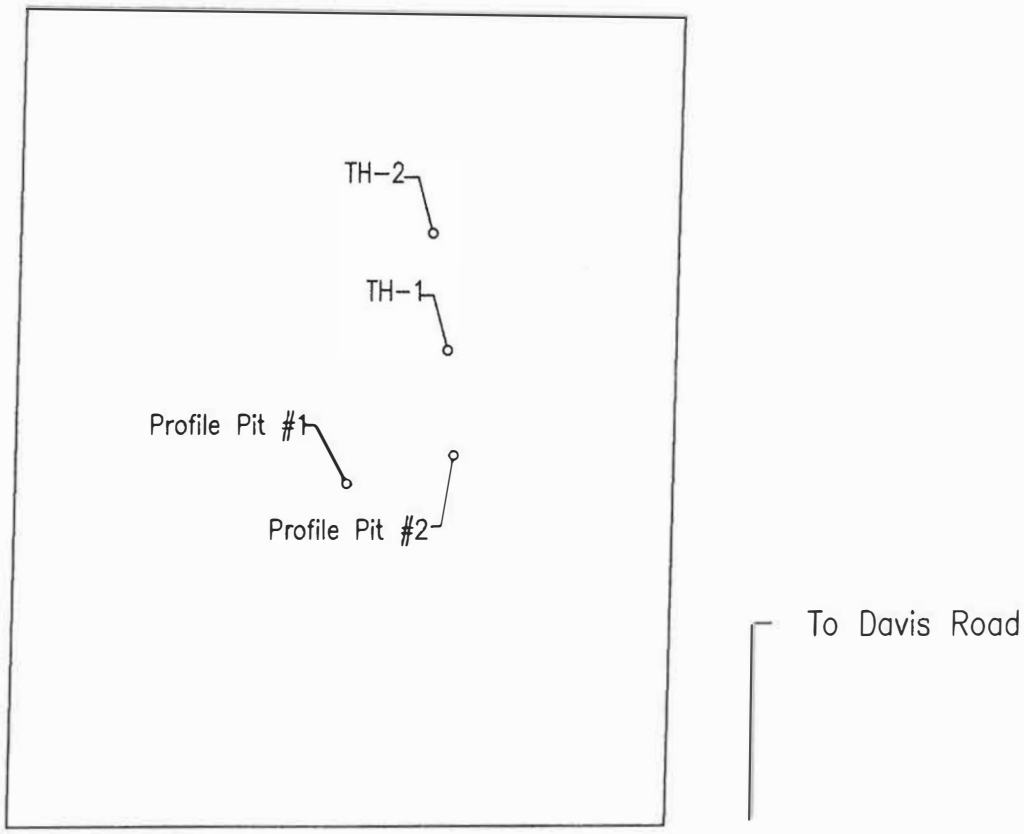
GEOQUEST, LLC.
6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204

GEOQUEST LLC

SITE MAP

14090 Davis Road
Lot 3
El Paso County
Colorado
Job #22-0662



N

0 25 50 75 100 125
GRAPHIC SCALE IN FEET
SCALE: 1" = 125'

Location from Northeast Lot Corner to Profile Pit #1: S. 35° W. - 363'
Location from Profile Pit #1 to Profile Pit #2: N. 75° E. -70'
GPS Coordinates Profile Pit #1: N. 38° 52' 13.3" , W. 104° 33' 51.2"
GPS Coordinates Profile Pit #2: N. 38° 52' 13.5" , W. 104° 33' 50.3"

APPENDIX D: ENTECH REPORT

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

November 10, 2022

Ginger Spence
14090 Davis Road
El Paso County, Colorado 80831

Re: Soil, Geology, and Geologic Hazard Study
4-Lot Minor Subdivision
Parcel No. 43330-00-016
14090 Davis Road
El Paso County, Colorado
Entech Job No. 221987

Dear Mr. Spence:

The project consists of subdividing 37.134-acres. A four lot rural residential subdivision is proposed. The existing home and out buildings on Lot 4 will remain, and three new lots are proposed along the northern side of the property. The site is located north and east of Davis Road and North Blaney Road, in El Paso County.

GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in a portion of the SW¼ of SE¼ of Section 33 Township 13 South, Range 64 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately 5 miles east of Colorado Springs, north and east of the intersection of Davis Road and North Blaney Road, in El Paso County, Colorado. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site is generally gradually sloping to the south-southeast. A low area is located in the southern portion of the site on proposed Lot 4. Water was not observed in the drainage at the time of this investigation. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have included undeveloped agricultural and rural residential. The site contains field grasses, weeds, yucca, cacti, and trees around the existing house. The existing house with a water well and septic system located on Lot 4, will remain. Site photographs were taken and site mapping was completed on was October 11, 2022, and are included in appendix A. Test Borings were drilled on October 11, 2022.

Total acreage involved in the proposed subdivision is 37.134-acres. Four rural residential lots are proposed. The proposed lot sizes range from 5.0-acres to 21.32-acres. The existing house and barns located on Lot 4 will remain. The new lots will be serviced by individual wells and on-site wastewater treatment systems. The Site Plan/Test Boring Location Map is presented in Figure 3.

LAND USE AND ENGINEERING GEOLOGY

This site was found to be suitable for the proposed development. Areas were encountered where the geologic conditions will impose some constraints on development and land use. These include areas of hydrocompaction, and potentially seasonal shallow groundwater. Based on the proposed development plan, it appears that these areas will have minor impacts on the development. These conditions will be discussed in greater detail in the report.

In general, it is our opinion that the development can be achieved if the observed geologic conditions on site are either avoided or properly mitigated. All recommendations are subject to the limitations discussed in the report.

SCOPE OF THE REPORT

A general geologic analysis utilizing published geologic data. Detailed site-specific mapping was conducted to obtain general information in respect to major geographic and geologic features, geologic descriptions and their effects on the development of the property.

FIELD INVESTIGATION

Our field investigation consisted of the preparation of a geologic map of bedrock features and significant surficial deposits. The Natural Resource Conservation Service (NRCS), previously the Soil Conservation Service (SCS) survey was also reviewed to evaluate the site. The position of mappable units within the subject property are shown on the Geologic Map. Our mapping procedures involved both field reconnaissance and measurements, and aerial photo reconnaissance and interpretation. The same mapping procedures have also been utilized to produce the Geology/Engineering Geology Map which identified pertinent geologic conditions affecting development. The field mapping was performed by personnel of Entech Engineering, Inc. on October 11, 2022.

Two test borings were drilled on the site to determine general suitability of the soil characteristics for residential construction. The locations of the test borings are indicated on the Site Plan/Test Boring Location Map, Figure 3. The Test Boring Logs are presented in Appendix B. Results of this testing will be discussed later in this report.

Laboratory testing was also performed on some of the soils to classify and determine the soils engineering characteristics. Laboratory tests included grain-size analysis, ASTM D-422. Results of the laboratory testing are included in Appendix C.

PREVIOUS INVESTIGATIONS

A Soils Report and Profile Pit Evaluation were previously performed on proposed Lot 3 by Geoquest, LLC (References 1 and 2, Appendix D). The investigation consisted of drilling two test borings to 15 feet in the proposed building footprint, and two test pits in the proposed soil treatment area.

SOIL AND GEOLOGIC CONDITIONS

Soil Survey

The Natural Resource Conservation Service (NRCS) (Reference 3, Figure 4), previously the Soil Conservation Service (Reference 4) has mapped three soil types on the site. Complete descriptions of the soil types are presented in Appendix E. In general, the soils consist of loamy sand and sandy loam. The soils are described as follows:

Type	Description
8	Blakeland Loamy Sand, 1 – 9% Slopes
86	Stoneham Sandy Loam, 3 – 8% Slopes
97	Truckton Sandy Loam, 3 – 9% Slopes

The soils have been described to have rapid permeabilities. The soils are described as well suited for use as home sites. Possible hazards with soils erosion are present on the site. The erosion potential can be controlled with vegetation. The soils have been described to have moderate erosion hazards (Reference 4).

Soils

The soils encountered in the test borings can be grouped into one general soil type. The soils were classified using the Unified Soil Classification System (USCS).

Soil Type 1 is a slightly silty to silty sand (SM). The sand soils were encountered in both of the test borings at depths ranging from the existing surface grade and extending to the termination of test borings (20 feet). These soils were encountered at medium dense states and at dry to moist conditions. Samples tested had approximately 21 to 27 percent of the soil size particles passing the No. 200 Sieve.

Groundwater

Groundwater was not encountered in the test borings which were drilled to depths of 20 feet. Groundwater is not anticipated to affect shallow foundations on the majority of the site. A low lying area in the southern portion of the site has been identified as a potentially seasonal shallow groundwater area, and is discussed further later in this report. Fluctuations in groundwater conditions may occur due to variations in rainfall or other factors not readily apparent at this time. Isolated sand layers within the soil profile can carry water in the subsurface. Contractors should be cognizant of the potential for the occurrence of subsurface water features during construction.

Geology

Approximately 17 miles west of the site is a major structural feature known as the Rampart Range Fault. This fault marks the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. The site exists within a large structural feature known as the Denver Basin. Bedrock in the area is typically gently dipping in a northwesterly direction (Reference 5). The bedrock underlying the site consists of the Dawson Formation of Tertiary to Cretaceous Age. The Dawson Formation typically consists of coarse-grained arkosic sandstone with interbedded layers of claystone or siltstone.

The geology of the site was evaluated using the *Geologic Map of the Corral Bluffs Quadrangle,* by Soister in 1968, (Reference 6, Figure 5). The Geology Map for the site is presented in Figure 6. One mappable unit was identified on this site which are described as follows:

Qes **Eolian Sad of Quaternary Age:** These are windblown fine grained sands that were deposited by the action of the prevailing winds from the west and northwest. They typically occur as large dune deposits or narrow ridges. The soils are typically tan to brown and have a uniform gradation. The materials tend to have a high permeability and low density.

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Corral Bluffs Quadrangle* distributed by the US Geological Survey in 1968 (Reference 6, Figure 5), the *Geologic Map of the Colorado Springs-Castle Rock Area,* distributed by the US Geological Survey in 1979 (Reference 7), and the *Geologic Map of the Pueblo 1° x 2° Quadrangle,* distributed by the US Geological Survey in 1978 (Reference 8). The test borings and test pits logs used in evaluating the site and are included in Appendix B. The Geology Map prepared for the site is presented in Figure 6.

ENGINEERING GEOLOGIC HAZARDS

Mapping has been performed on this site to identify areas where various geologic conditions exist of which developers should be cognizant during the planning, design and construction stages where new construction is proposed. The engineering geologic constraints identified on this site include hydrocompaction, and potentially seasonal shallow groundwater, as indicated on the Engineering Geology Map, Figure 6. Potential Hazards including expansive soils and minor drainage swales, have also been addressed below. These hazards and recommended mitigation techniques are discussed as follows:

Hydrocompaction – Constraint

Areas in which this hazard has been identified are acceptable as building sites. However, in areas identified for this hazard classification, we anticipate a potential for settlement movements upon saturation of these surficial soils. The low density, uniform grain sized, windblown sand deposits are particularly susceptible to this type of phenomenon.

Mitigation: The potential for settlement movement is directly related to saturation of the soils below the foundation areas. Therefore, good surface and subsurface drainage is extremely critical in these areas in order to minimize the potential for saturation of these soils. The ground surface around all permanent structures should be positively sloped away from the structure to all points, and water must not be allowed to stand or pond anywhere on the site. We recommend that the ground surface within 10 feet of the structures be sloped away with a minimum gradient of ten percent. If this is not possible on the upslope side of the structures, then a well-defined swale should be created to intercept the surface water and carry it quickly and safely around and away from the structures. Roof drains should be made to discharge well away from the structures and into areas of positive drainage. Where several structures are involved, the overall drainage design should be such that water directed away from one structure is not directed against an adjacent building. Planting and watering in the immediate vicinity of the structures, as well as general lawn irrigation, should be minimized.

Drainage Areas

A low-lying area drainage areas exist in the southern portion of the site on proposed Lot 4. This area appears to be associated with older blowout feature and surrounded by older sand dune ridges. No water was observed in the low-lying area, however, this area has the potential for seasonal shallow groundwater. This area is indicated in the Geology/Engineering Geology Map (Figure 6) and are discussed below. Due to the size of the proposed lot this area can be avoided by future development. The site does not lie within any floodplain zones according to the FEMA Map No. 08041CO780G dated December 7, 2018 (Figure 7, Reference 9). Exact locations of floodplain and specific drainage studies are beyond the scope of this report.

Potentially Seasonal Shallow Groundwater Area - Constraint

The low-lying area in the southern portion of the site on proposed Lot 4 has been identified as a potentially seasonal shallow groundwater area. In this area we would anticipate the potential for periodically high subsurface moisture conditions, frost heave potential and highly organic soils. This area lies within defined minor drainage and can be avoided by the proposed development. Construction in any portions of these areas, if required, or immediately adjacent to these areas should follow these precautions.

Mitigation: Foundations must have a minimum 30-inch depth for frost protection. In areas where high subsurface moisture conditions are anticipated periodically, subsurface perimeter drains are recommended to help prevent the intrusion of water into areas below grade. Typical drain details are presented in Figure 8. Any grading in these areas should be done to direct surface flow around construction to avoid areas of ponded water. All organic material would be completely removed prior to any fill placement. **Specific drainage studies are beyond the scope of this report.**

RELEVANCE OF GEOLOGIC CONDITIONS TO LAND USE PLANNING

The proposed development will be rural-residential utilizing individual on-site wastewater treatment systems and water wells. Four rural residential lots are proposed. The lot sizes range from 5.0-acres to 21.32-acres. The existing house and out buildings located on proposed Lot 4 will remain. The new lots will be serviced by individual wells and on-site wastewater treatment systems. The existing geologic and engineering geologic conditions will impose minor constraints on development and construction. The geologic constraints on the site include hydrocompaction, and potentially seasonal shallow groundwater areas which can be satisfactorily mitigated through avoidance or proper engineering design and construction practices.

The upper granular soils encountered in the test borings on the site were encountered at medium dense states. Moderate allowable bearing capacities should be expected, and excavation of the site sands should be moderate with rubber-tired equipment.

The site has been mapped as eolian sands with the potential for hydrocompation. Areas in which this hazard has been identified are acceptable as building sites. However, in areas identified for this hazard classification, we anticipate a potential for settlement movements upon saturation of these surficial soils. The low density, uniform grain sized, windblown sand deposits are particularly susceptible to this type of phenomenon

The low-lying area in the southern portion of the site on proposed Lot 4 has been identified as a potentially seasonal shallow groundwater area. In this area we would anticipate the potential for periodically high subsurface moisture conditions, frost heave potential and highly organic soils. This area lies within defined minor drainage and can be avoided by the proposed development. Construction in any portions of these areas, if required, or immediately adjacent to these areas should follow these precautions. Since the house is to remain on Lot 4 this area should not be a factor.

In summary, the granular soils will likely provide good support for shallow foundations. The geologic conditions encountered on site can be mitigated with avoidance or proper engineering and construction practices.

ECONOMIC MINERAL RESOURCES

Some of the sandy materials on-site could be considered a low grade sand resource. According to the El Paso County Aggregate Resource Evaluation Map (Reference 11), the area of the site is mapped as upland deposits. According to the Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties distributed by the Colorado Geological Survey (Reference 12) the site is mapped as U3 – Upland deposits: sand, fine aggregates. According to the Evaluation of Mineral and Mineral Fuel Potential (Reference 9), the area of the site has been mapped as "Fair" for industrial minerals. Considering the silty nature of much of the materials encountered on site and abundance of similar materials through the region, they would be considered to have little significance as an economic resource.

According to the Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands (Reference 12), the site is mapped within the Denver Basin Coal Region. The area of the site has been mapped as "Fair" for coal resources. No metallic mineral resources have been mapped on the site (Reference 12).

The site has been mapped as "Fair to Good" for oil and gas resources (Reference 12). No oil or gas fields have been discovered in the area of the site. Wells have been drilled southwest of the site, but no oil or gas was reported and they were plugged and abandoned. The sedimentary rocks in the area lacked the essential elements for oil or gas; therefore, it would not be considered a significant resource.

EROSION CONTROL

The soil types observed on the site are mildly to highly susceptible to wind erosion, and moderately to highly susceptible to water erosion. A minor wind erosion and dust problem may be created for a short time during and immediately after construction. Should the problem be considered severe enough during this time, watering of the cut areas or the use of chemical palliative may be required to control dust. However, once construction has been completed and vegetation re-established, the potential for wind erosion should be considerably reduced.

With regard to water erosion, loosely compacted soils will be the most susceptible to water erosion, residually weathered soils and weathered bedrock materials become increasingly less susceptible to water erosion. For the typical soils observed on site, allowable velocities or unvegetated and unlined earth channels would be on the order of 3 to 4 feet/second, depending upon the sediment load carried by the water. Permissible velocities may be increased through the use of vegetation to something on the order of 4 to 7 feet/second, depending upon the type of vegetation established. Should the anticipated velocities exceed these values, some form of channel lining material may be required to reduce erosion potential. These might consist of some of the synthetic channel lining materials on the market or conventional riprap. In cases where ditch-lining materials are still insufficient to control erosion, small check dams or sediment traps may be required. The check dams will serve to reduce flow velocities, as well as provide small traps for containing sediment. The determination of the amount, location and placement of ditch linings, check dams and of the special erosion control features should be performed by or in conjunction with the drainage engineer who is more familiar with the flow quantities and velocities.

Cut and fill slope areas will be subjected primarily to sheetwash and rill erosion. Unchecked rill erosion can eventually lead to concentrated flows of water and gully erosion. The best means to combat this type of erosion is, where possible, the adequate re-vegetation of cut and fill slopes. Cut and fill slopes having gradients more than three (3) horizontal to one (1) vertical become increasingly more difficult to revegetate successfully. Therefore, recommendations pertaining to the vegetation of the cut and fill slopes may require input from a qualified landscape architect and/or the Soil Conservation Service.

CLOSURE

It is our opinion that the existing geologic engineering and geologic conditions will impose some minor constraints on development and construction of the site. The majority of these conditions can be avoided by construction. Others can be mitigated through proper engineering design and construction practices. The proposed development and use are consistent with anticipated geologic and engineering geologic conditions.

It should be pointed out that because of the nature of data obtained by random sampling of such variable and non-homogeneous materials as soil and rock, it is important that we be informed of any differences observed between surface and subsurface conditions encountered in construction and those assumed in the body of this report. Individual investigations for new

building sites and septic systems will be required prior to construction. Construction and design personnel should be made familiar with the contents of this report. Reporting such discrepancies to Entech Engineering, Inc. soon after they are discovered would be greatly appreciated and could possibly help avoid construction and development problems.

This report has been prepared for Ginger Spence, for application to the proposed project in accordance with generally accepted geologic soil and engineering practices. No other warranty expressed or implied is made.

We trust that this report has provided you with all the information that you required. Should you require additional information, please do not hesitate to contact Entech Engineering, Inc.

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford, P.G.
Geologist

Reviewed by:

Joseph C. Goode, P.E.
President

LLL

Encl.

Entech Job No. 221987
AAprojects/2022/221987 sgs

BIBLIOGRAPHY

1. Geoquest, LLC. dated August 25, 2022. *Soils Report, 0 Davis Road, El Paso County, Colorado.* Geoquest Job No. 22-0662.

2. Geoquest, LLC. dated August 25, 2022. *Profile Pit Evaluation, 0 Davis Road, El Paso County, Colorado.* Geoquest Job No. 22-0662.

3. Natural Resource Conservation *Service,* September 2, 2022. *Web Soil Survey.* United States Department Agriculture, http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

4. United States Department of Agriculture Soil Conservation Service. June 1981. *Soil Survey of El Paso County Area, Colorado.*

5. Scott, Glen R.; Taylor Richard B.; Epis, Rudy C; and Wobus, Reinhard A. 1978. *Geologic Structure Map of the Pueblo 1° x 2° Quadrangle, South-Central Colorado.* Sheet 2. U.S. Geologic Survey. Map I-1022, Sheet 2.

6. Soister, Paul E., 1968. *Geologic map of the Corral Bluffs Quadrangle, El Paso County, Colorado.* USGS, Map GQ-783.

7. Trimble, Donald E. and Machette, Michael N. 1979. *Geologic Map of the Colorado Springs-Castle Rock Area, Front Range Urban Corridor, Colorado.* USGS, Map I-857-F.

8. Scott, Glen R.; Taylor Richard B.; Epis, Rudy C; and Wobus, Reinhard A. 1978. *Geologic Map of the Pueblo 1° x 2° Quadrangle, South-Central Colorado.* Sheet 2. U.S. Geologic Survey. Map I-1022.

9. Federal Emergency Management Agency. December 7, 2018. *Flood Insurance Rate Maps for the City of Colorado Springs, Colorado.* Map Number 08041CO305G.

10. El Paso County Planning Development. December 1995. *El Paso County Aggregate Resource Evaluation Maps.*

11. Schwochow, S.D.; Shroba, R.R. and Wicklein, P.C. 1974. *Atlas of Sand, Gravel, and Quarry Aggregate Resources, Colorado Front Range Counties.* Colorado Geological Survey. Special Publication 5-B.

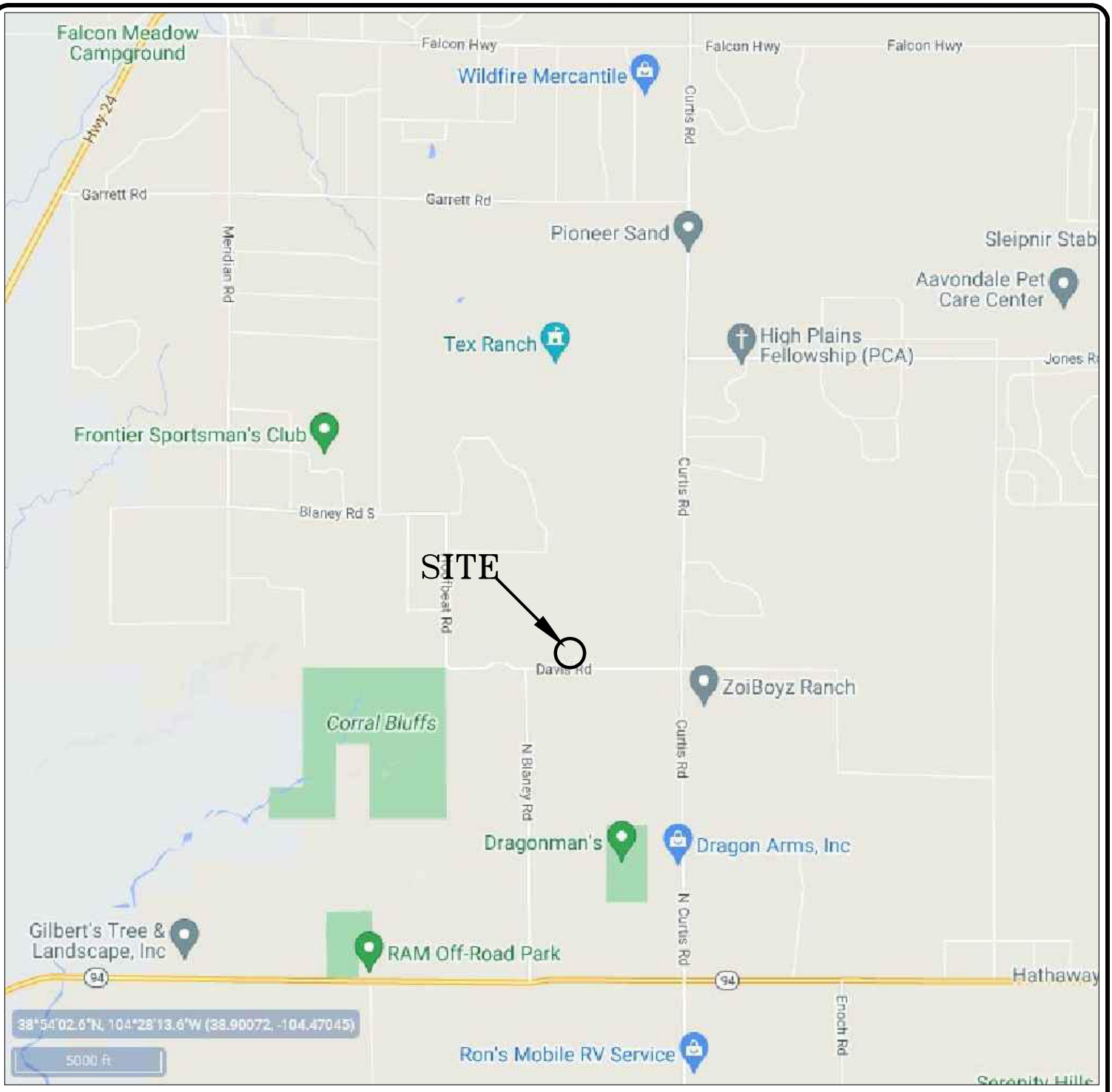
12. Keller, John W.; TerBest, Harry and Garrison, Rachel E. 2003. *Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands Administered by the Colorado State Land Board.* Colorado Geological Survey. Open-File Report 03-07.

TABLES

Table 2: Summary Test Boring Results

Test Boring No.	Depth to Bedrock (ft.)	Depth to Groundwater (ft.)
1	>20	>20
2	>20	>20

FIGURES



N

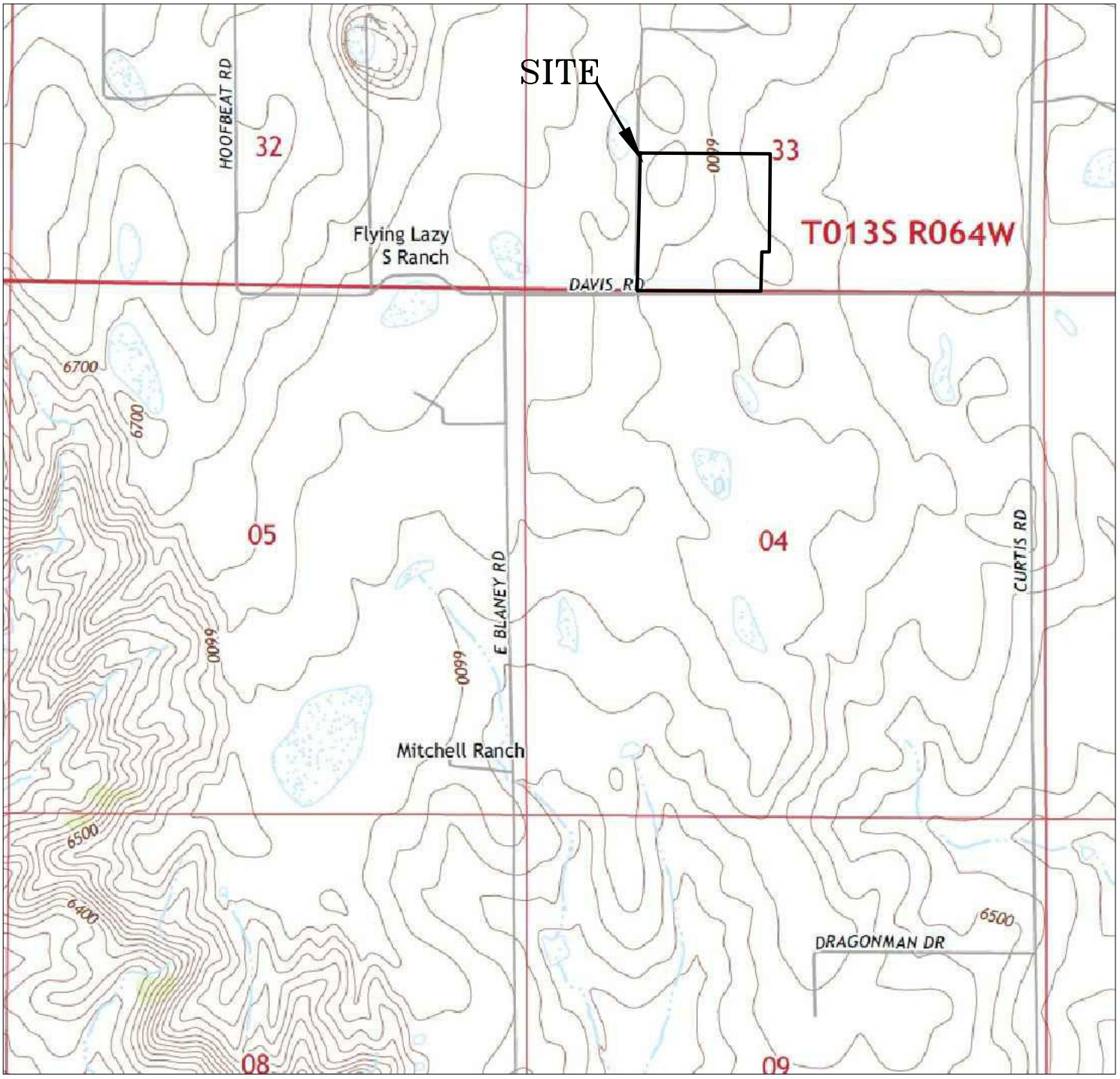
ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

VICINITY MAP
4-LOT MINOR SUBDIVISION
14090 DAVIS ROAD
EL PASO COUNTY, CO.
FOR: GINGER SPENCE

DRAWN:	DATE:	CHECKED:	DATE:
LLL	10/27/22		

JOB NO.: 221987

FIG NO.: 1



N

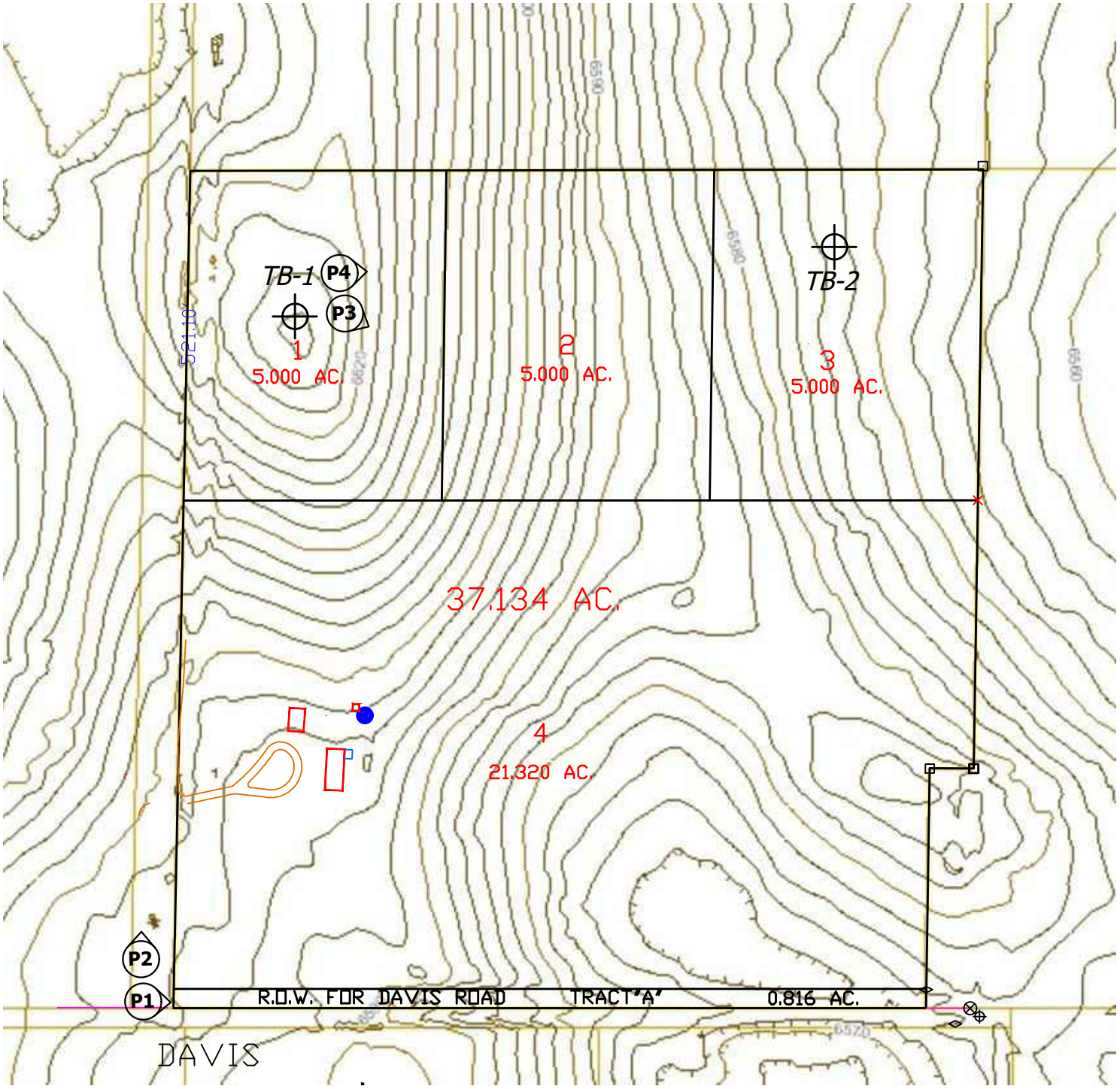
ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

USGS MAP
4-LOT MINOR SUBDIVISION
14090 DAVIS ROAD
EL PASO COUNTY, CO.
FOR: GINGER SPENCE

DRAWN:	DATE:	CHECKED:	DATE:
LLL	10/27/22		

JOB NO.: 221987

FIG NO.: 2



TB- APPROXIMATE TEST BORING LOCATION AND NUMBER

P1 - APPROXIMATE PHOTOGRAPH LOCATION AND DIRECTION

N

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

SITE PLAN/TESTING LOCATION MAP
4-LOT MINOR SUBDIVISION
14090 DAVIS ROAD
EL PASO COUNTY, CO.
FOR: GINGER SPENCE

DRAWN:	DATE:	CHECKED:	DATE:
LLL	10/27/22		

JOB NO.: 221987

FIG NO.: 3

N

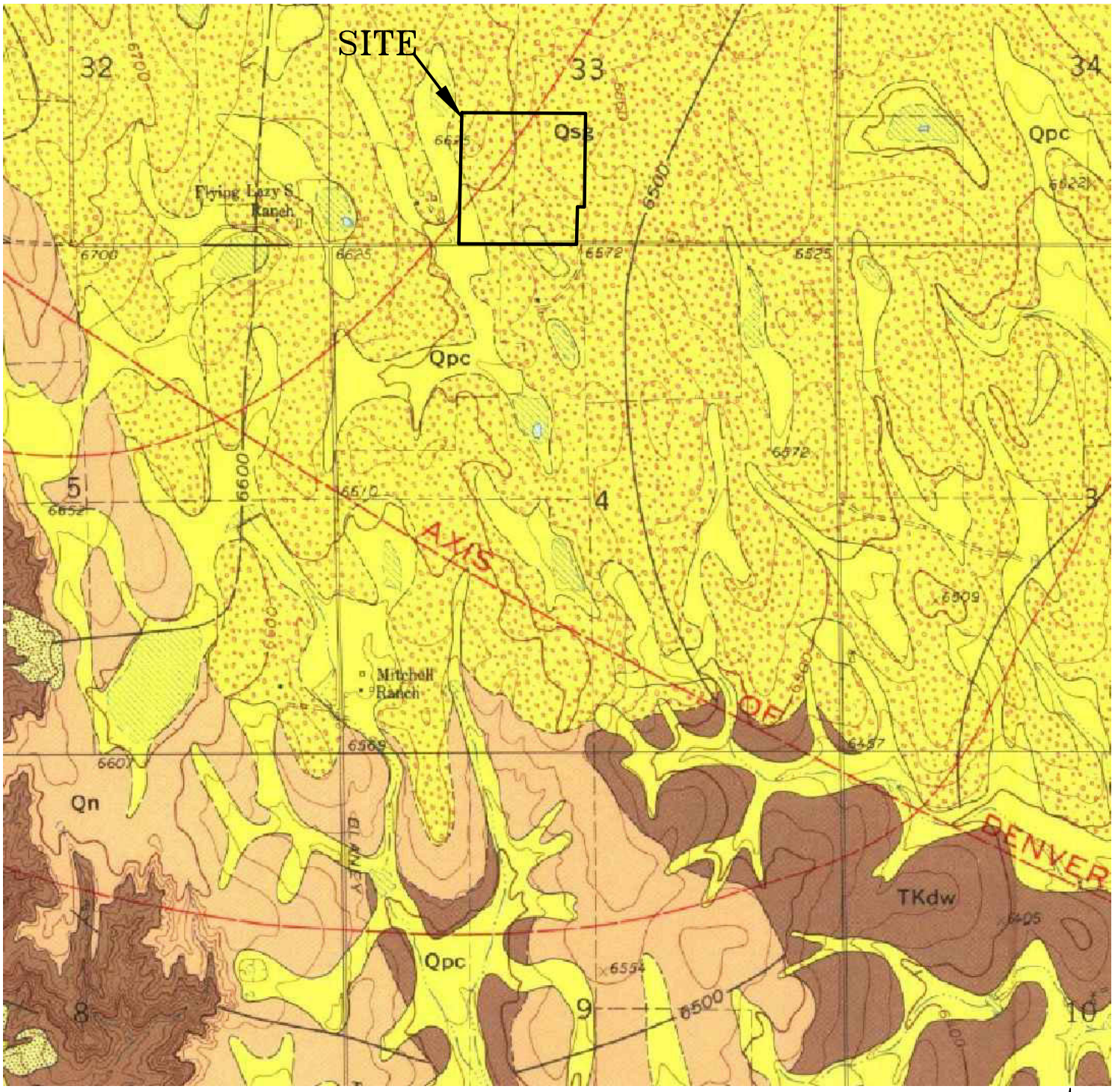
ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

SOIL SURVEY MAP
4-LOT MINOR SUBDIVISION
14090 DAVIS ROAD
EL PASO COUNTY, CO.
FOR: GINGER SPENCE

DRAWN:	DATE:	CHECKED:	DATE:
LLL	10/27/22		

JOB NO.: 221987

FIG NO.: 4



N

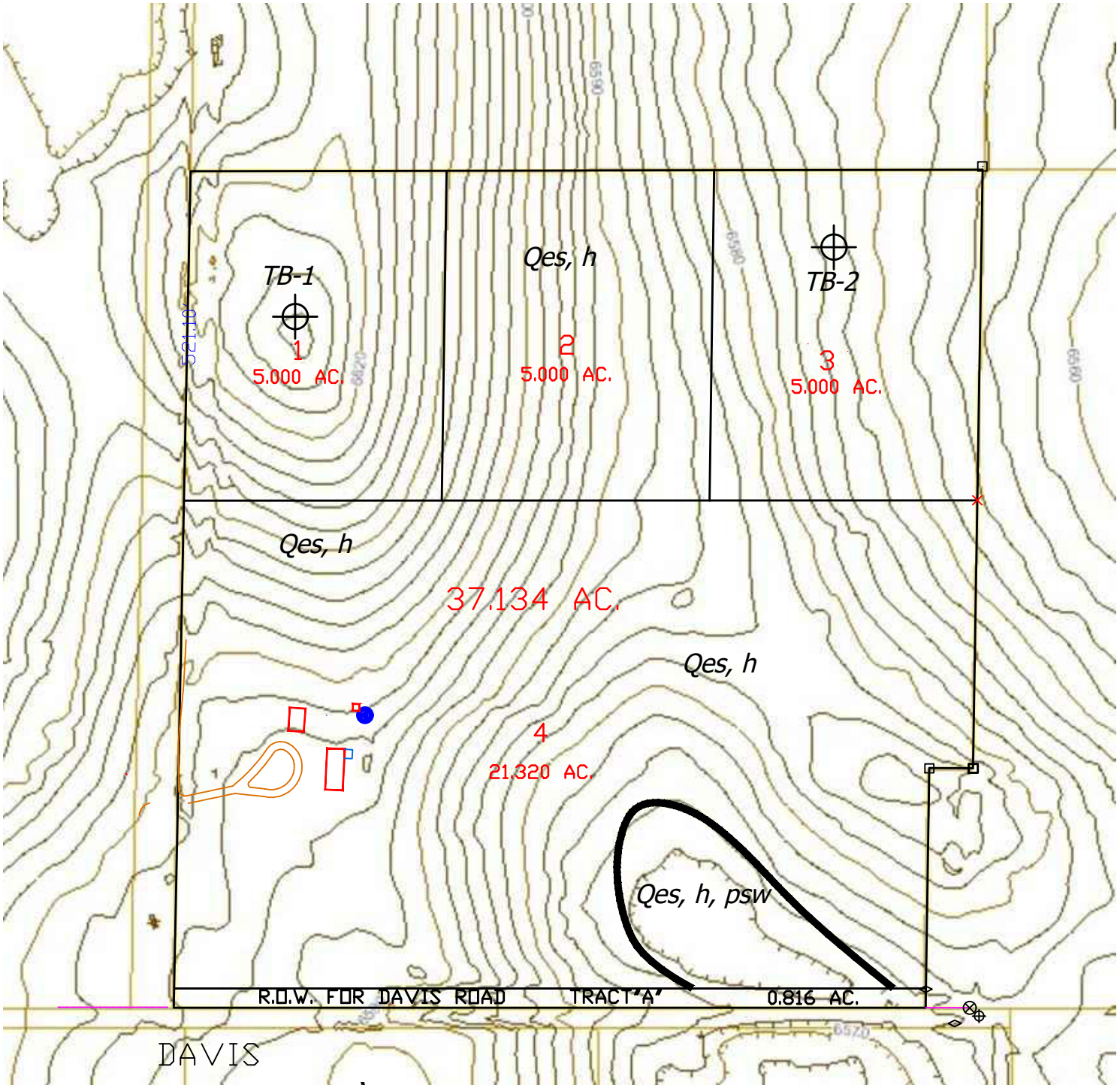
ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

CORRAL BLUFFS QUADRANGLE GEOLOGIC MAP
4-LOT MINOR SUBDIVISION
14090 DAVIS ROAD
EL PASO COUNTY, CO.
FOR: GINGER SPENCE

DRAWN:	DATE:	CHECKED:	DATE:
LLL	10/27/22		

JOB NO.: 221987

FIG NO.: 5



LEGEND

Qes - Eolian Sand of Quaternary Age:
Wind blown sand deposits

h - hydrocompaction
psw - potentially seasonal shallow groundwater

TB- APPROXIMATE TEST BORING LOCATION AND NUMBER

N

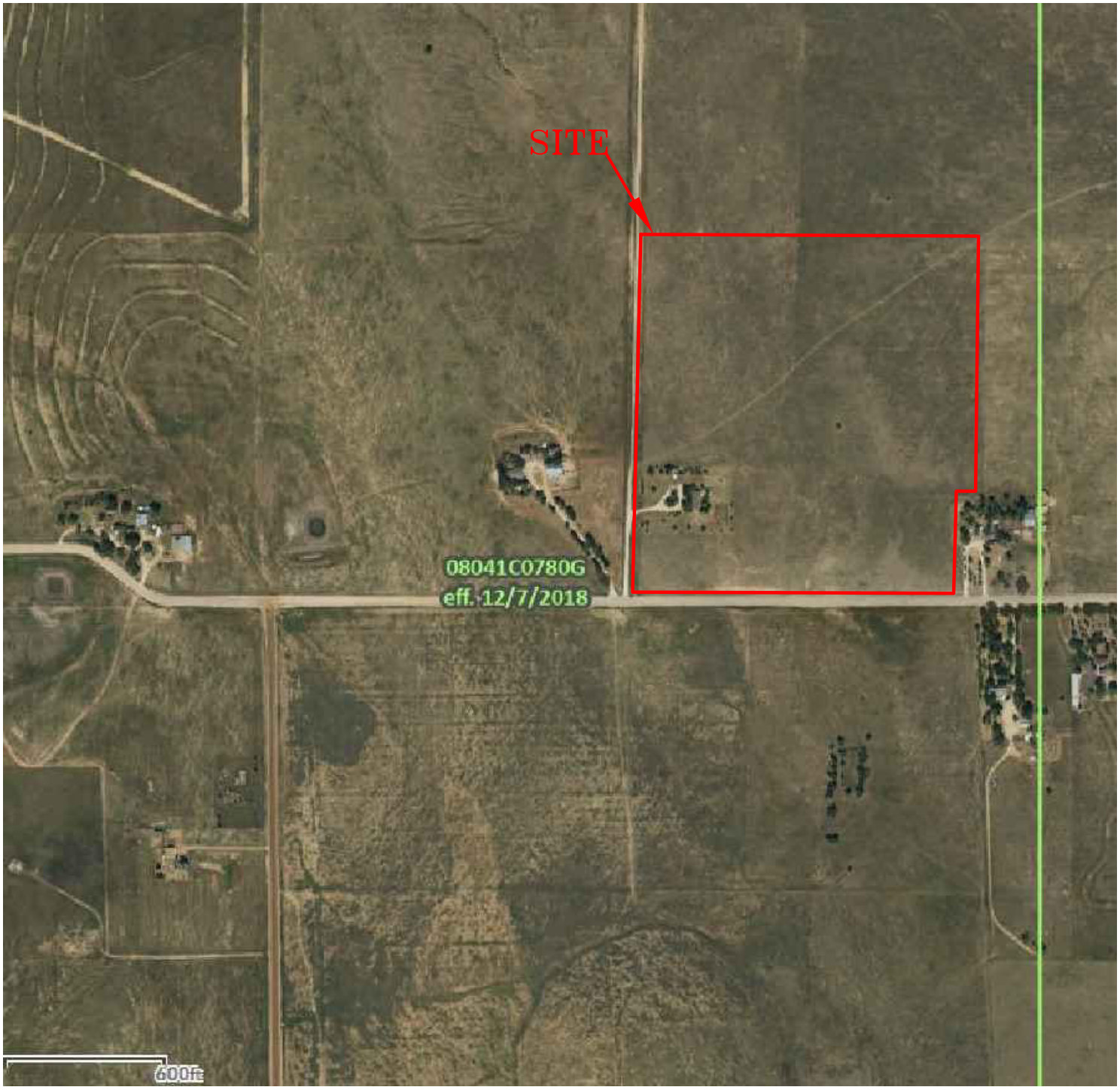
ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

GEOLOGY/ENGINEERING GEOLOGY MAP
4-LOT MINOR SUBDIVISION
14090 DAVIS ROAD
EL PASO COUNTY, CO.
FOR: GINGER SPENCE

DRAWN:	DATE:	CHECKED:	DATE:
LLL	10/27/22		

JOB NO.: 221987

FIG NO.: 6



N

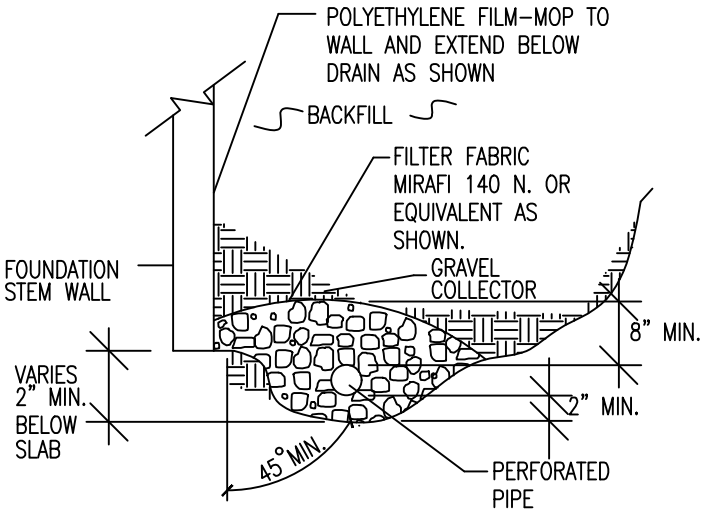
ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

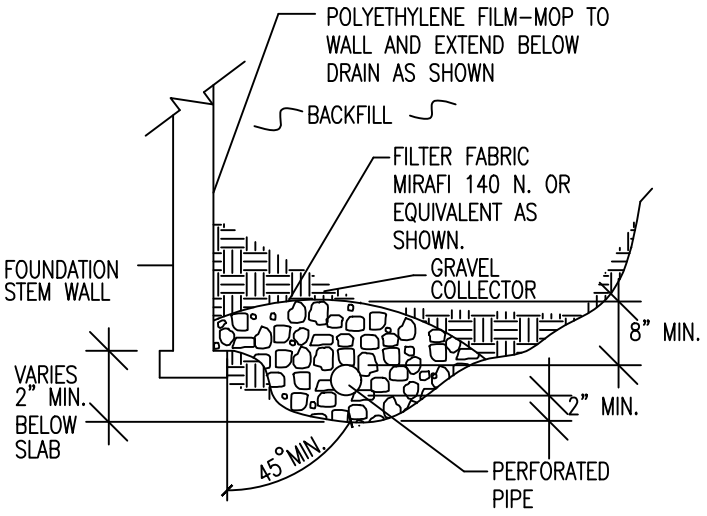
FEMA FLOODPLAIN MAP
4-LOT MINOR SUBDIVISION
14090 DAVIS ROAD
EL PASO COUNTY, CO.
FOR: GINGER SPENCE

DRAWN:	DATE:	CHECKED:	DATE:
LLL	10/27/22		

JOB NO.: 221987

FIG NO.: 7





NOTES:

–GRAVEL SIZE IS RELATED TO DIAMETER OF PIPE PERFORATIONS–85% GRAVEL GREATER THAN 2x PERFORATION DIAMETER.

–PIPE DIAMETER DEPENDS UPON EXPECTED SEEPAGE. 4–INCH DIAMETER IS MOST OFTEN USED.

–ALL PIPE SHALL BE PERFORATED PLASTIC. THE DISCHARGE PORTION OF THE PIPE SHOULD BE NON–PERFORATED PIPE.

–FLEXIBLE PIPE MAY BE USED UP TO 8 FEET IN DEPTH, IF SUCH PIPE IS DESIGNED TO WITHSTAND THE PRESSURES. RIGID PLASTIC PIPE WOULD OTHERWISE BE REQUIRED.

–MINIMUM GRADE FOR DRAIN PIPE TO BE 1% OR 3 INCHES OF FALL IN 25 FEET.

–DRAIN TO BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. A SUMP AND PUMP MAY BE USED IF GRAVITY OUT FALL IS NOT AVAILABLE.

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

PERIMETER DRAIN DETAIL

DRAWN:	DATE:	DESIGNED:	CHECKED:

JOB NO.: 221987

FIG NO.: 8

APPENDIX A: Site Photographs

1

Looking east from the southwest side of the site.

October 11, 2022

2

Looking north from the southwest side of the site.

October 11, 2022

Job No. 221987

3

Looking southeast from the northwest portion of the site.

October 11, 2022

4

Looking east from the northwest portion of the site.

October 11, 2022

Job No. 221987

APPENDIX B: Test Boring Logs

TEST BORING NO. 1
DATE DRILLED 10/11/2022
Job # 221987

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 10/11/22						
SAND, SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE TO LOOSE, DRY TO MOIST				24	2.0	1
	5			23	2.7	1
	10			13	4.9	1
	15			10	7.4	1
	20			8	6.0	1

TEST BORING NO. 2
DATE DRILLED 10/11/2022
CLIENT GINGER SPENCE
LOCATION 14090 DAVIS ROAD

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 10/11/22						
SAND, SILTY, FINE TO COARSE GRAINED, TAN, MEDIUM DENSE TO LOOSE, MOIST				18	4.8	1
	5			21	5.4	1
	10			14	5.0	1
	15			15	9.9	1
	20			27	10.9	1

ENTECH
ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

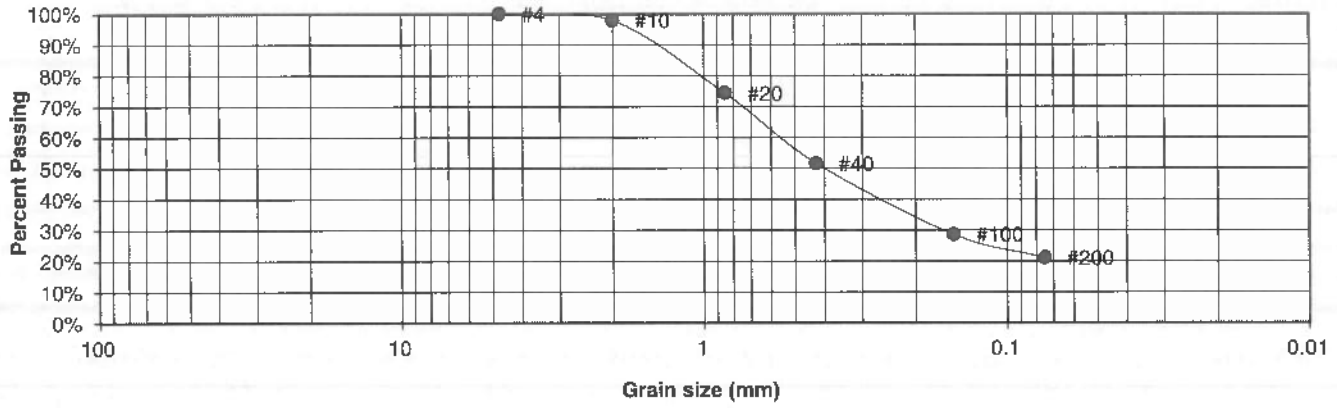
DRAWN:	DATE:	CHECKED:	DATE:
		LLL	10/25/22

JOB NO.: 221987
FIG NO.: B- 1

APPENDIX C: Laboratory Test Results

UNIFIED CLASSIFICATION	SM	CLIENT	GINGER SPENCE
SOIL TYPE #	1	PROJECT	14090 DAVIS ROAD
TEST BORING #	1	JOB NO.	221987
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	97.9%
20	74.3%
40	51.6%
100	28.6%
200	21.1%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

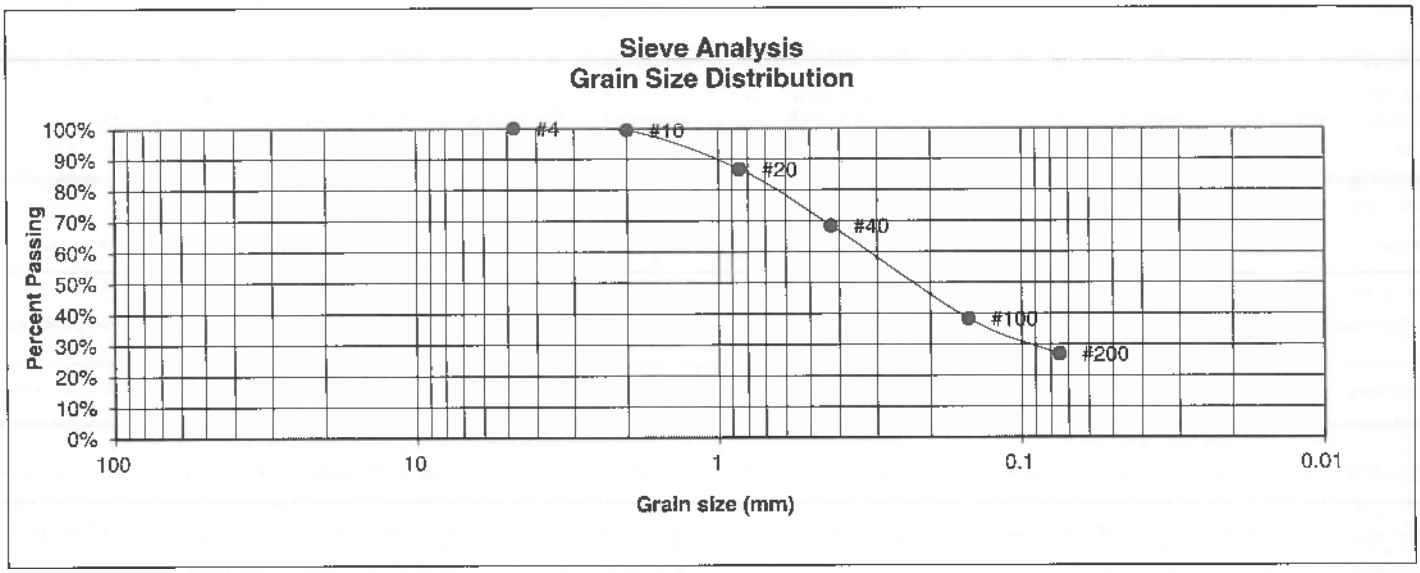
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	10/25/22

JOB NO.: 221987

FIG NO.: C-1

UNIFIED CLASSIFICATION	SM	CLIENT	GINGER SPENCE
SOIL TYPE #	1	PROJECT	14090 DAVIS ROAD
TEST BORING #	2	JOB NO.	221987
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.4%
20	86.7%
40	68.4%
100	38.3%
200	26.9%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LLL	10/25/22

JOB NO.: 221987

FIG NO.: C-2

APPENDIX D: **Geoquest, LLC, Soils Report and Profile Pit Evaluation, Geoquest Job No. 22-0662**

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

19 August 2022

Ginger Spence
14090 Davis Road
Peyton, Colorado 80831

RE: Soil Test Receipt, 0 Davis Road, Geoquest #22-0662

To Whom It May Concern:

Thank you for choosing Geoquest, LLC to perform the Soils Report for the property at the above location.

The attached Soils Report provided by Geoquest, LLC, has been prepared in accordance with the standard of practice. This report does not address possible geologic hazards, environmental hazards, or drainage that exist on-site. There are specific requirements for the design and construction of the foundation of a structure at the location noted in the report. Some of these requirements are placed on the homeowner of the property and may be outside of the builders' control. **Accordingly, we are requiring both the builder and the homeowner to sign this letter indicating both parties have accepted a copy of the report, have read and understood the contents, and know they each have specific responsibilities. Failure to follow the recommendations and requirements of the report by any party can result in unsatisfactory performance of the foundation or building components. The Builder and Owner understand the risks, as noted in the Soils Report, and accept all risk, including movement of slabs.**

After the excavation has been completed an **Open Hole Observation is required** to be performed by the Soils Engineer. **After the Open Hole Observation is complete, the owner/builder should inform the Foundation Engineer of any changes to the soil conditions or allowable bearing. The Open Hole Observation is an additional cost.**

Geoquest, LLC, will not provide any documentation for site inspections until we have received this letter with the required signatures. If the property is being developed as a speculative investment and no homeowner has been contracted to purchase the property, you can indicate that under the homeowner signature line. Upon the sale of the property the builder understands that both this letter and a copy of the Soils Report shall be provided to the buyer, and a homeowner signed copy returned to Geoquest, LLC.

If you have any questions, feel free to contact us at (719) 481-4560.

Sincerely,

Charles E. Milligan, P.E.

Builder Representatives

Homeowner(s)

_____ _____

_____ _____

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

SOILS REPORT

FOR

GINGER SPENCE

JOB #22-0662

0 Davis Road,
El Paso County,
Colorado

Sincerely,

Charles E. Milligan, P.E.

COLORADO REGISTERED
CHARLES E. MILLIGAN
34608
PROFESSIONAL ENGINEER
25 AUG 22

TABLE OF CONTENTS

INTRODUCTION

The owners must be made aware of the contents of this report. If there are any questions or concerns regarding the information in this report, please contact Geoquest, LLC. It is the responsibility of the contractor on this project to make subsequent owners aware of the contents of this report. This is to ensure that the recommendations and requirements of the report, especially regarding the surface drainage, are acknowledged and followed. This report is prepared for **Ginger Spence, owner, on 14090 Davis Road, El Paso County, Colorado.** This report is prepared with the understanding that a single-family residence is planned for this site. The site does not have existing structures.

CONCLUSIONS

A satisfactory foundation for this structure is a properly designed shallow foundation system consisting of foundation components resting directly on undisturbed materials. Foundation components resting directly on undisturbed moderate density materials shall be designed for a loading of not greater than **2,000 pounds per square foot.** Foundation components resting directly on undisturbed low-moderate densitiy materials shall be designed for a loading of not greater than **1,500 pounds per square foot. Any design by any engineer is subject to revision based on the results of the open hole observation.** The compressibility of this material is low. This bearing capacity is calculated with a safety factor of three. The type of foundation configuration used depends on the building loads applied. The depth of foundation elements shall be determined by the foundation engineer but should be at least as deep as the minimum depth required by the governing building authority. **The laboratory testing revealed that the on-site soil is clayey sand (U.S.C.S. Classification Symbol SC). The unit weight of equivalent fluid soil pressure of this material is 85 pounds per cubic foot. The native SC is not suitable and shall not be used as backfill material around the perimeter of the foundation.** The actual equivalent fluid soil pressure was not determined. The expected values are from ASCE 7-10, Table 3.2-1. **Foundation components should bear on soils of similar bearing capacity. Foundation components bearing on dissimilar soils should be avoided. The owners shall be made aware that movement will occur if surface or subsurface water is allowed to collect around the foundation wall.**

GENERAL

The investigation was made to reveal important characteristics of the soils and of the site influencing the foundation design. Also evaluated during the investigation were subsurface conditions that affect the depth of the foundation and subsequent loading design, such as ground water levels, soil types, and other factors which affect the bearing capacity of the soils. Design loadings are based on soils characteristics and represent the maximum permissible loads for these conditions. The bearing capacity is calculated with a safety factor of three.

FIELD AND LABORATORY INVESTIGATION

Two exploratory holes were drilled on July 14, 2022, at the locations shown on the enclosed site map. The location of these test holes was determined by Ginger Spence. The test holes were drilled with a 4-inch diameter auger. At intervals anticipated to be the foundation depths, and as determined by the soils conditions, the drill tools were removed, and samples were taken by the use of a 2-inch split barrel sampler connected to a 140-pound drop-hammer. This hammer is dropped 30 inches to drive the penetration sampler into the soil **(ASTM D-1586).** The depths and descriptions of the materials encountered in each test boring at which the samples were taken are shown on the enclosed log sheets. All samples were classified both in the field and in the laboratory to evaluate the physical and mechanical properties of the materials encountered.

TOPOGRAPHY

The topography of this site is that of an incline sloping down towards the east at 4%.

WEATHER

The weather at the time of the soil examination consisted of partly cloudy skies with hot temperatures.

DESIGN AND CONSTRUCTION CONSIDERATIONS

Slabs-on-grade may move and crack. Vertical slab movement of up to one and a half inches should be expected for native soils with low expansion potential. In some cases, vertical movement may exceed this range. If movement and associated damage to basement floors and finishes cannot be tolerated, a structural floor system should be installed. If compaction is not performed, settlement may occur causing cracking of foundation walls and floors. Soil located beneath concrete walls shall be compacted to at least 95% Modified Proctor density **(ASTM D-1557)**. Soil located beneath concrete slabs shall be compacted to at least 85% Modified Proctor density. Special care is to be taken to re-compact the material above utility lines to a minimum of 85% Modified Proctor density. During construction, conditions that could cause settlement shall be eliminated. Interior non-bearing partition walls shall be constructed such that they do not transmit floor slab movement to the roof or overlying floor. The gap or void (1.5 inch min.) installed in these non-bearing partitions may require re-construction over the life of the structure to re-establish the gap or void to allow for vertical slab movement. Stairwells, doorways, and sheeted walls should be designed for this movement.

The following are general recommendations of on-grade slabs:

1. Slabs shall be placed on well-compacted, non-expansive materials, and all soft spots shall be thoroughly excavated and replaced with non-expansive fill materials as stated above.

2. Slabs shall be separated from all foundation walls, load bearing members, and utility lines.

3. At intervals not to exceed 12 feet in each direction, provide control joints to reduce problems with shrinkage and curling as recommended by the American Concrete Institute **(ACI 360R-10)**. Moisten the ground beneath the slab prior to the placement of concrete.

4. All concrete placed must be cured properly as recommended by the American Concrete Institute **(ACI 360R-10)**. Separate load bearing members from slabs, as discussed above. Care must be exercised to prevent excess moisture from entering the soil under the structure, both during and after construction.

5. Due to the exposure of exterior concrete to variations in moisture fluctuations, heaving and cracking of exterior slabs-on-grade should be expected. Placement of at least 3 feet of non-expansive fill beneath the slabs can help to reduce the impact of differential movement and cracking but may not eliminate movement. Exterior concrete shall slope away from the structure a minimum of 2% grade.

6. **The clayey sand (SC) has been tested for its expansion and/or consolidation potential. This material has a 0.02% expansion potential with a dead load of 1,500 pounds per square foot.** Basement slabs, garage slabs, and all concrete floor slabs, exert a very low dead-load pressure on the soil. Since this soil contains a small amount of swell/consolidation potential, slabs will crack and heave or settle if excess water is allowed to penetrate the subgrade. For example, column openings to pads below the placed slab, if exposed to precipitation during construction, will conduct water to the subgrade, possibly causing it to expand/consolidate. Also, if the slab is placed with concrete too wet, expansion/consolidation may occur. We recommend 3,000 psi concrete placed at a maximum slump of 4 inches.

RECOMMENDATION REMARKS

The recommendations provided in this report are based upon the observed soil parameters, anticipated foundation loads, and accepted engineering procedures. The recommendations are intended to minimize differential movement resulting from the heaving of expansive soil or from the settlement induced by the application of loads. **It must be recognized that the foundation will undergo some movement on all soil types.** In addition, concrete floor slabs will move vertically, therefore, adherence to those recommendations which isolate floor slabs from columns, walls, partitions or other structural components is extremely important if damage to the superstructure is to be minimized.

Any subsequent owners should be apprised of the soil conditions and advised to maintain good practice in the future with regard to surface and subsurface drainage and partition framing, drywall and finish work above floor slabs.

Geoquest, LLC does not assure that the contractor and/or homeowner will comply with the recommendations provided in this report. Geoquest, LLC provides recommendations only and does not supervise, direct or control the implementation of the recommendations.

Failure to follow the recommendation provided by Geoquest, LLC and follow observation requirements may jeopardize the construction project and Geoquest, LLC shall be absolved from any and all responsibility for any damages arising from the failure to obtain proper site observation and follow recommendations.

COLD TEMPERATURE CONSIDERATIONS

1. Concrete shall not be placed upon wet or frozen soil.
2. Concrete shall be protected from freezing until it has been allowed to cure for at least 7 days after placement in forms.
3. Snow or other frozen water shall not be allowed in the forms during placement of concrete.
4. Concrete shall be cured in forms for at least 72 hours.
5. Concrete shall be vibrated or rodded in forms to avoid segregation and cold joints.
6. The site shall be kept well drained at all times. Ponding of water should be avoided in the excavation area.

SURFACE DRAINAGE

After construction of foundation walls, the backfill material shall be well compacted to 80% Modified Proctor density, to reduce future settlement. Any areas that settle after construction shall be filled to eliminate ponding of water adjacent to the foundation walls. **The finished grade shall have a positive slope away from the structure with an initial slope of 6 inch in the first 10 feet.** 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 of 5 feet from the foundation and sloped parallel with the wall at a 2% grade to intercept the surface water and carry it around and away from the structure. Homeowners shall maintain the surface grading and drainage installed by the builder to prevent water from being directed in the wrong direction. All downspouts shall have extensions that will remove runoff to the outside of the backfilled areas. Shrubs and plants requiring minimal watering shall be established in this area. Irrigated grass shall not be located within 5 feet of the foundation. Sprinklers shall not discharge water within 5 feet of the foundation. Irrigation should be limited to the minimum amount sufficient to maintain vegetation. Application of more water will increase the likelihood of floor slab and foundation movement.

All exterior grading and location of downspouts and their performance shall be inspected by Geoquest, LLC. **The native clayey sand (SC) material is not suitable and shall not be used as backfill material around the perimeter of the foundation.** If on-site soils are not suitable for the backfill, the backfill material shall consist of clean non-cohesive granular soils or road base material as described previously. Imported material is to be approved by Geoquest, LLC prior to placement. **We recommend imported granular backfill with a maximum unit weight of 45 pounds per cubic foot**. It is the responsibility of the contractor to schedule all inspections.

SUBSURFACE DRAINAGE

Perimeter drains are required around all walls of the habitable or usable area portion of the structure that are below finished grade including all common wall(s) adjacent to the basement. Crawlspaces, slab on grade, and walkout areas need not be drained unless specified at the time of the Open Hole Observation. Perimeter drains may be required during the open hole due to high moisture or grade that slopes toward the excavation. The final determination of the necessity for perimeter drains will be made at the time of the Open Hole Observation. An Exterior Drain Detail is provided in this report. Drains should daylight away from the structure or discharge to a sump pump. Even if drains are not required, areas below grade may experience moisture problems if unusual conditions are present in the future.

REINFORCING

The concrete foundation walls shall be properly reinforced as per the specific design for this foundation by a **Colorado Registered Professional Engineer. Exact requirements are a function of the design of the structure. Questions concerning the specific design requirements shall be referred to the design engineer.**

FOOTING DESIGN

The design for footings, pads, and/or piers for this structure is determined by applying the dead load and full live load to the foundation walls.

CONSTRUCTION DETAILS

It is necessary with any soils investigation to assume that the materials from the test holes are representative of the materials in the area. On occasion variations in the subsurface materials do occur, therefore, should such variations become apparent during construction, the owner is advised to contact this office for a determination as to whether these variations will affect the design of the structure's foundation. If anomalies are observed during the excavation for the structure, this office should be contacted to determine whether the layers will adversely affect the design.

MINIMUM MATERIALS SPECIFICATIONS

1. Minimum materials specifications of the concrete, reinforcing, etc., shall be determined by the Professional Foundation Design Engineer.
2. Compact beneath foundation walls a minimum of 95% Modified Proctor density to prevent settlement.
3. Compact all backfill material located around the perimeter of the foundation to a minimum of 80% Modified Proctor density.
4. Concrete shall be vibrated or rodded in forms to avoid segregation and cold joints.
5. The site shall be kept well drained at all times.

OPEN HOLE OBSERVATION (added cost)

If anyone other than Geoquest, LLC, performs the Open Hole Observation, that person/company assumes liability for the soils, and any possible changes to the foundation design.

The owner, or a representative of the construction company shall contact **Geoquest, LLC** a minimum of **24 hours** prior to excavating for the foundation. An Open Hole Observation must be performed on each individual structure prior to the placement of concrete, and preferably prior to the placement of forms in the excavated area. **The failure to request or obtain an Open Hole Observation prior to the placement of foundation components may result in this Soils Report being declared null and void.** This is to ensure that soft areas, anomalies, etc., are not present in the foundation region. At the time of the open hole observation the **foundation type recommendations, maximum allowable bearing capacity may be revised** according to soil conditions found at that time. If revisions are made to the Soils Report due to the soil conditions of the excavation, **the Foundation Design Engineer must be notified of all revisions.**

COMPACTION TESTING (added cost)

Geoquest, LLC shall perform compaction testing on any replaced material. Soil shall be compacted in maximum 6-inch lifts. Testing shall be performed at intervals not to exceed 24 inches (or as required by the design engineer). Modified Proctor Density must be provided to Geoquest, LLC prior to compaction testing, see below.

The owner, or a representative of the construction, shall contact Geoquest, LLC a **minimum of 24 hours prior to the time the compaction test is requested. The failure to properly compact and/or obtain proper compaction testing may result in this Soils Report being declared null and void.**

MODIFIED PROCTOR DENSITY TESTING (added cost)

Modified Proctor Density test must be provided to Geoquest, LLC prior to compaction testing. If a Proctor cannot be provided, a Modified Proctor Density test must be completed prior to compaction testing. Two 5-gallon valid samples of the soil to be used, must be provided for testing, at least 2 weeks prior to the placement and compaction of the material.

The failure to provide this data may result in this Soils Report being declared null and void.

FINAL OBSERVATIONS (added cost)

The owner, or a representative of the construction company, shall contact Geoquest, LLC at the time final grading and landscaping procedures are completed. This is to ensure that sprinkler systems are not installed adjacent to the structure and that only shrubs or plants that require minimal watering are established in this area. All exterior grading as well as the location of downspouts and their performance shall be inspected by Geoquest, LLC. Any additional landscaping or grading changes performed by subsequent contractors and/or owners shall be inspected and approved. It is the responsible of the contractor and/or owner to schedule all these inspections at the appropriate times. **The failure to obtain this inspection may result in this Soils Report being declared null and void.**

LIMITATIONS

This report is issued based on the understanding that the owner or his representative will bring the information, data, and recommendations contained in this report to the attention of the project engineer and architect, in order that they may be incorporated into the plans for the structure. It is also the owner's responsibility to ensure that all contractors and sub-contractors carry out these recommendations during the construction phase.

This report was prepared in accordance with generally accepted professional geotechnical/engineering methods. However, Geoquest, LLC makes no other warranty, express or implied, as to the findings, data, specifications, or professional advice rendered hereunder. **Due to circumstances outside of Geoquest, LLC's control, including improper construction, failure to follow recommendations, and unforeseen events, the Limits of Liability extend only to fees rendered for the professional services provided.**

This report is considered valid as of the present date. The owner acknowledges, however, that changes in the conditions of the property might occur with the passage of time, such as those caused by natural effects or man-made changes, both on this land and on abutting properties. Further, changes in acceptable tolerances or standards might arise as the result of new legislative actions, new engineering advances, or the broadening of geotechnical knowledge. Thus, certain developments beyond our control may invalidate this report, in whole or in part.

This report and its recommendations do not apply to any other site than the one described herein and are predicated on the assumption that the soil conditions do not deviate from those described. In the event that any variations or undesirable conditions should be detected during the construction phase or if the proposed construction varies from that planned as of this report date, the owner shall immediately notify Geoquest, LLC in order that supplemental recommendations can be provided, if so required.

This report excludes possible environmental issues, geologic hazards, flooding, or any other natural or man-made hazards that affect this site. These are outside the scope of work, for this report.

APPENDIX

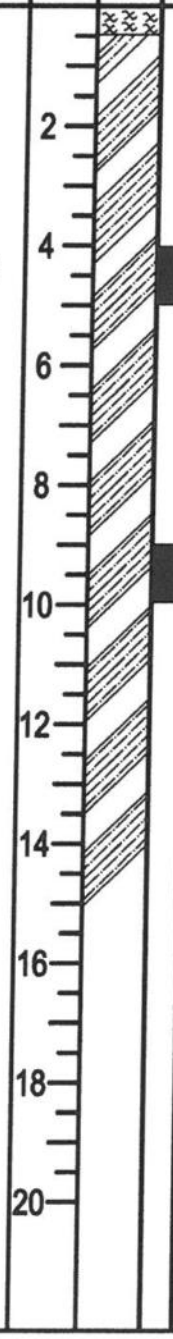
GEOQUEST, LLC
481-4560

DRILL LOGS

JOB #: 22-0662
TEST BORING
NO.: TH-1
Date: 07/14/2022
By: ADB

0" - 6" TOPSOIL

6" - 15' Sand (SC)
Fine-Medium grained
Low-Moderate density
Low-Moderate moisture content
Moderate clay content
Low plasticity
Very Pale Brown color

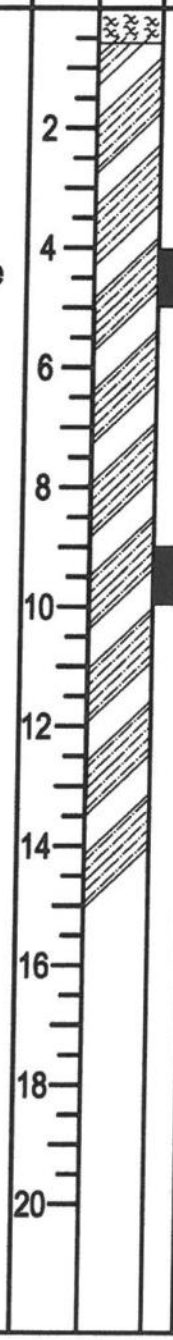


SYMBOL	SAMPLES	BLOW COUNT	WATER %	SOIL TYPE
		22/12"	5.8	SC
		15/12"	5.4	SC

JOB #: 22-0662
TEST BORING
NO.: TH-2
Date: 07/14/2022
By: ADB

0" - 6" TOPSOIL

6" - 15' Sand (SC)
Fine-Medium grained
Low-Moderate density
Low-Moderate moisture content
Moderate clay content
Low plasticity
Dark Yellowish Brown color

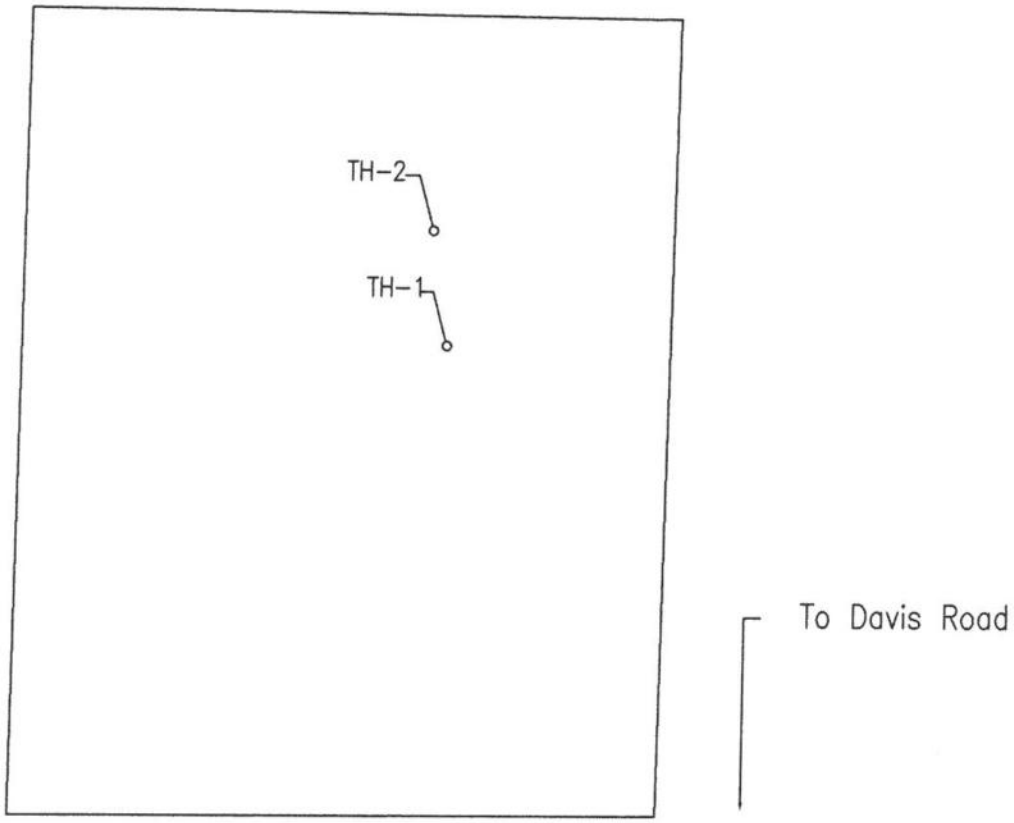


SYMBOL	SAMPLES	BLOW COUNT	WATER %	SOIL TYPE
		21/12"	4.7	SC
		15/12"	6.8	SC

GEOQUEST LLC

SITE MAP

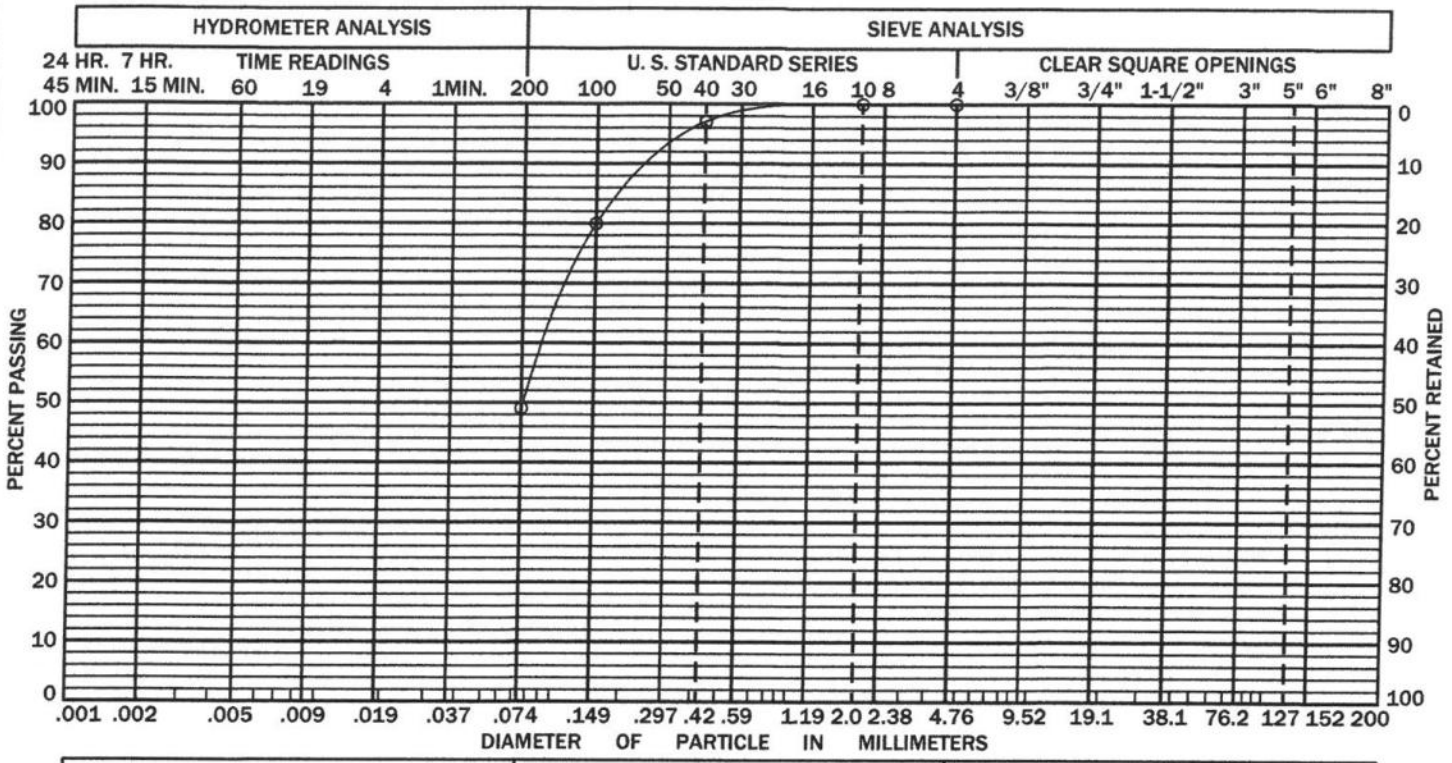
0 Davis Road
El Paso County
Colorado
Job #22-0662
By: MJD



0 25 50 75 100 125
GRAPHIC SCALE IN FEET
SCALE: 1" = 125'

GEOQUEST LLC

GRADATION TEST RESULTS



CLAY TO SILT	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

CLASSIFICATION SC

GRAVEL 0.00 %

SAND 51.33 %

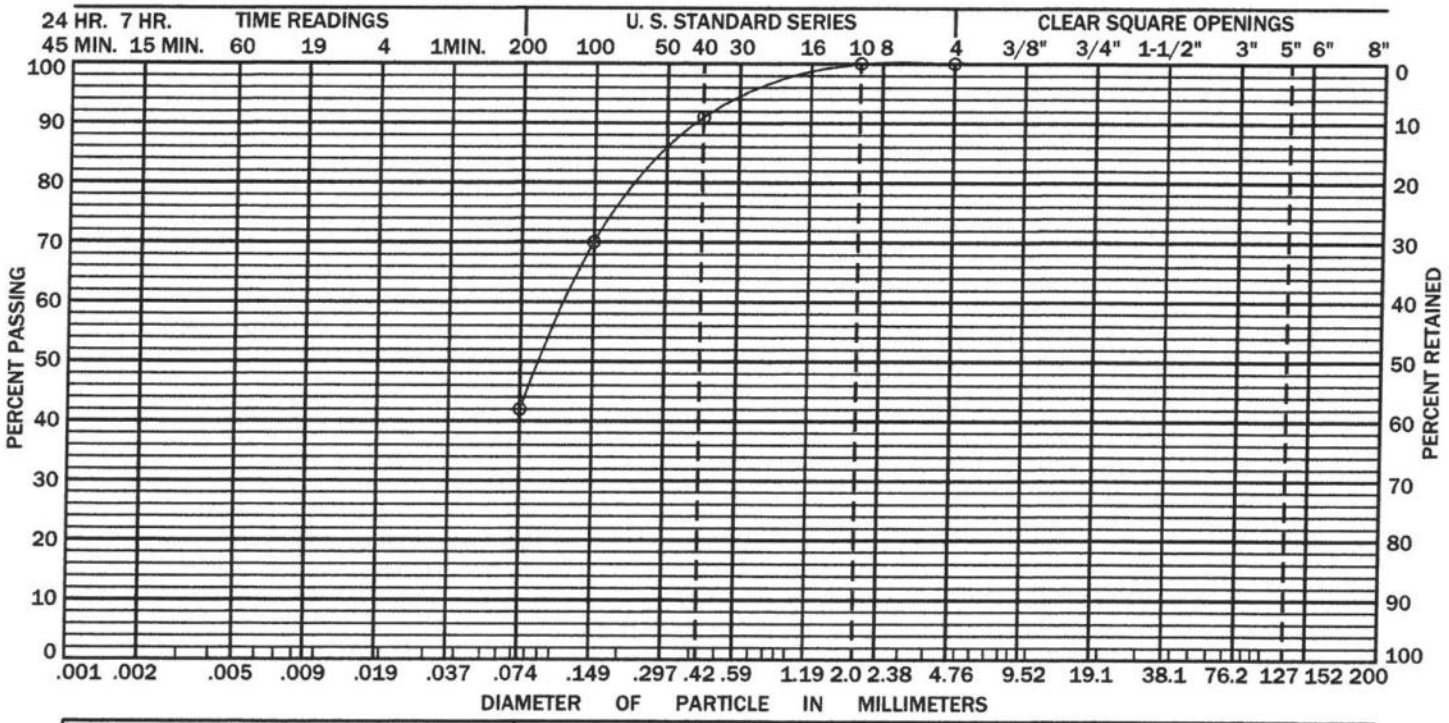
FINES 48.67 %

SAMPLE# 1 HOLE# TH-1 DEPTH 4 FEET

NOTES: 5.77 % Moisture content

Cu = 3.23

Non Plastic



CLAY TO SILT	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

CLASSIFICATION SC

GRAVEL 0.00 %

SAND 58.29 %

FINES 41.71 %

SAMPLE# 2 HOLE# TH-1 DEPTH 9 FEET

NOTES: 5.42 % Moisture content

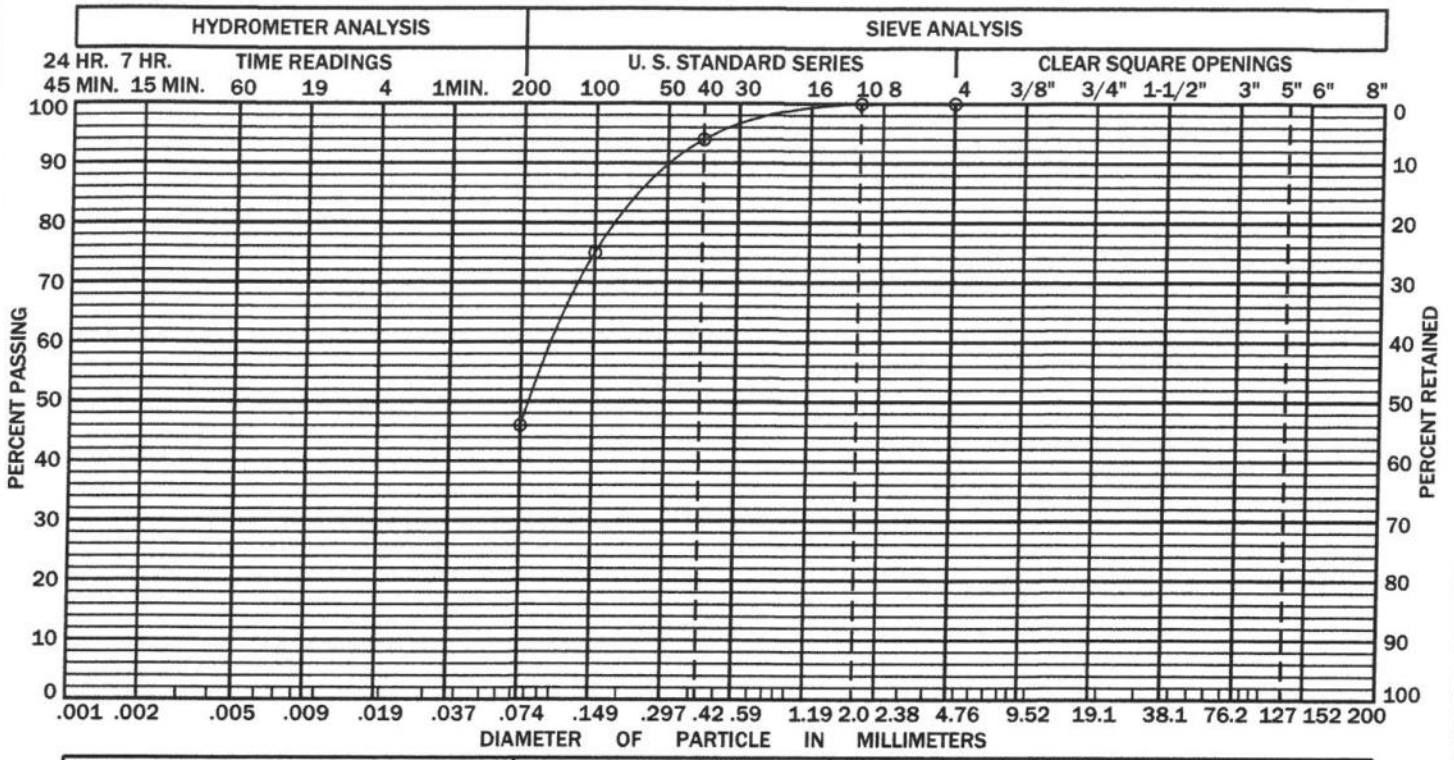
Cu = 3.68

Non Plastic

Job: 22-0662 By: acm 08/03/2022

GEOQUEST LLC

GRADATION TEST RESULTS



CLAY TO SILT	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

CLASSIFICATION SC

GRAVEL 0.00 %

SAND 54.11 %

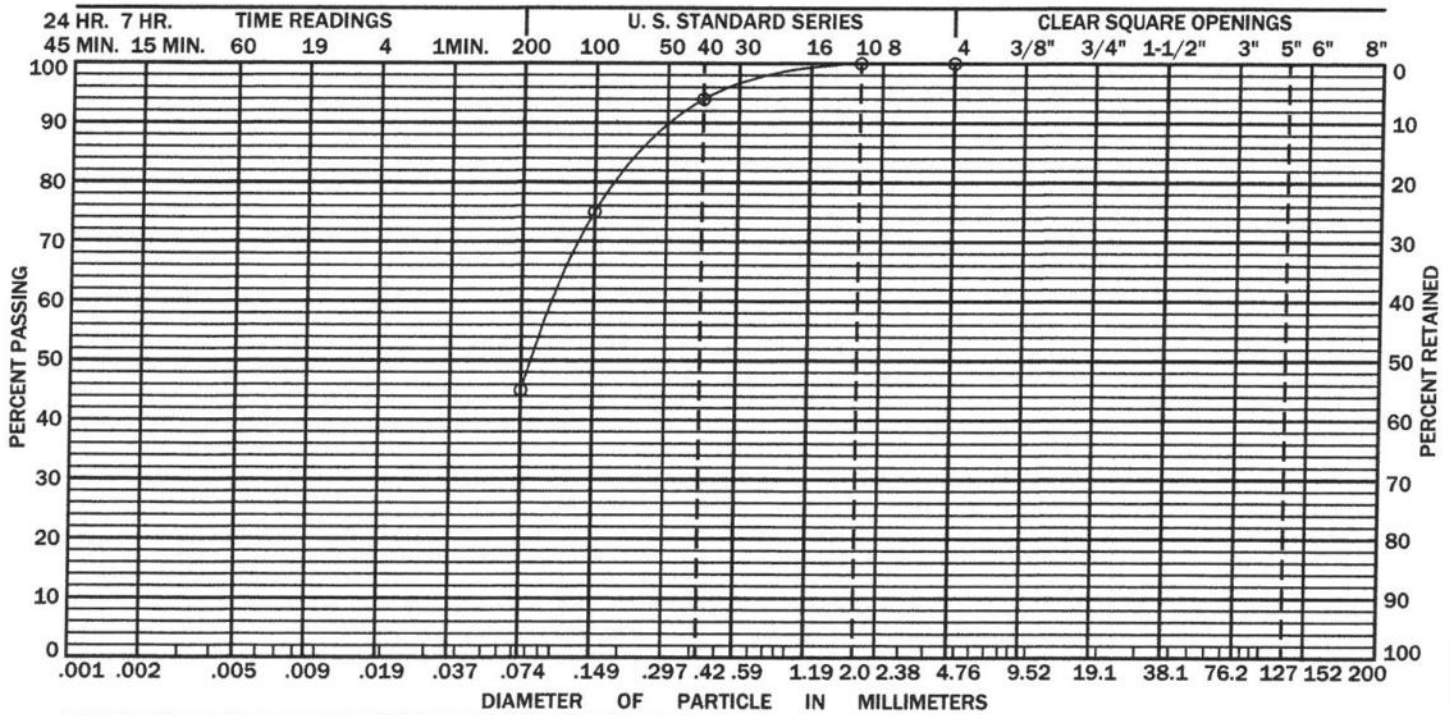
FINES 45.89 %

SAMPLE# 3 HOLE# TH-2 DEPTH 4 FEET

NOTES: 4.74 % Moisture content

Cu = 3.56

Non Plastic



CLAY TO SILT	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

CLASSIFICATION SC

GRAVEL 0.08 %

SAND 54.80 %

FINES 45.12 %

SAMPLE# 4 HOLE# TH-2 DEPTH 9 FEET

NOTES: 6.80 % Moisture content

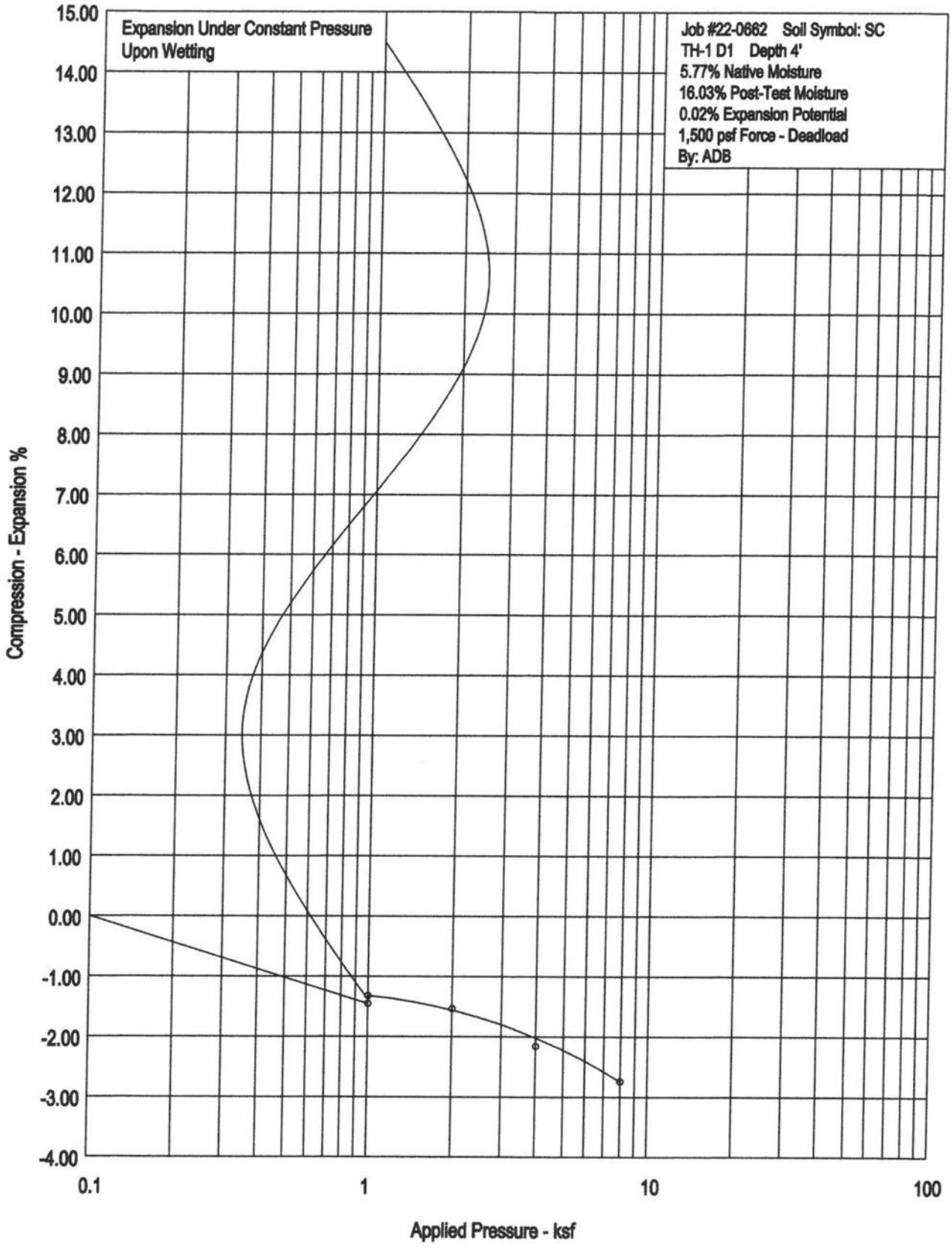
Cu = 3.54

Non Plastic

Job: 22-0662 By: acm 08/03/2022

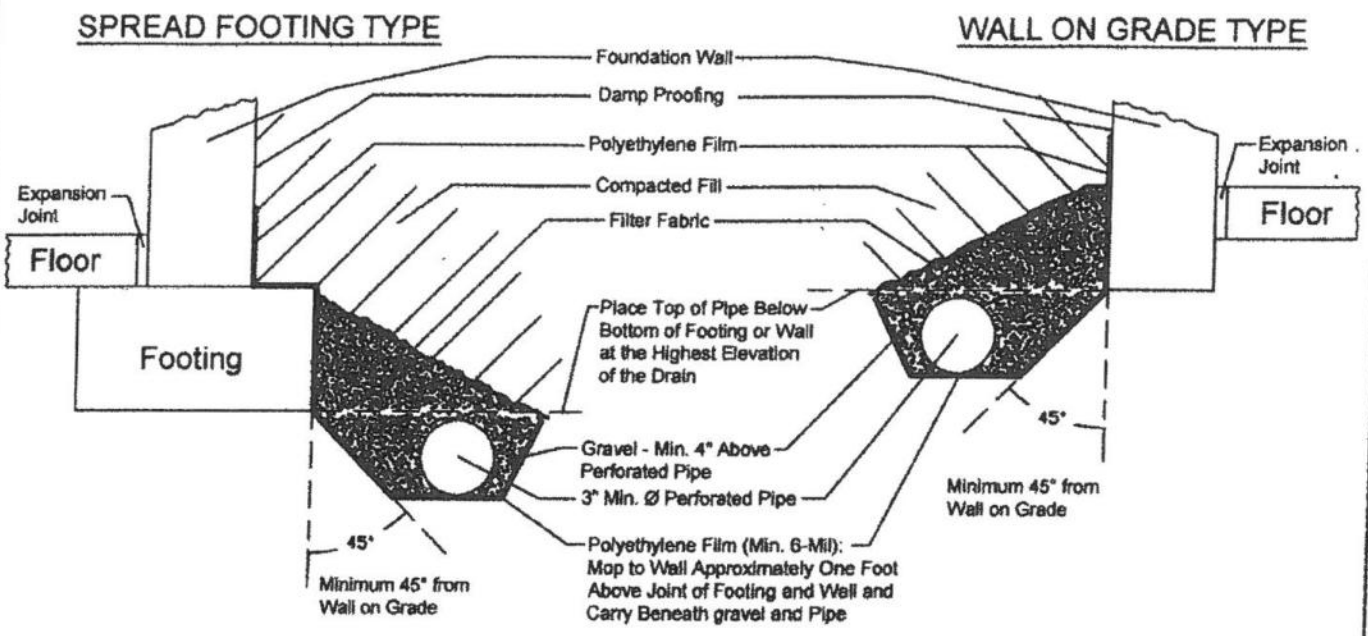
Geoquest LLC

Swell-Consolidation Test Results



GEOQUEST, LLC
481-4560

EXTERIOR DRAIN DETAIL



1. Gravel to be Not More Than 1-1/2" and Not Less Than 1/2" Diameter.

2. Perforated Pipe Diameter Varies With Expected Seepage. 3"Ø and 4"Ø are Most Common. ABS and PVC are Most Common Materials for Pipe. We approve the use of an "EZ Flow Drainage System" by Infiltrator. All specifications in this drain detail are still applicable.

3. Pipe to be Laid out in a Minimum Slope of 1" in 10'.

4. Gravity Outfall is Desired if Possible. Portion of Pipe in Area Not Drained Shall be Non-Perforated. Daylight Must be Maintained Clear of Debris in Order to Function Properly.

5. If Gravity Outfall is Not Possible, Provide a Sump With Operational Pump. Pump May Not Connect to Any Sanitary or Storm Sewer.

6. Soil Backfill Should be Compacted to at Least 80% of the Modified Proctor Denisty in the Upper Three Feet of Fill.

7. Filter Fabric to be Mirafi 140s or Approved Equivalent. Roofing Felt and Sheet Plastic are Not Acceptable.

8. Drain Pipe Shall be Laid Below Protected Area, as Shown in The Detail Above.

9. Mop Polyethylene Film to Wall Approximately One Foot Above Joint of Footing and Wall (Do Not Pull Plastic Tight) and Carry Beneath Gravel and Pipe.

10. The Polyethylene Film Shall be Continued to the Edge of the Excavation.

GEOQUEST, LLC

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

PROFILE PIT EVALUATION

FOR

GINGER SPENCE

JOB #22-0662

0 Davis Road,
El Paso County,
Colorado

Sincerely,

Douglas J Pretzer

Douglas J. Pretzer, P.E.
Civil Engineer

COLORADO LICENSED
DOUGLAS J PRETZER
55147
8/22/22
PROFESSIONAL ENGINEER

PROFILE PIT FINDINGS

Enclosed are the results of the profile pit for the septic system to be installed at **0 Davis Road, El Paso County, Colorado.** The location of the test pits was determined by Ginger Spence. 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 east at approximately 4% at least 20 feet. All applicable portions of the El Paso County Public Health Department Onsite Wastewater Treatment System Regulations (OWTS) must be complied with for the installation of the treatment system.

The inspection was performed on August 3, 2022, in accordance with Table 10-1 of the **E.P.C.P.H. OWTS Regulations.**

Soil Profile #1:

0 to 4" - Topsoil - loam, organic composition.

4" to 8" - USDA soil texture sandy clay loam, soil type 3, structure shape blocky, structure grade 2, non-cemented, LTAR 0.35, dark yellowish brown in color, 10 YR 4/4, 0% rock.

Soil Profile #2:

0 to 4" - Topsoil - loam, organic composition.

4" to 8" - USDA soil texture sandy clay loam, soil type 3, structure shape blocky, structure grade 2, non-cemented, LTAR 0.35, dark yellowish brown in color, 10 YR 4/4, 0% rock.

Groundwater was not encountered during the inspection. Bedrock was not encountered 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 USDA soil type 3, the septic system to be installed on this site need not be designed by a Colorado Licensed Engineer. A conventional septic system is approved for this site. Based on the observed conditions, we feel a design based on an LTAR of 0.35 GPD/SF (USDA 3, treatment soil, treatment level 1) is reasonable. Maximum depth of the installation shall not be deeper than 4 feet below the existing grade.

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 hot temperatures.

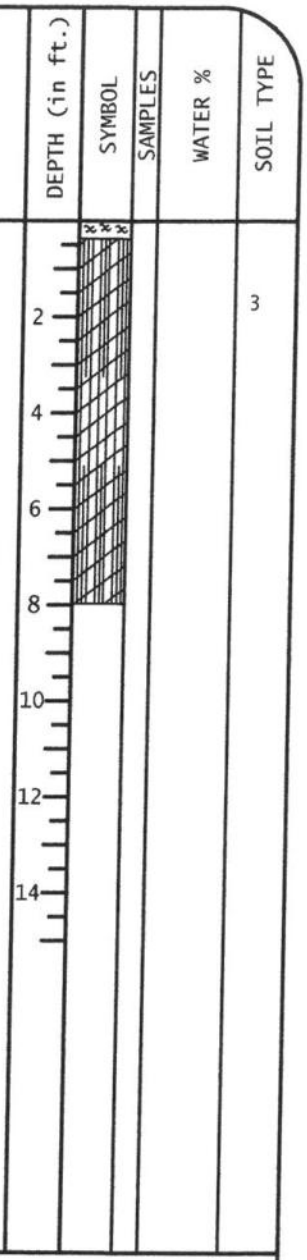
PROFILE PIT LOG - Profile Pit #1

JOB#: 22-0662
DATE EVALUATED: 3 August 2022
EQUIPMENT USED: MINI EX

0"-4" **TOPSOIL**
Loam
Organic Composition

4"- 8' **Clayey Sand**
Fine-coarse Grained
High Density
Low Moisture Content
Moderate Clay Content
Low-moderate Cohesion
Low-moderate Plasticity
Dark Yellowish Brown Color
10YR 4/4

USDA Soil Texture: Sandy Clay Loam
USDA Soil Type: 3
USDA Structure Shape: Blocky
USDA Structure Grade: 2
Cementation Class: Non-cemented
Long Term Acceptance Rate (LTAR, Treatment Level 1):0.35
0% Rock



LTAR to be Used for OWTS Sizing: **0.35GPD/SF (USDA Type 3, Treatment soil, Treatment Level 1)**
Depth to Groundwater (Permanent or Seasonal): Not Encountered
Depth to Bedrock and Type: Not Encountered
Depth to Proposed Infiltrative Surface from Ground Surface: Unknown (Maximum 4ft Below Existing Ground Surface)
Soil Treatment Area Slope and Direction: East @ 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: 22-0662	Project Name and Address
Sheet: 1 of 2	Ginger Spence
Date: 10 Aug 2022	0 Davis Road
	Sch. No. Unknown
	El Paso County, Colorado
Scale: 1/4" = 1'	
Drawn by: rah	
Checked by: djp	

GEOQUEST, LLC.
6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

OFFICE: (719) 481-4560
FAX: (719) 481-9204

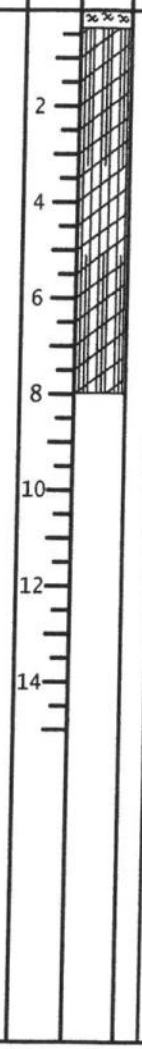
PROFILE PIT LOG - Profile Pit #2

JOB#: 22-0662
DATE EVALUATED: 3 August 2022
EQUIPMENT USED: MINI EX

0"-4" **TOPSOIL**
Loam
Organic Composition

4"- 8' **Clayey Sand**
Fine-coarse Grained
High Density
Low Moisture Content
Low-moderate Clay Content
Low-moderate Cohesion
Low-moderate Plasticity
Dark Yellowish Brown Color
10YR 4/4

USDA Soil Texture: Sandy Clay Loam
USDA Soil Type: 3
USDA Structure Shape: Blocky
USDA Structure Grade: 2
Cementation Class: Non-cemented
Long Term Acceptance Rate (LTAR, Treatment Level 1):0.35
0% Rock



LTAR to be Used for OWTS Sizing: **0.35GPD/SF (USDA Type 3, Treatment soil, Treatment Level 1)**
Depth to Groundwater (Permanent or Seasonal): Not Encountered
Depth to Bedrock and Type: Not Encountered
Depth to Proposed Infiltrative Surface from Ground Surface: Unknown (Maximum 4ft Below Existing Ground Surface)
Soil Treatment Area Slope and Direction: East @ 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: 22-0662	Project Name and Address
Sheet: 2 of 2	Ginger Spence
Date: 10 Aug 2022	0 Davis Road
	Sch. No. Unknown
	El Paso County, Colorado
Scale: 1/4" = 1'	
Drawn by: rah	
Checked by: djp	

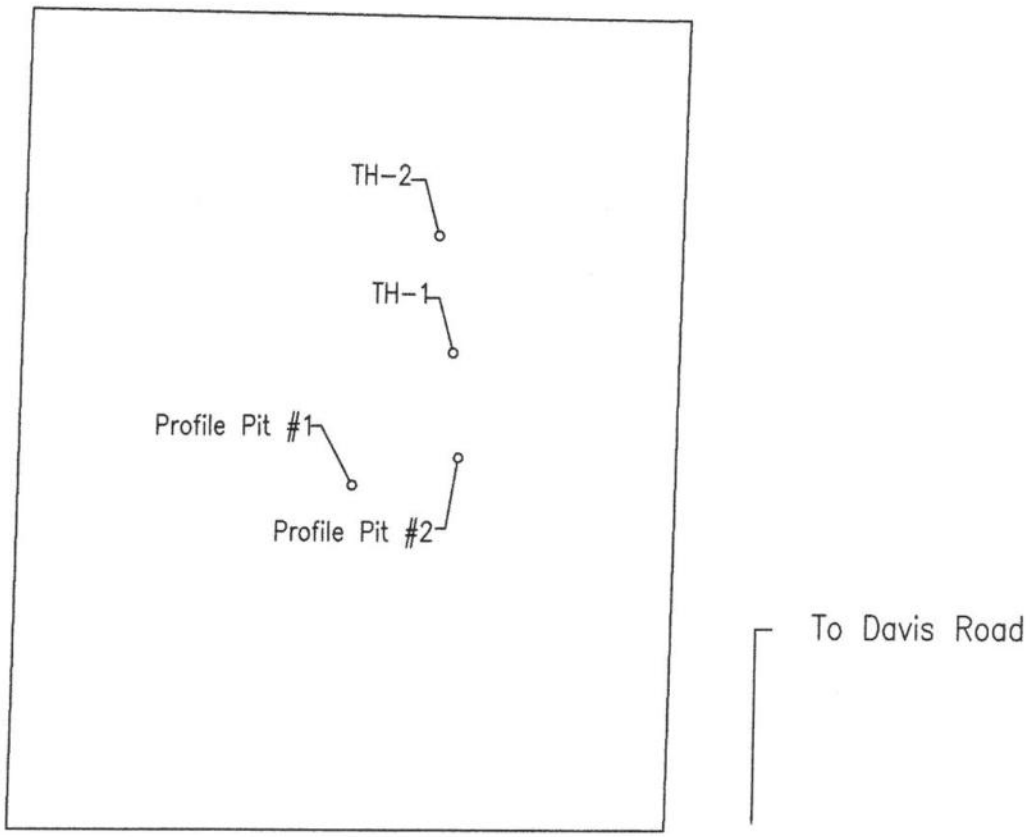
GEOQUEST, LLC.
6825 SILVER PONDS HEIGHTS
SUITE 101
COLORADO SPRINGS, CO
80908

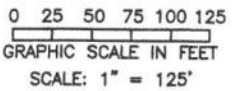
OFFICE: (719) 481-4560
FAX: (719) 481-9204

GEOQUEST LLC

SITE MAP

0 Davis Road
El Paso County
Colorado
Job #22-0662





Location from Northeast Lot Corner to Profile Pit #1: S. 35° W. - 363'
Location from Profile Pit #1 to Profile Pit #2: N. 75° E. - 70'
GPS Coordinates Profile Pit #1: N. 39° 52' 13.3" , W. 104° 33' 51.2"
GPS Coordinates Profile Pit #2: N. 39° 52' 13.5" , W. 104° 53' 50.3"

APPENDIX E: Soil Survey Descriptions

El Paso County Area, Colorado

8—Blakeland loamy sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369v
Elevation: 4,600 to 5,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Flats, hills
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock and/or eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 11 inches: loamy sand
AC - 11 to 27 inches: loamy sand
C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Other soils

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

Pleasant

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

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

El Paso County Area, Colorado

86—Stoneham sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 36b2
Elevation: 5,100 to 6,500 feet
Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Stoneham and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stoneham

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium

Typical profile

A - 0 to 4 inches: sandy loam
Bt - 4 to 8 inches: sandy clay loam
Btk - 8 to 11 inches: sandy clay loam
Ck - 11 to 60 inches: loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B

Ecological site: R067BY024CO - Sandy Plains
Other vegetative classification: SANDY PLAINS (069AY026CO)
Hydric soil rating: No

Minor Components

Other soils
Percent of map unit: 4 percent
Hydric soil rating: No

Pleasant
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

El Paso County Area, Colorado

97—Truckton sandy loam, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: 2x0j2
Elevation: 5,300 to 6,850 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 85 to 155 days
Farmland classification: Not prime farmland

Map Unit Composition

Truckton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Truckton

Setting

Landform: Hillslopes, interfluves
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Re-worked alluvium derived from arkose

Typical profile

A - 0 to 4 inches: sandy loam
Bt1 - 4 to 12 inches: sandy loam
Bt2 - 12 to 19 inches: sandy loam
C - 19 to 80 inches: sandy loam

Properties and qualities

Slope: 3 to 9 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): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline (0.1 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Blakeland

Percent of map unit: 8 percent
Landform: Hillslopes, interfluves
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Bresser

Percent of map unit: 7 percent
Landform: Low hills, interfluves
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 20, Sep 2, 2022

APPENDIX F: Septic Records

EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT
INDIVIDUAL SEWAGE DISPOSAL SYSTEM INSPECTION FORM

Permit # 010356
Date 8/16/96

APPROVED: YES ✓ **NO** # 433300000016 ENVIRONMENTALIST Larry Schaad

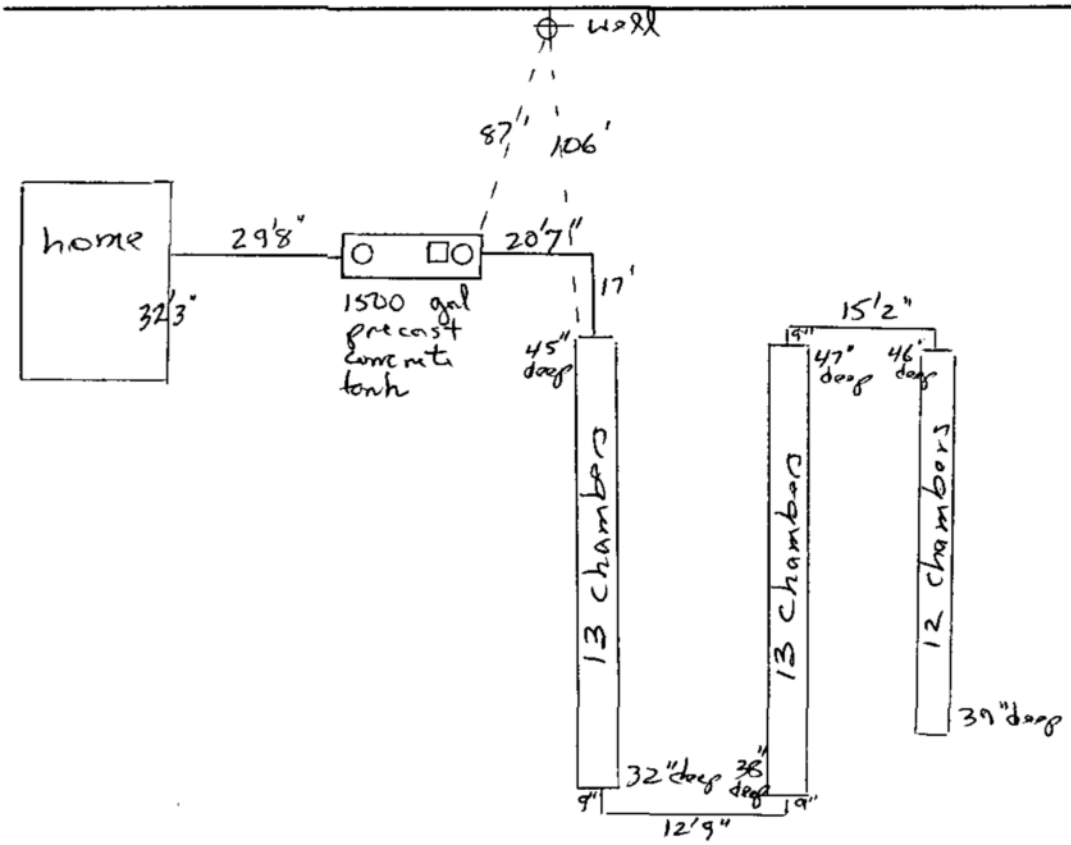
Address 14090 Davis Road Owner Kathy French

Legal Description SE4 SW4 Sec 33-T13-R64
Residence ✓, # of bedrooms 4; Commercial ____; System Installer Murr Ditching 495-2690

SEPTIC TANK:
Commercial ✓; Noncommercial ____, L ____, W ____, WD ____
Construction Material Precast Concrete, capacity 1500 gallons.

DISPOSAL FIELD:
Rock Systems:
Trench: depth ____, width ____, total length ____, sq. feet ____
Bed: depth ____, length ____, width ____, sq. feet ____
Rock type ____, depth ____, under PVC ____, over PVC ____
Seepage Pits: # of pits ____, total # of rings ____, working depth(s) ____
size of pit(s) L X W ____, lining material ____, total sq. feet ____
Rockless Systems:
Chamber: Type Biodiffuser, number of chambers 38, bed ____, trench ✓
sq. ft./section 18, reduction allowed 0 %, sq. ft required 673
total sq. ft. installed 684, depth of installation 32-47"
Engineer Design Y or (N), Designing Engineer ____,
Approval letter provided? Y or N
Well 50 feet from tank (Y) or N 100 feet from leach field (Y) or N
Well installed at time of septic system inspection (Y) or N Public Water ____
*Approval will be revoked if in the future the well is found to be within 50 feet of the septic tank and/or 100 feet of the disposal field.

NOTES: Pipes SDR 35



Acres 40

EL PASO COUNTY • DEPARTMENT OF HEALTH AND ENVIRONMENT

301 South Union Blvd. • Colorado Springs, Colorado • 578-3125

Water Supply WELL

Permit 010356

PERMIT

TO CONSTRUCT, ALTER, REPAIR OR MODIFY ANY INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Receipt No. [illegible]

Issued to KATHY FRENCH Date 7-2-96

Address of Property 14090 DAVIS ROAD, SE4, SW4, SEC: 33-T13-R64 Phone 683-2663

(Permit valid at this address only)

Sewage-Disposal System work to be performed by MURR DITCHING Phone 495-2690

This Permit is issued in accordance with 25-10-106 Colorado Revised Statutes 1973, as amended. PERMIT EXPIRES upon completion-installation of sewage-disposal system or at the end of twelve (12) months from date of issue-whichever occurs first-(unless work is in progress). This permit is revokable if all stated requirements are not met.

-THIS PERMIT DOES NOT DENOTE APPROVAL OF ZONING AND ACREAGE REQUIREMENTS-

$150.00
PERMIT FEE (NOT REFUNDABLE)

[signature], M.D.
DIRECTOR, DEPARTMENT OF HEALTH AND ENVIRONMENT

7-2-97
DATE OF EXPIRATION

[signature]
ENVIRONMENTALIST

NOTE: LEAVE ENTIRE SEWAGE-DISPOSAL SYSTEM UNCOVERED FOR FINAL INSPECTION. 48 HOUR ADVANCE NOTICE REQUIRED.

SEPTIC TANK:	TRENCH SYSTEM:	BED SYSTEM:	SEEPAGE PIT SYSTEM:
1500 gallons	total square feet 613 ____ ft. of trench ____ inches wide ____ ft. of trench ____ inches wide	total square feet ____	total square feet ____ ____ rings or ____ diam.x ____ w/d

NOTES: INSTALL IN THE AREA AND DEPTH (40 INCHES) OF THE PERCOLATION TEST. PER ENGINEER NO REDUCTION FOR CHAMBERED SYSTEM INSTALLATION.

The Health Office shall assume no responsibility in case of failure or inadequacy of a sewage-disposal system, beyond consulting in good faith with the property owner or representative. Free access to the property shall be authorized at reasonable time for the purpose of making such inspections as are necessary to determine compliance with requirements of this law.

EL PASO COUNTY ENVIRONMENTAL HEALTH SERVICES
301 South Union Boulevard Colorado Springs, CO 80910-3123

APPLICATION FOR A (NEW), REMODEL, REPAIR, OR ADDITION TO AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Owner Kathy French Phone (719) 683-2663

Address of Property 14090 DAVIS Rd Legal Description SE¼, SW¼ Sec. 33 T13 R64

Tax Schedule Number 43330-00-011 Lot Size 40 Acre Source of Water Supply well

Type of Building by Use single family Septic Contractor and Phone # D. Murr Ditching 495

Owner's Mailing Address 2620 N. Curtis, Falcon, CO 80831 MAXIMUM POTENTIAL BEDROOMS 4

Basement Y (N) Percolation Test Attached (Y) N Garbage Disposal Y (N) Clothes Washer (Y) N

I have supplied a plot plan as described on the back of this form. I acknowledge the completeness of the application is conditional upon such further mandatory and additional tests and reports as may be required by the Department to be made and furnished by a applicant for purposes of evaluating the application, and issuance of the permit is subject to such terms and conditions as deemed necessary to ensure compliance with rules and regulations adopted pursuant to C.R.S. 10-25-101 et. seq. I hereby certify all represented to be true and correct to the best of my knowledge and belief, and are designed to be relied on by the El Paso County Department of Health and Environment in evaluating the same for purposes of issuing the permit applied for herein. I further understand any falsification or misrepresentation may result in the denial of the application or revocation of any permit granted based upon said application and in legal action for perjury as provided by law.

OWNER'S SIGNATURE Kathy French Date 6/11/96

DEPARTMENT OF HEALTH USE ONLY

673 ft² Absorption Area | 1500 Tank Capacity | 6-12-96 MT Date of Site Inspection

REMARKS: Install on the area and depth (40") of the perc test. Per engineer, no reduction for chambered system installation.

Pending Planning Dept. OK

EHS INSPECTOR [signature] Date 6/14/96 (APPROVED) DENIED

PERMIT # 10356 (FEE) NO FEE DATE TO EPC PLANNING DEPT 6/12/96

Mail to owner - 7/1/96 attached (OK)

We require the ORIGINAL of your percolation (**PERC**) **TEST**.
The following information must be on your **PLOT PLAN**.

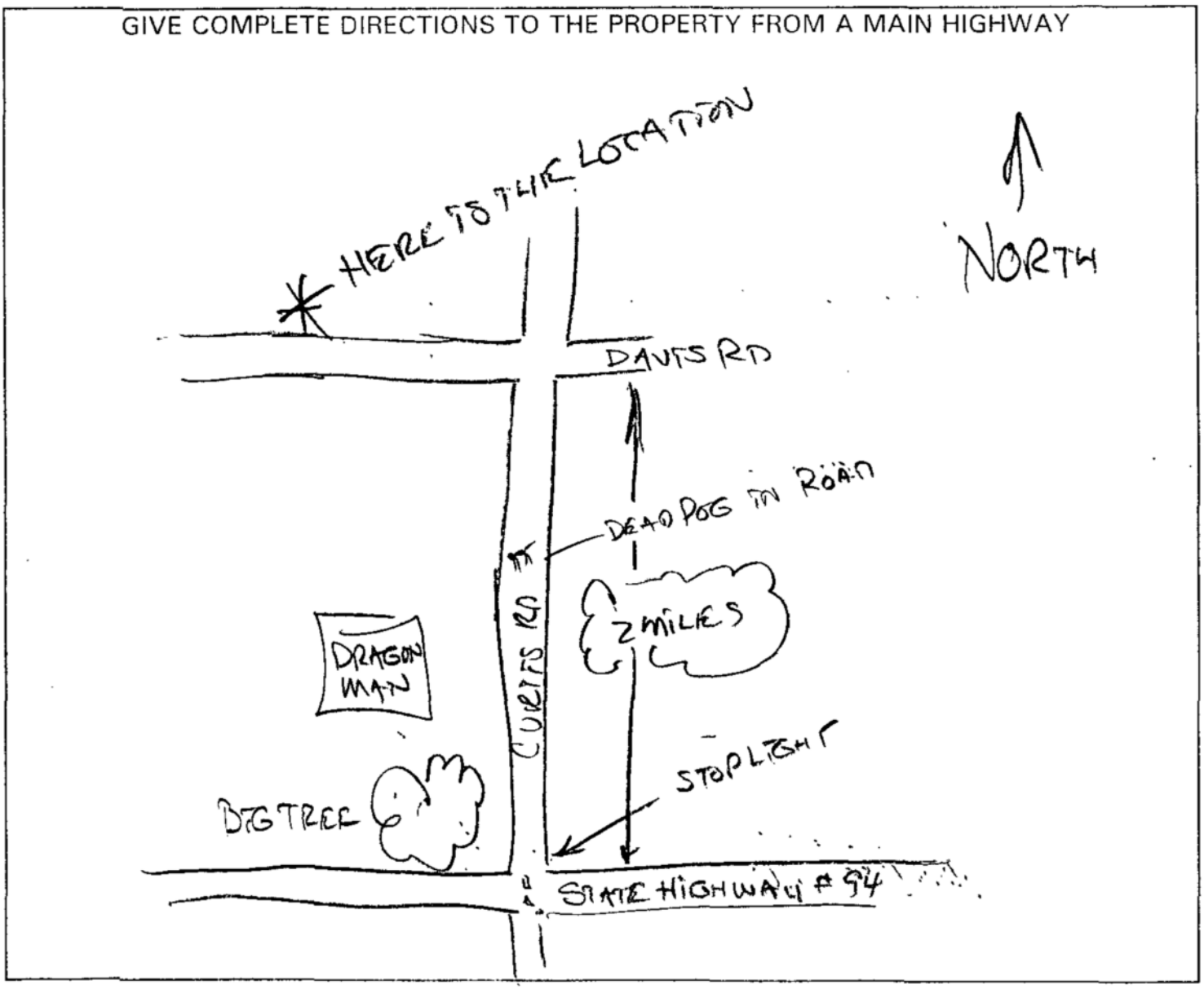
Property lines
Proposed septic system site
Well(s)
Building(s)
Water line
Subsoil drain(s)
Property dimensions
Designated alternate septic system site
Adjacent property well(s)
Proposed building(s)
Cistern

If any of these are within 100 feet of your proposed septic system include on your plot plan

Spring(s)
Pond(s)
Dry Gulch(s)
Lake(s)
Stream(s)
Natural drainage course(s)

PROPERTY AND PERC HOLES MUST BE CLEARLY MARKED OR POSTED

GIVE COMPLETE DIRECTIONS TO THE PROPERTY FROM A MAIN HIGHWAY



HILDENBRANDT & ASSOCIATES

May 30, 1996 Project 960510

14090 Davis Rd
#4333ØØØØ16
E
08-16-96

Mr. Erik Murr
18280 Hanover Road
Colorado Springs, CO 80828

Re: Percolation Test
14090 Davis Road
El Paso County, Colorado

Dear Mr. Murr:

As requested, personnel of Hildenbrandt & Associates have performed percolation testing at the above referenced site. This letter presents the results of our testing.

The percolation test was performed on May 28-29, 1996. The location of the percolation holes is shown in Figure 1. Soils encountered in the profile hole and percolation holes consisted of silty sand. Groundwater or bedrock were not encountered in the profile hole, which was drilled to 10'. The ground in the area of the proposed absorption system slopes to the southeast at 5%.

The average percolation rate was determined to be 14 minutes/inch. Percolation results are shown in Figure 2. Based on a percolation rate of 14 minutes/inch, the field should be 169 square feet per bedroom. The field should be sized based on the number of bedrooms and anticipated usage. A reduction in field size for use of a chambered system is not recommended.

Gravity flow from the septic tank to the field should be used if possible. A pump and pumping chamber may be used if gravity flow is not possible.

The septic tank and absorption field should be installed in accordance with El Paso County Health Department regulations.

We trust that this has provided you with the information you required. If you have any questions or need additional information, please do not hesitate to contact us.

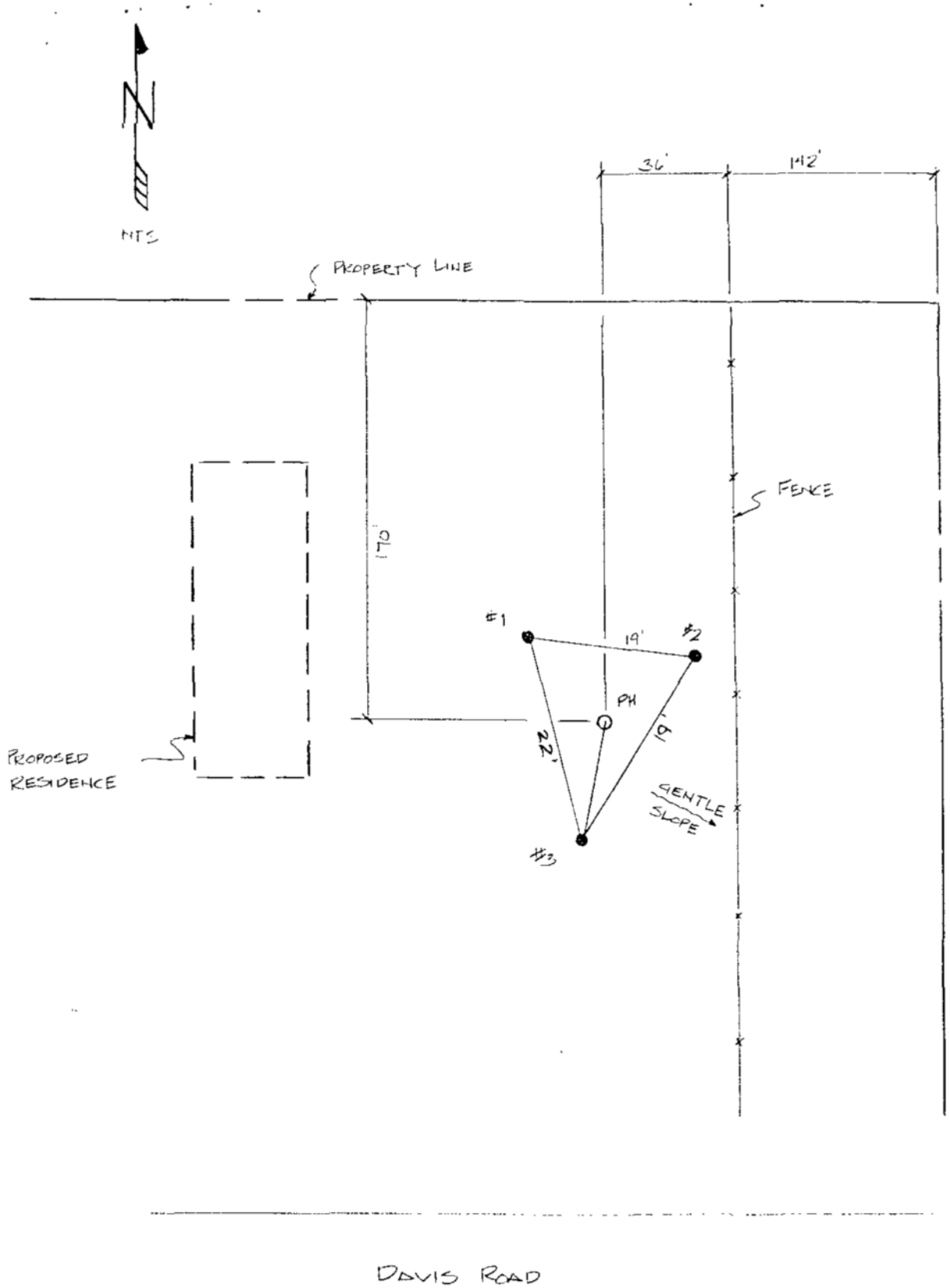
Respectfully submitted,

HILDENBRANDT & ASSOCIATES

COLORADO REGISTERED BRIAN HILDENBRANDT 29623 PROFESSIONAL ENGINEER

Brian L. Hildenbrandt,
P.E. 29623

11715 Black Forest Rd. • Colorado Springs, CO 80908 • (719) 495-8124



HILDENBRANDT & ASSOCIATES			
Date	Drawn by:	Project 960510-P	Figure 1

Client: Erik Murr

Date: 5/30/96
Project: 960510

Test Location: 14090 Davis Road
El Paso County

Date Test Performed: 5/29/96
Observer: B. Hildenbrandt

PERCOLATION TEST DATA

Hole No. 1

Trial	Time (min.)	Water Level Change (In.)
1	10	1.38
2	10	1
3	10	1

Depth of hole: 40"

Perc Rate min./In.: 10

Hole No. 2

Trial	Time (min.)	Water Level Change (In.)
1	10	1.25
2	10	.94
3	10	.69

Depth of hole: 38"

Perc Rate min./In.: 15

Hole No. 3

Trial	Time (min.)	Water Level Change (In.)
1	10	1
2	10	.69
3	10	.69

Depth of hole: 39"

Perc Rate min./In.: 15

Average Perc Rate (min./In.): 14

PROFILE HOLE

Date Drilled: 5/28/96 Method: 4-inch hand auger

Depth	Description
0-10'	SAND, SILTY, MEDIUM BROWN TO 1 1/2 FOOT, THEN LIGHT BROWN, DAMP, LOOSE TO 1 1/2 FOOT, THEN MEDIUM DENSE @ 1'7" 120 BLOWS/FOOT @ 4' MOIST @ 4'5" 70 BLOWS/FOOT @ 8' CLEAN TO SILTY SAND, DENSE, DAMP @ 9' 150 BLOWS/FOOT

BLOW COUNTS OBTAINED BY DRIVING A 3-INCH O.D. CALIFORNIA SAMPLER WITH A 36 LB. WEIGHT DROPPED 12 INCHES. TYPICAL RELATIVE DENSITIES FOR BLOWS REQUIRED TO DRIVE THE SAMPLER 12" ARE AS OUTLINED BELOW:

0-15	VERY LOOSE
15-45	LOOSE
45-120	MEDIUM DENSE
120-200	DENSE
200+	VERY DENSE

Required Area of Absorption Field: .75 Sq. Ft/gpd sewage volume
Required Area of Absorption Field: 169 Sq. Ft./bedroom

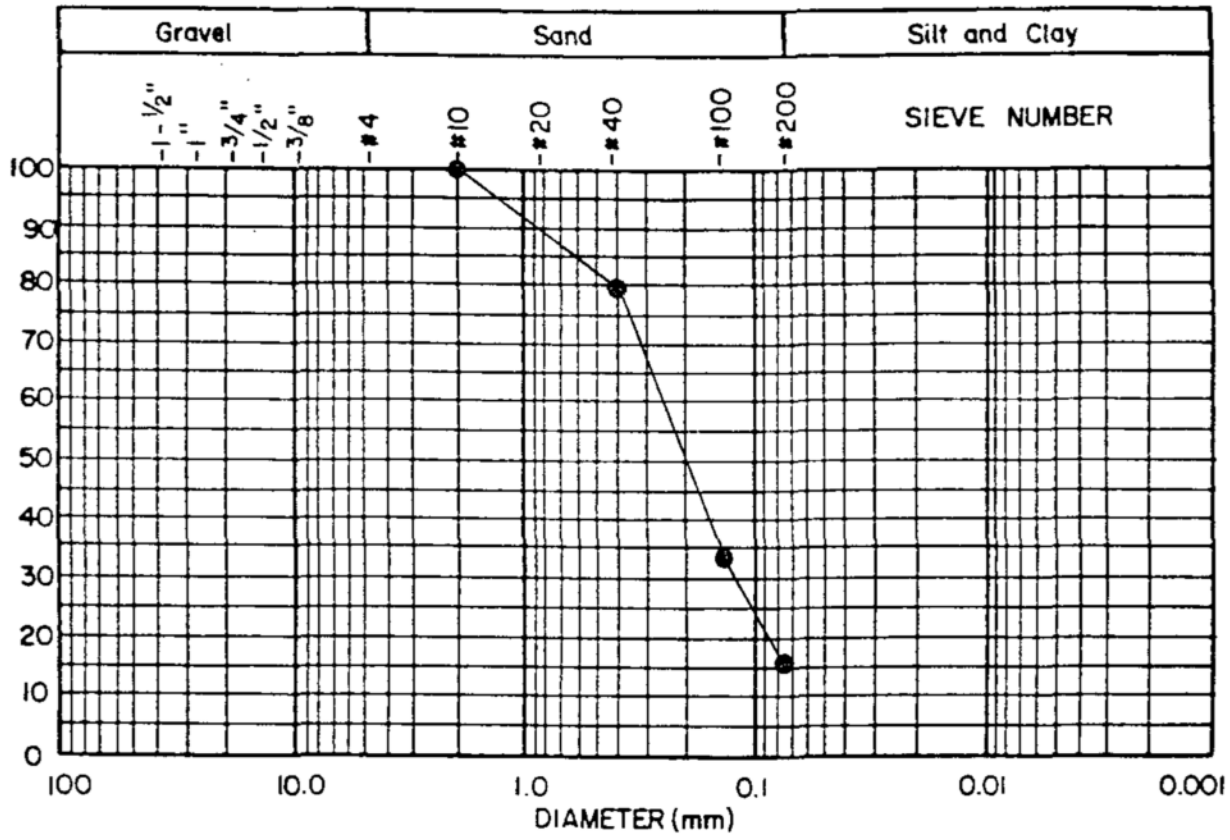
Remarks: No bedrock, no groundwater

By: R. Hildenbrandt

Figure 2

Boring No. PH Depth 4'5"

Project 14090 DAVIS RD.



SIEVE SIZE	% PASSING
3/4"	
# 4	
# 10	100
# 40	79
# 100	33
# 200	16

UNIFIED CLASSIFICATION: SM

HILDENBRANDT & ASSOCIATES		GRAIN SIZE ANALYSIS	
Date	Drawn by:	Project 960510-P	Figure 3

Planning Dept. approval is contingent upon compliance with all applicable notes on the recorded plat.

Prior to the establishment of any driveway onto a County road an access permit must be granted by the El Paso County Dept. of Transportation.

Diversion or blockage of any drainageway is not permitted without the approval of the El Paso County Dept. of Transportation.

RR-3

43330-00-011 part of

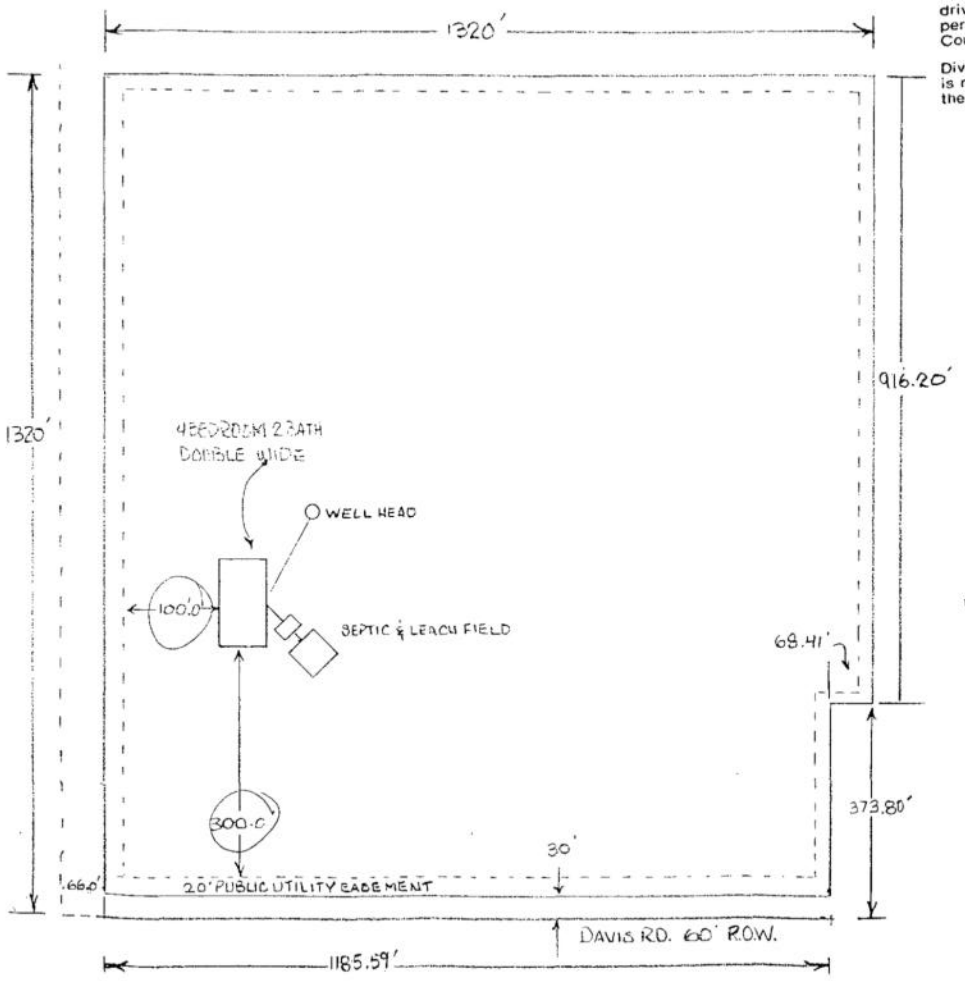
016 New #

37. AC.

APPROVED
EL PASO COUNTY PLANNING DEPT.
THIS 1 DAY OF July, 1996
for Approved for mobile per note.

SE 1/4, SW 1/4, SEC. 33, T13, R64W OF 6TH PM

EXCEPTING THEREFROM THE WEST 66.0 FEET OF SAID PARCEL AND ALSO EXCEPTING THEREFROM THE EAST 68.4 FEET OF THE SOUTHERLY 373.80 FEET OF THE SAID PARCEL AND CONTAINING 37.41 AC.



NORTH

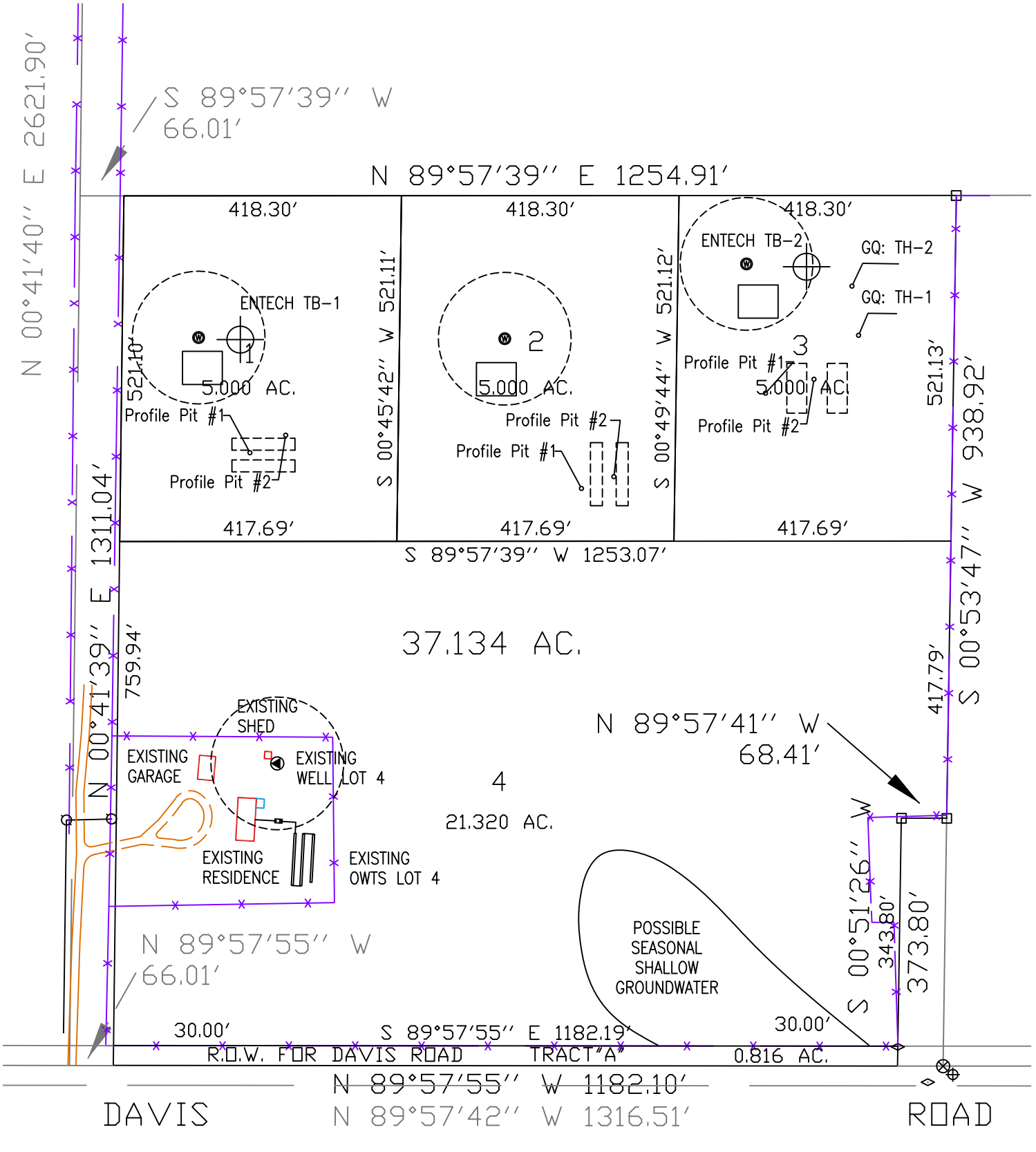
ONE INCH EQUALS 200 FT.

14090 DAVIS RD

KATHLEEN S. FRENCH
2670 DAVIS RD, FALCON, CO 80831 - 719-683-2663

SCALE:	APPROVED BY:	DRAWN BY
DATE:		REVISED
		DRAWING NUMBER

APPENDIX E: PROPOSED DEVELOPMENT LAYOUT



Project: 23-060	
Sheet: 1 of 1	
Date: 6 Mar 2023	
Revised:	
Drawn by: djp	
Checked by: djp	

Project Address

Ginger Spence
14090 Davis road,
Lot #1-4,
Sch. No. 4333000016
El Paso County, Colorado

D & D ENGINEERING
(719) 375-1779

N

0 50 100 150 200
GRAPHIC SCALE IN FEET
SCALE: 1" = 200'