



**ENTECH**  
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January 26, 2024  
Revised March 11, 2024

Vertex Consulting Services  
455 East Pikes Peak Avenue, Suite 101  
Colorado Springs, Colorado 80903

Attn: Craig Dossey

Re: Wastewater Study  
McLean Subdivision  
2415 Hodgen Road  
Parcel No. 61281-00-014  
El Paso County, Colorado  
Entech Job No. 231709

Dear Mr. Dossey:

The project consists of subdividing 38.68-acres into two rural residential lots. An existing home and out buildings on Lot 1 will remain. The site is located east of the intersection of Hodgen Road and Roller Coaster Road on the southern side of Hodgen Road, in El Paso County, Colorado.

### **GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION**

The site is located in a portion of the NE¼ of Section 28, Township 11 South, Range 66 West of the 6<sup>th</sup> Principal Meridian in El Paso County, Colorado. The site is located approximately 2½ miles east of Monument, Colorado, east of the intersection of Hodgen Road and Roller Coaster 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 gradually to moderately sloping to the south with steeper slopes along the minor drainages in the central portion of the property. The drainages were dry at the time of our site investigation. Vegetation on the site primarily consist of ponderosa pines with field grasses and weeds. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have included undeveloped and rural residential development. Site photographs, taken October 24, 2023, are included in Appendix A.

Total acreage involved in the proposed subdivision is 38.68-acres. Two rural residential lots are proposed as part of the replat. The proposed lot sizes are 20.25 and 18.41-acres. The existing residence, outbuildings, on-site wastewater treatment system, and water well located on proposed Lot 1, will remain. The new lot will be serviced by individual water wells and on-site wastewater treatment system. The Site Plan with the proposed replat is presented in Figure 3.

### **SCOPE OF THE REPORT**

The scope of the report will include the following a general geologic analysis utilizing published geologic data. Detailed site-specific mapping will be 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 any 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 24, 2023.

Two test borings were drilled and two test pits were excavated on the site to determine general suitability for construction and the use of on-site wastewater treatment systems and general soil characteristics. The location of the test pit is indicated on the Site Plan/Test Pit Location Map, Figure 3. The Test Pit Log is 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, and Atterberg Limits, ASTM D-4318. Results of the laboratory testing are included in Appendix C. A Summary of Laboratory Test Results is presented in Table 1.

## **SOIL AND GEOLOGIC CONDITIONS**

### Soil Survey

The Natural Resource Conservation Service (NRCS) (Reference 1, Figure 4), previously the Soil Conservation Service (Reference 2) has mapped three soil types on the site. Complete descriptions of the soil types are presented in Appendix D. In general, the soils consist of sandy loam to gravelly loamy sand. The soils are described as follows:

<u>Type</u>	<u>Description</u>
41	Kettle gravelly loamy sand, 8 to 40 percent slopes
68	Peyton-Pring complex, 3 to 8 percent slopes
93	Tomah-Crowfoot complex, 8 to 15 percent slopes

The soils have been described to have moderate to rapid permeabilities. The soils are described as well suited for use as homesites. 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 2).

### Soils

The soils encountered in the test borings and test pits consisted of a layer of silty to gravelly silty sand and clayey sand overlying sandstone bedrock with varying amounts of silt and clay. The sands were encountered at medium dense states and moist conditions. Bedrock was encountered at depths ranging from the existing surface grade to 7 The upper sands were encountered at medium dense states and moist to dry conditions. The sand soils exhibit a low expansion potential.

### Groundwater

Groundwater was not encountered in the test borings or test pits, which were drilled to 20 feet and excavated to 3½ to 8 feet. It is anticipated groundwater will not affect shallow foundations on

the site. Areas of potential seasonally shallow groundwater have been mapped in minor drainages on the site that are discussed in the following sections. 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 7 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 the southwestern extent of a large structural feature known as the Denver Basin. Bedrock in the area is typically gently dipping in a northeasterly direction (Reference 3). The bedrock underlying the site consists of the Dawson Formation of Cretaceous Age. The Dawson Formation typically consists of coarse-grained arkosic sandstone with interbedded layers of claystone or siltstone. Overlying the Dawson formation are unconsolidated layers of colluvial and residual soils, and alluvium deposited along the minor drainages.

The geology of the site was evaluated using the *Geologic Map of the Black Forest Quadrangle*, by Thorson, in 2003, (Reference 4, Figure 5). The Geology Map for the site is presented in Figure 6. Three mappable units were identified on this site which is described as follows:

- Qal Recent Alluvium of Holocene Age:** These are recent deposits that have been deposited along the drainages that exist on-site. These materials consist of silty to gravelly sands. Some of these alluviums may contain highly organic soils.
- Qc Colluvium of Quaternary Age:** These materials consist of gravelly silty sands deposited by the action of sheetwash and gravity as well as the in-situ weathering of the bedrock materials on-site.
- Tkd Dawson Formation of Tertiary to Cretaceous Age:** The Dawson formation typically consists of arkosic sandstone with interbedded fine-grained sandstone, siltstone and claystone. Overlying this formation is a variable layer of residual soil. The residual soils were derived from the in-situ weathering of the bedrock materials on-site. These soils consisted of silty to clayey sands and sandy clays.

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Black Forest Quadrangle* distributed by the Colorado Geologic Survey in 2003 (Reference 4, Figure 5), The *Geologic Map of the Colorado Springs-Castle Rock Area*, distributed by the US Geological Survey in 1979 (Reference 5), and the *Geologic Map of the Denver 1° x 2° Quadrangle*, distributed by the US Geological Survey in 1981 (Reference 6). The test borings and test pits were used in evaluating the site and is included in Appendix B. The Geology Map prepared for the site is presented in Figure 6.

### Drainage Areas

The site is not mapped within any floodplains according to the FEMA Map No. 08041CO285G, dated December 7, 2018 (Figure 8, Reference 6). Areas of potential seasonally shallow groundwater were observed on the site (Figure 6). In these areas, we would anticipate the potential for periodically high subsurface moisture conditions and frost heave potential. These

areas lie along minor drainages located in the central portions of the site. Water was not observed in any of the drainages at the time of our site investigation. These areas can likely be avoided by development. The potential exists for high groundwater levels during high moisture periods and should structures encroach on these areas. Specific drainage studies are beyond the scope of this report. Individual wastewater treatment systems must be located a minimum of 25 feet from dry gulches and 50 feet from water courses or floodplains.

### **ON-SITE WASTEWATER TREATMENT**

The Natural Resource Conservation Service (Reference 1), previously the Soil Conservation Service (Reference 2) has been mapped with three soil descriptions. The Soil Survey Map (Reference 1) is presented in Figure 4, and the Soil Survey Descriptions (Reference 2) are presented in Appendix D. The soils are described as having moderate to rapid percolation rates. Existing El Paso County Health Department septic records for the system on Lot 1 are included in Appendix E.

Soils encountered in the tactile test pits consisted of loamy to gravelly loamy sand and sandy clay loam overlying sandstone. The limiting layers encountered in the test pits are the gravelly sandy loam, sandy clay loam, and sandstone, which corresponds with USDA Soil Types R1 and 4 with an LTAR value of 0.80 to 0.20 gallons per day per square foot. Bedrock was encountered in the test pits at depths of 3 and 6 feet, and signs of seasonally occurring groundwater were not observed in the test pits. Absorption fields must be maintained a minimum of 4 feet above groundwater or bedrock, or confining layer. Should groundwater or bedrock be encountered within 6 feet of the surface, designed systems will be required. Designed systems are anticipated for the new lot, however, other areas may be encountered on the lots where conventional systems would be suitable.

In summary, it is our opinion the site is suitable for individual on-site wastewater treatment systems (OWTS) and that contamination of surface and subsurface water resources should not occur provided the OWTS sites are evaluated and installed according to El Paso County and State Guidelines and properly maintained. Based on the testing performed designed systems will be required for the new lot. The Septic Suitability Map is presented in Figure 8. A possible house location, water well, and two septic sites for the new lot are indicated on Figure 8. Areas that should be avoided by septic systems are indicated on the septic suitability map.

**Individual soil testing is required for proposed construction on each lot prior to construction.** Absorption fields must be located a minimum of 100 feet from any well, including those on adjacent properties. Absorption fields must also be located a minimum of 50 feet from any drainages, floodplains or ponded areas and 25 feet from dry gulches.



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Wastewater Study  
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## CLOSURE

This report has been prepared for Vertex Consulting Services, 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.

Reviewed by:

A handwritten signature in blue ink, appearing to read "Logan L. Langford".

Logan L. Langford, P.G.  
Sr. Geologist



A handwritten signature in blue ink, appearing to read "Joseph C. Goode, Jr.".

Joseph C. Goode, Jr., P.E.  
President

LLL

Encl.

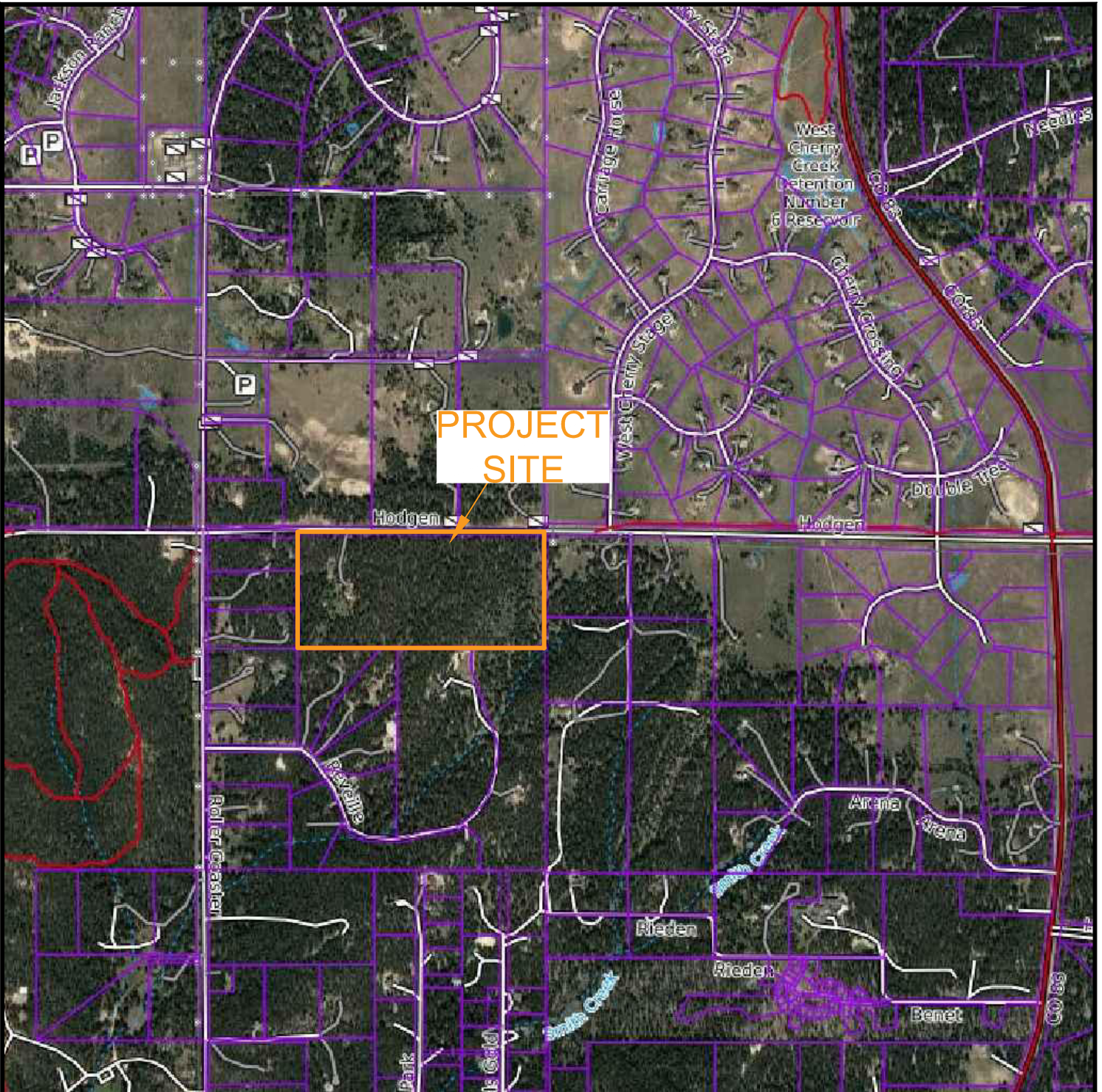
F:\AA Projects\2023\231709-Vertex Consulting-2415 Hodgen Rd-OWTS-GeoHaz\Reports\231709 wws.docx

## BIBLIOGRAPHY

1. Natural Resource Conservation Service, August 24, 2023. *Web Soil Survey*. United States Department Agriculture, <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.
2. United States Department of Agriculture Soil Conservation Service. June 1981. *Soil Survey of El Paso County Area, Colorado*.
3. Bryant, Bruce; McGrew, Laura W. and Wobus, Reinhard A. 1981. *Geologic Map of the Denver 1° x 2° Quadrangle, North-Central Colorado*. U.S. Geologic Survey. Map I-1163.
4. Thorson, Jon P., 2003. *Geologic Map of the Black Forest Quadrangle, El Paso County, Colorado*. Colorado Geological Survey. Open-File Report 03-6.
5. 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.
6. Federal Emergency Management Agency. December 7, 2018. *Flood Insurance Rate Maps for the City of Colorado Springs, Colorado*. Map Number 08041CO285G.

## FIGURES





PROJECT  
SITE

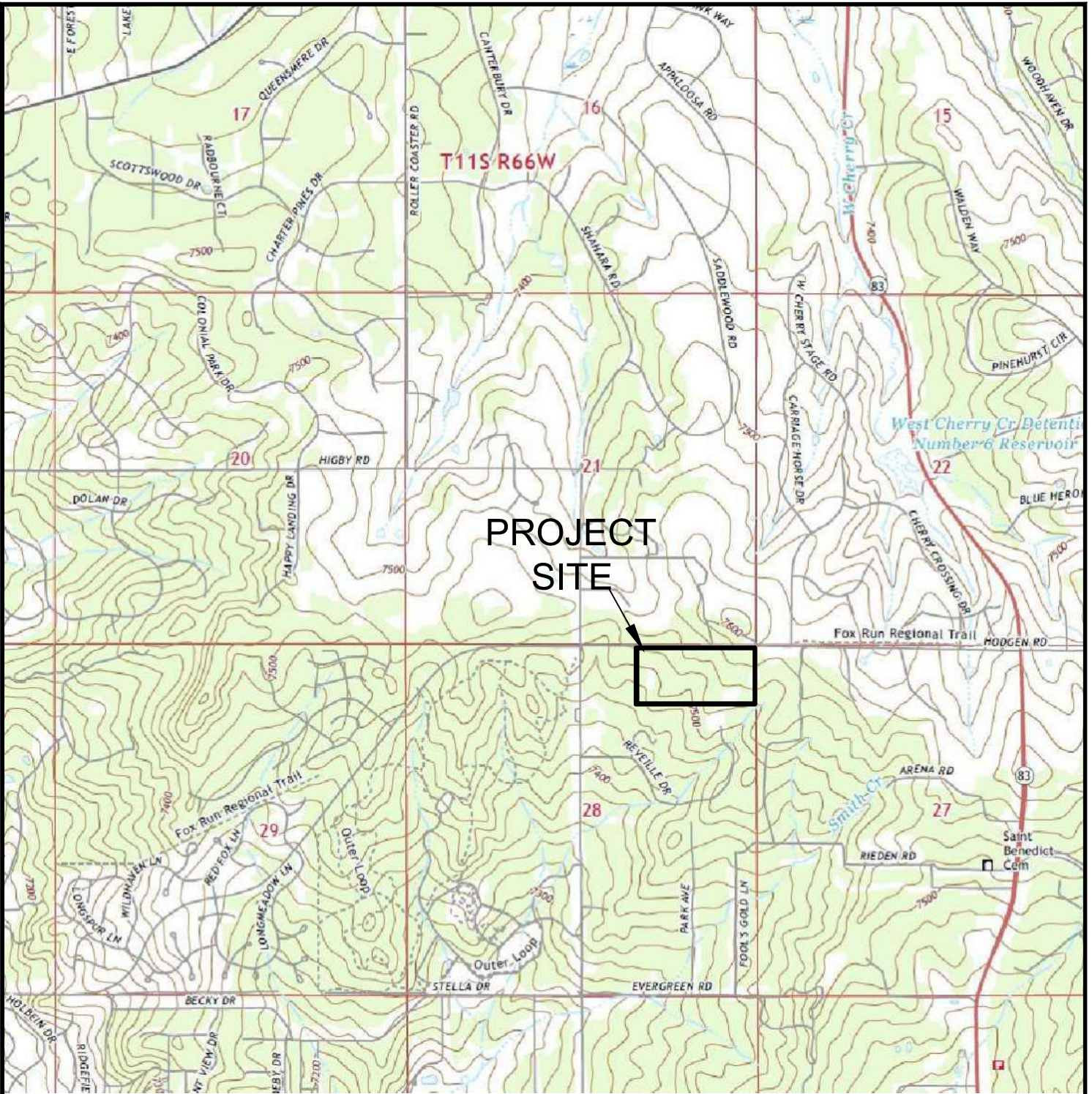


**VICINITY MAP**  
2415 HODGEN RD  
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**FIG. 1**





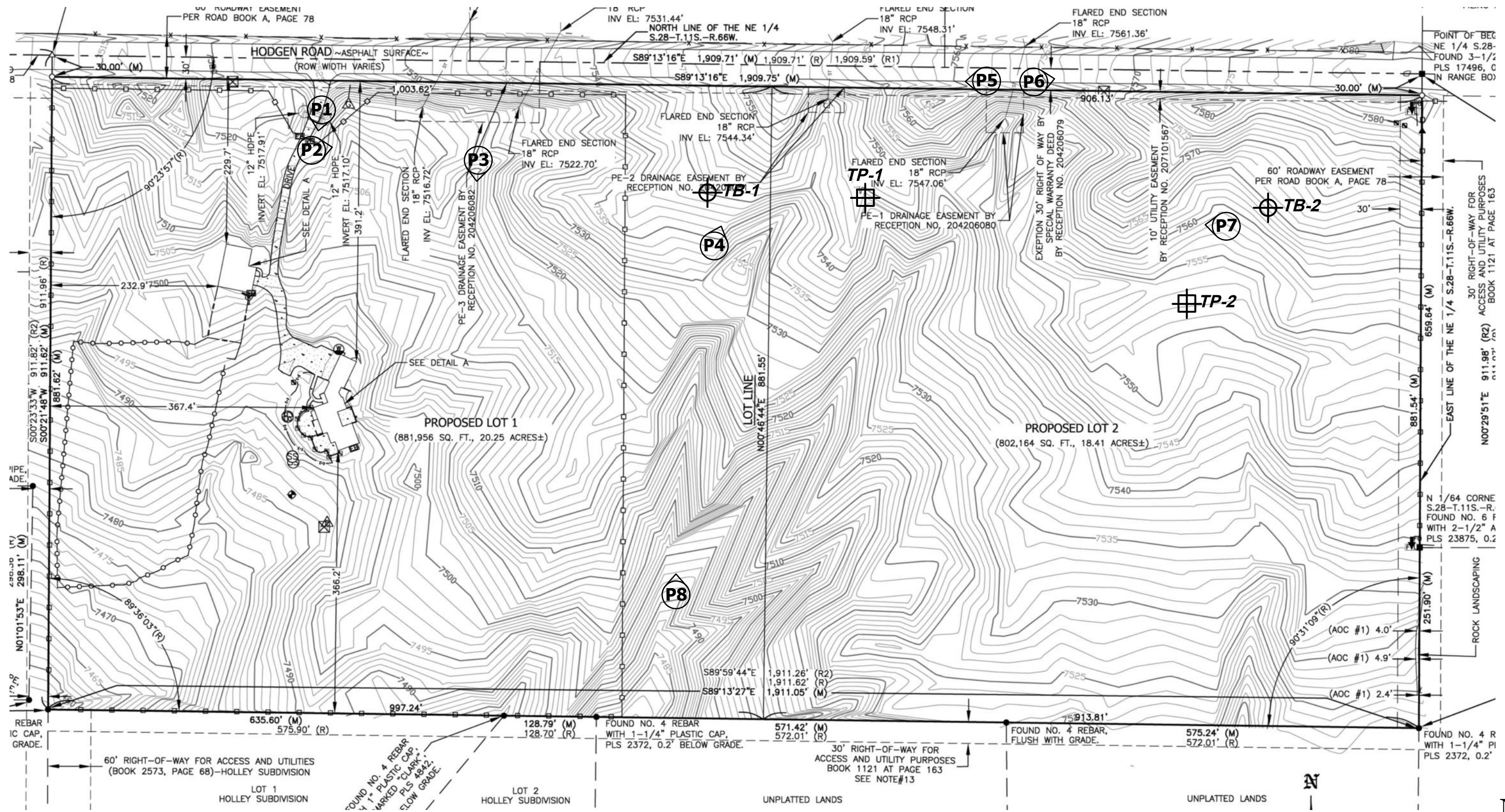
**USGS TOPOGRAPHY MAP**

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**FIG. 2**





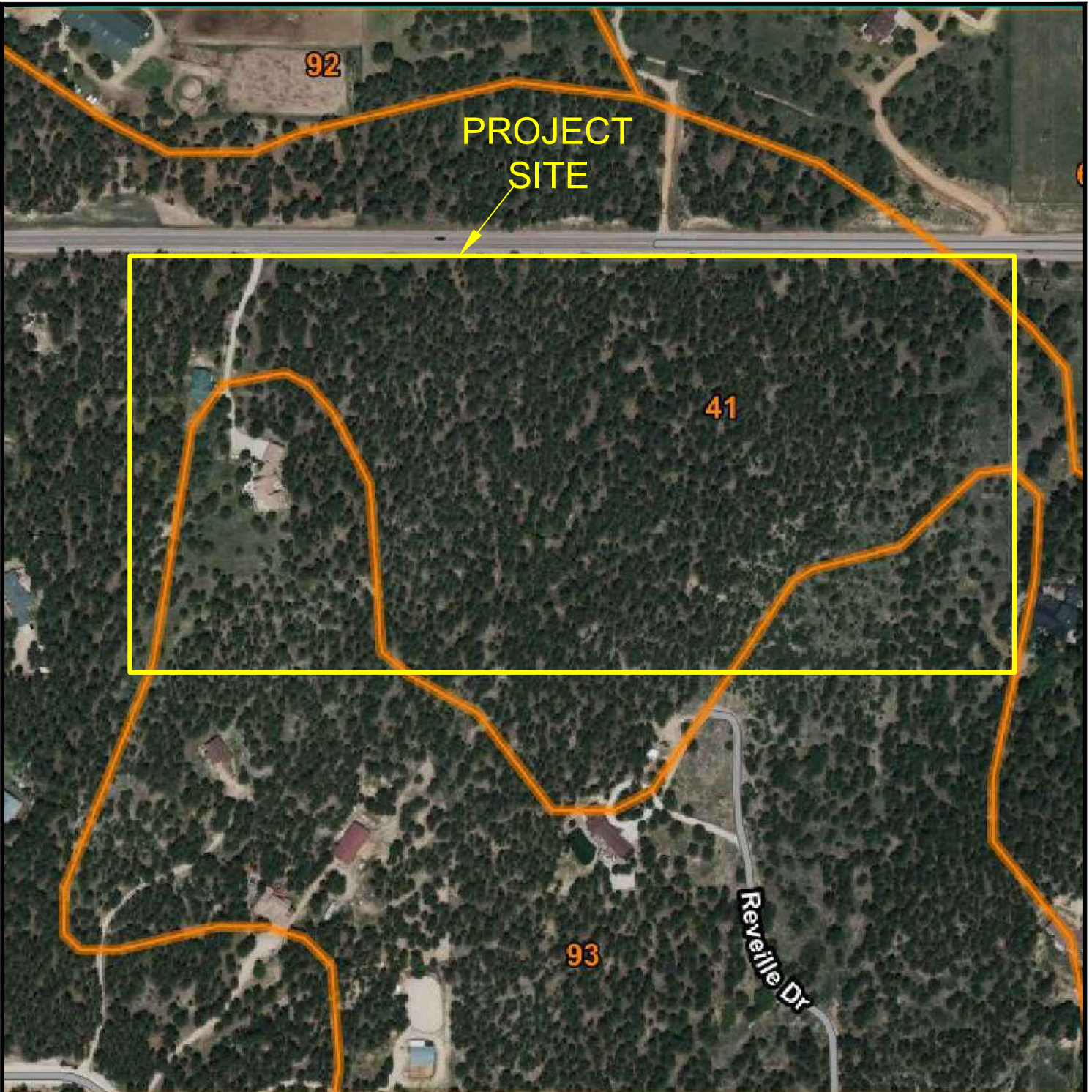
- ⊕ - APPROXIMATE TEST BORING LOCATION AND NUMBER
- ⊞ - APPROXIMATE TEST PIT LOCATION AND NUMBER
- Ⓟ - APPROXIMATE PHOTOGRAPH LOCATION AND NUMBER



**SITE AND EXPLORATION PLAN**  
2415 HODGEN ROAD  
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**FIG. 3**



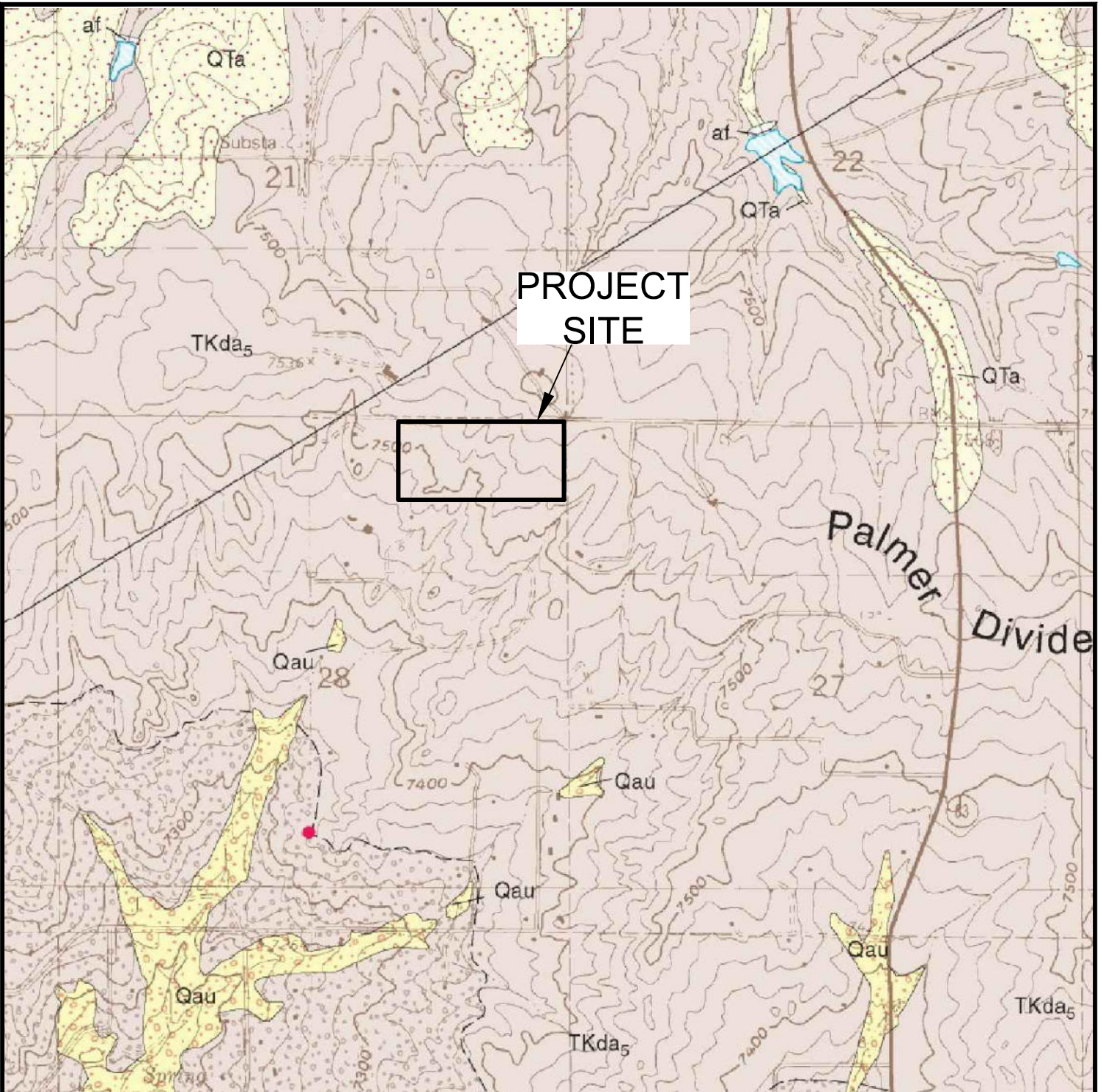


**SOIL SURVEY MAP**  
2415 HODGEN RD  
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**FIG. 4**



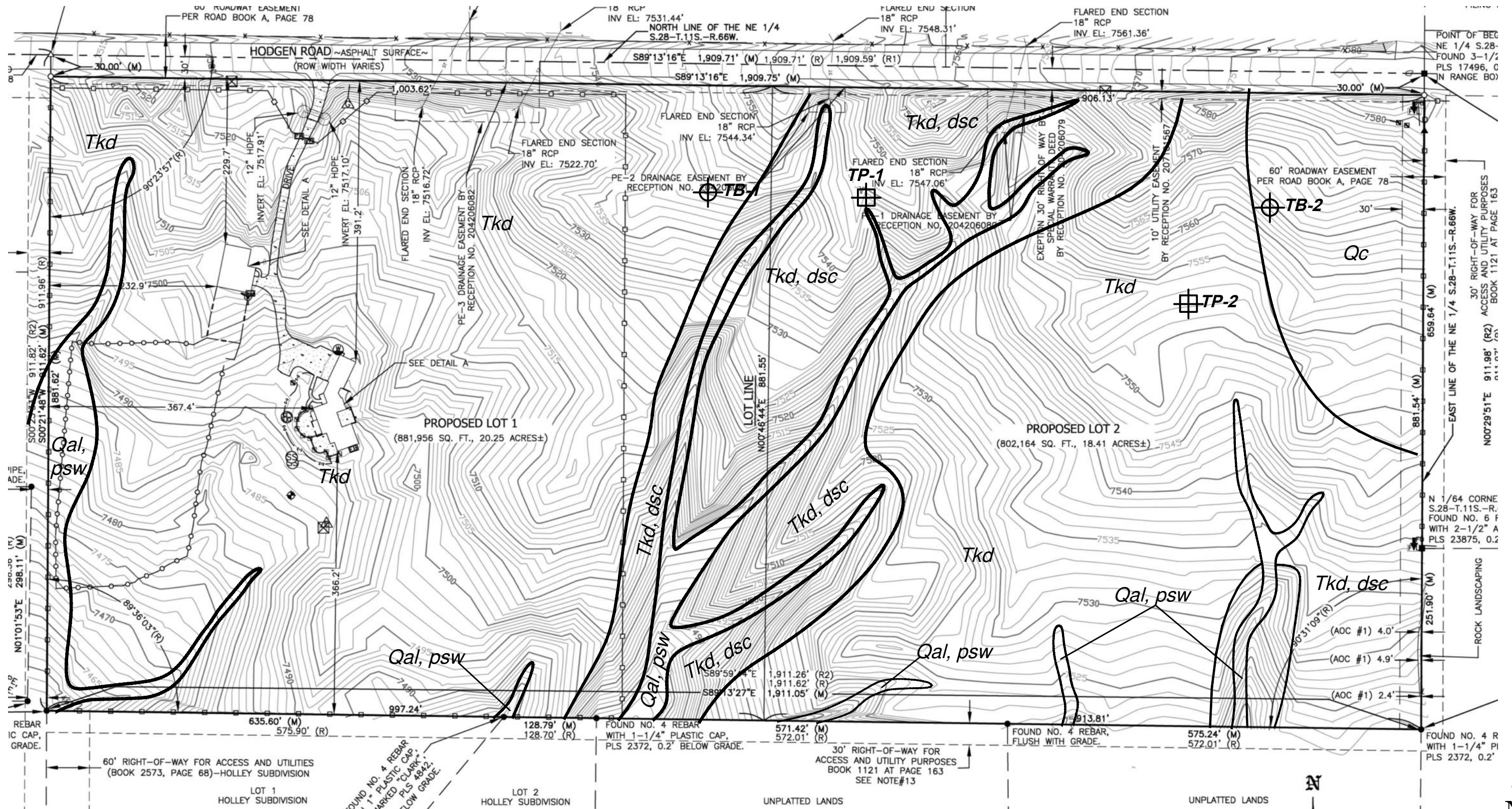


**GEOLOGIC MAP OF THE  
MOUNMENT QUADRANGLE**  
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**FIG. 5**





- Legend:
- Qal - Alluvial Deposits of Holocen Age: recent water deposited sands and gravel along minor drainages
  - Qc - Colluvium of Holocene and late Pleistocene Age: colluvial and sheetwash deposits
  - Tkd - Dawson Formation of Tertiary to Cretaceous Age: arkosic sandstone with interbedded layers of claystone and siltstone
  - dsc - downslope creep area
  - psw - potentially seasonal shallow groundwater area



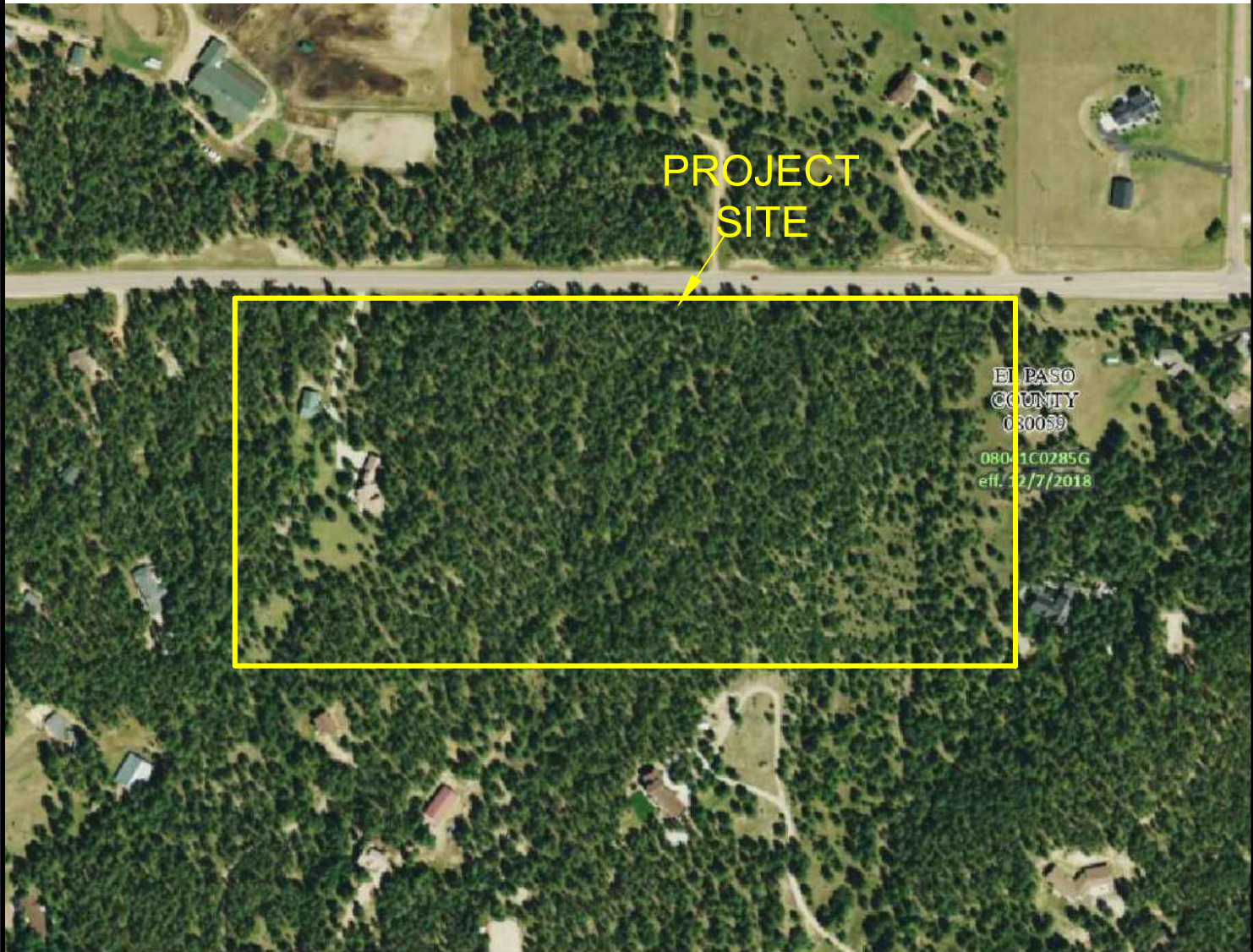
**GEOLOGY / ENGINEERING MAP**

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FIG. 6





**FEMA FLOODPLAIN MAP**

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**FIG. 7**

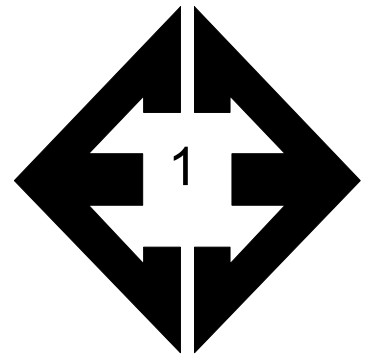






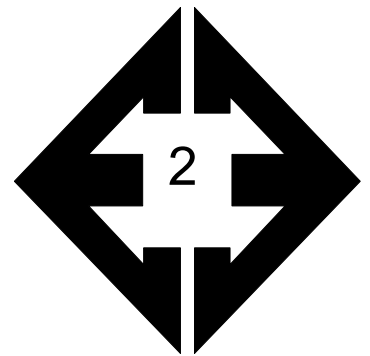
## **APPENDIX A: Site Photographs**





**Looking south from the northwest side of the site (Lot 1).**

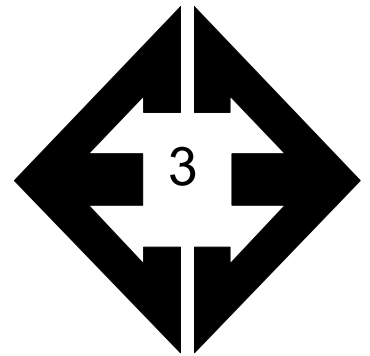
October 24, 2023



**Looking east from the northwest side of the site.**

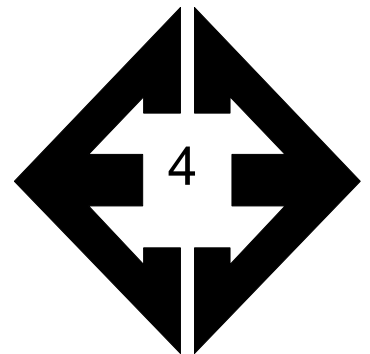
October 24, 2023





**Looking south along  
the lot boundary of  
Lots 1 and 2.**

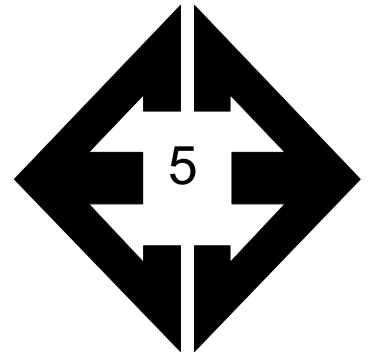
October 24, 2023



**Looking north from the  
central portion of the  
Lot 2.**

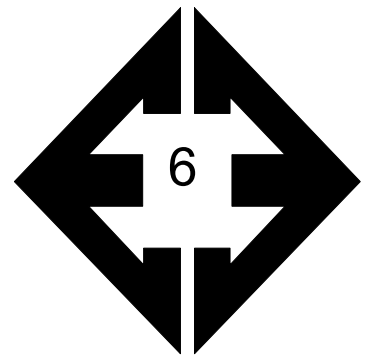
October 24, 2023





**Looking west northern side of the site.**

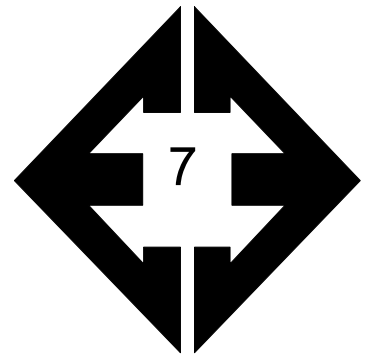
October 24, 2023



**Looking east from the northern side of the site.**

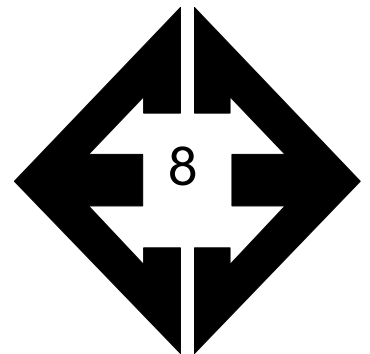
October 24, 2023





**Looking west from the  
central portion of Lot  
4.**

October 24, 2023



**Looking north along  
minor drainage in the  
southern portion of the  
site.**

October 24, 2023



## **APPENDIX B: Test Boring and Test Pit Logs**

TEST BORING 1  
DATE DRILLED 10/27/2023

TEST BORING 2  
DATE DRILLED 10/27/2023

REMARKS

REMARKS

DRY TO 20', 10/27/23

DRY TO 20', 10/27/23

SANDSTONE, EXTREMELY WEAK, TAN, MODERATELY WEATHERED (SAND, WITH SILT, VERY DENSE, MOIST)

SAND, GRAVELLY, SILTY, TAN, MEDIUM DENSE to LOOSE, MOIST

SANDSTONE, VERY WEAK, TAN, FRESH (SAND, CLAYEY, VERY DENSE, MOIST)

SANDSTONE, VERY WEAK, TAN, SLIGHTLY WEATHERED (SAND, WITH SILT, VERY DENSE, MOIST)

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
5			50 11"	3.3	2	5			15	3.3	1
			50 11"	6.8	2				6	3.2	1
10			50 8"	7.1	2	10			50 8"	6.3	2
15			50 7"	14.5	2	15			50 7"	7.1	2
20			50 5"	8.1	2	20			50 5"	7.2	2



TEST BORING LOGS

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FIG. B-1



TEST PIT 1  
DATE EXCAVATED 10/27/2023

TEST PIT 2  
DATE DRILLED 10/27/2023

REMARKS

REMARKS

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, loamy sand, brown, moist	1						topsoil, loamy sand, brown, moist	1					
loamy sand to gravelly loamy sand, fine to coarse grained, tan to light brown	2			gr	w	2 R1	sandy clay loam, fine to coarse grained, tan	2			gr	m	3
	3						sandstone (Dawson Formation), gravelly sandy clay, fine to coarse grained, grayish brown	3			ma		4 R1
	4							4					
	5							5					
	6							6					
sandstone (Dawson Formation), gravelly sandy clay, fine to coarse grained, grayish brown	7			ma		4 R1		7					
	8							8					
	9							9					
	10							10					

Soil Structure Shape

granular - gr  
platy - pl  
blocky - bl  
prismatic - pr  
single grain - sg  
massive - ma

Soil Structure Grade

weak - w  
moderate - m  
strong - s  
loose - l



**TEST PIT LOGS**

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**FIG. B-2**

## **APPENDIX C: Laboratory Test Results**

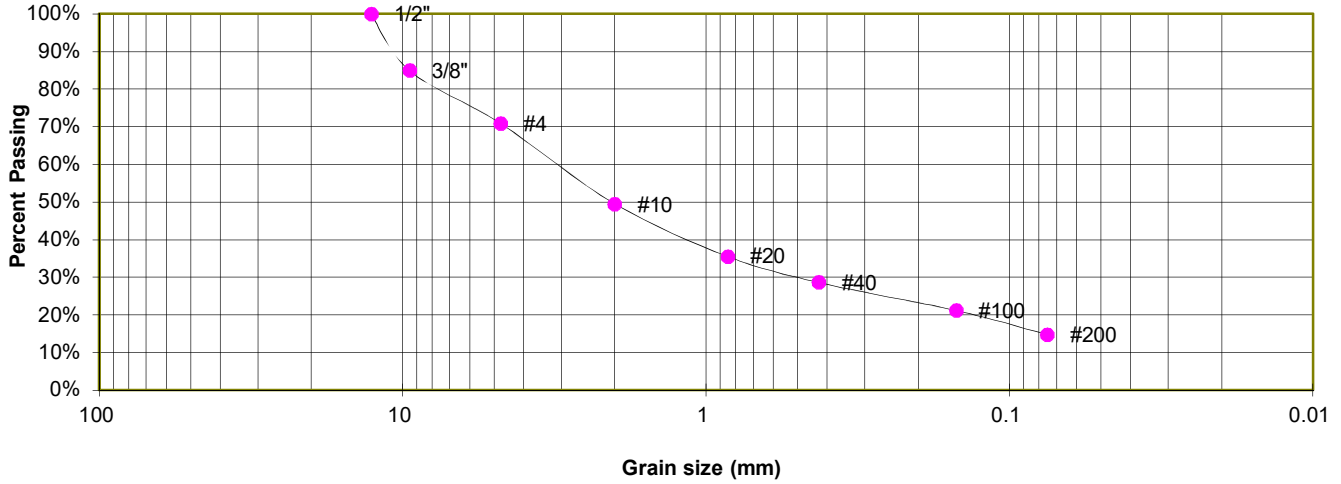
**TABLE C-1  
SUMMARY OF LABORATORY TEST RESULTS**

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	USCS	SOIL DESCRIPTION
1	2	2-3	14.8	NV	NP	NP	SM	SAND, SILTY
2	1	15	34.1				SC	SANDSTONE (SAND, CLAYEY)
2	2	10	11.0	NV	NP	NP	SW-SM	SANDSTONE (SAND, WITH SILT)

TEST BORING 2  
 DEPTH (FT) 2-3

SOIL DESCRIPTION SAND, SILTY  
 SOIL TYPE 1

**Sieve Analysis  
 Grain Size Distribution**



**GRAIN SIZE ANALYSIS**

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	85.0%
4	70.8%
10	49.5%
20	35.6%
40	28.6%
100	21.2%
200	14.8%

**ATTERBERG LIMITS**

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

**SOIL CLASSIFICATION**

USCS CLASSIFICATION: SM



**LABORATORY TEST RESULTS**

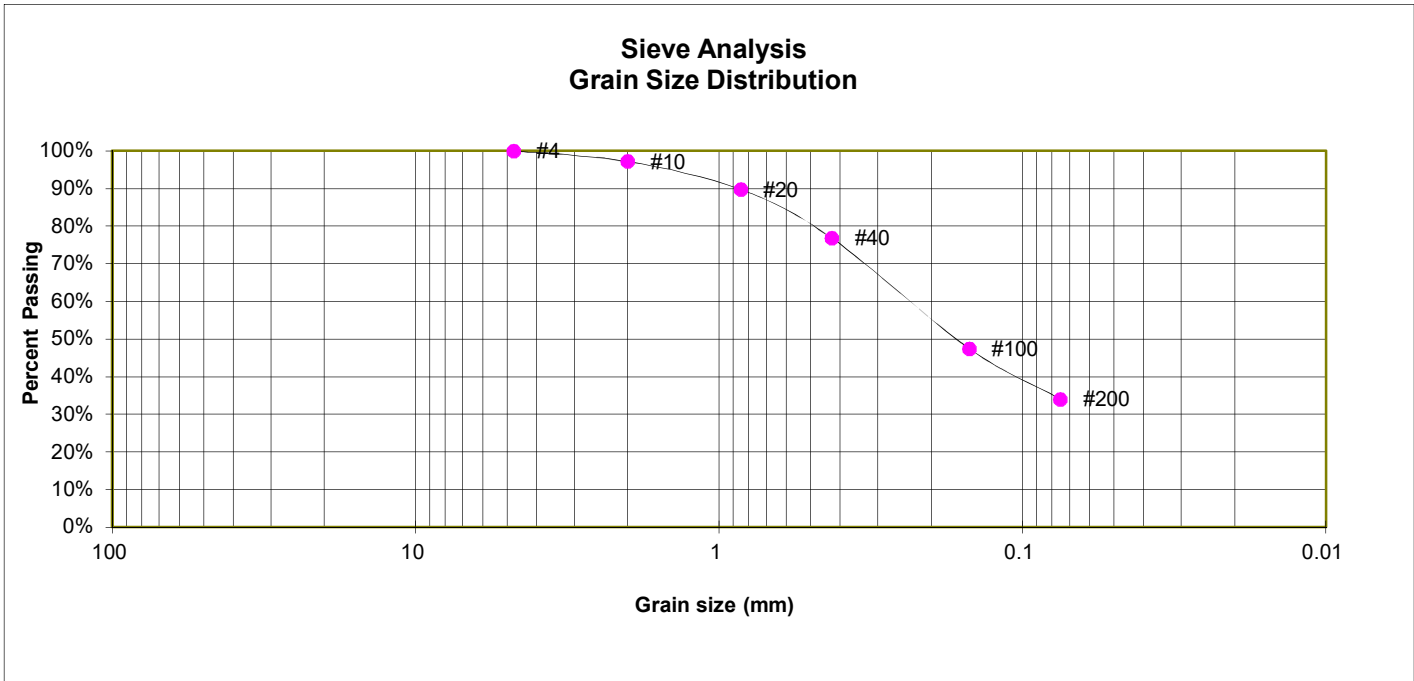
2415 HODGEN ROAD  
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**FIG. C-1**

TEST BORING 1  
DEPTH (FT) 15

SOIL DESCRIPTION SANDSTONE (SAND, CLAYEY)  
SOIL TYPE 2



**GRAIN SIZE ANALYSIS**

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	97.2%
20	89.8%
40	76.8%
100	47.5%
200	34.1%

**SOIL CLASSIFICATION**

USCS CLASSIFICATION: SC



**LABORATORY TEST RESULTS**

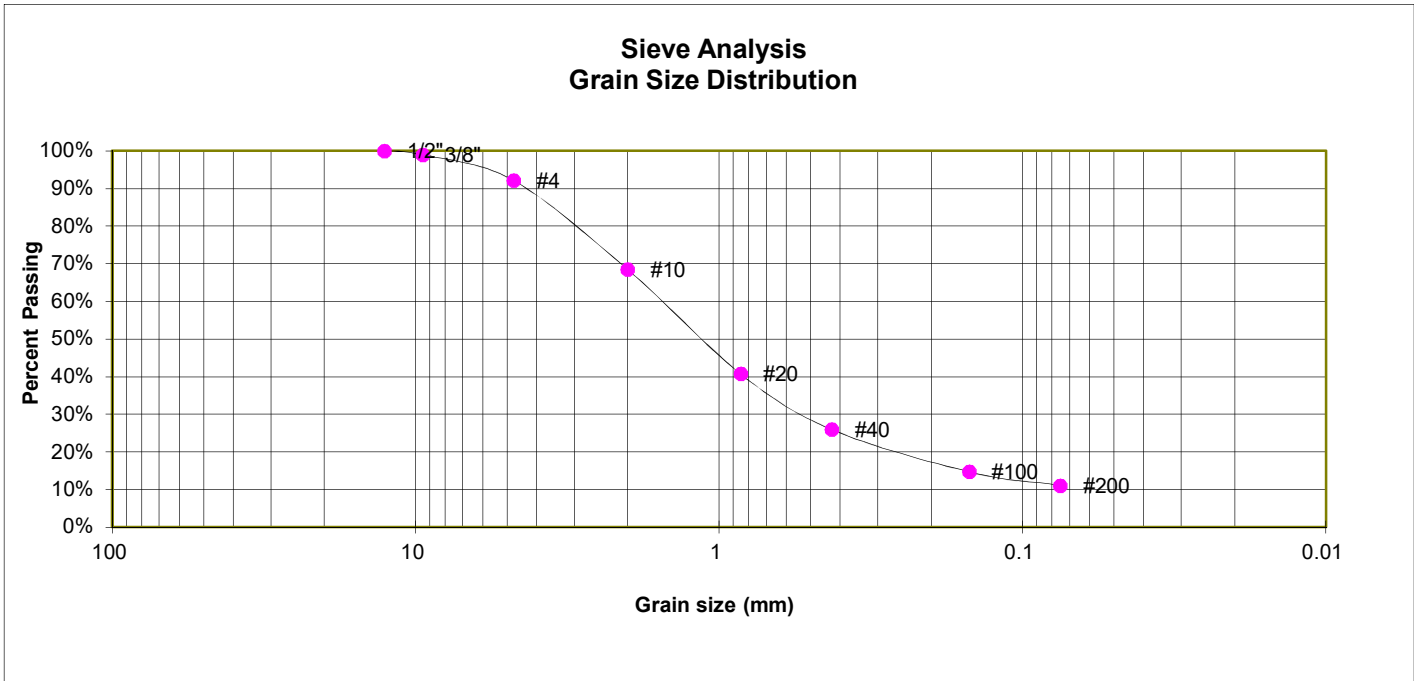
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**FIG. C-2**

TEST BORING 2  
 DEPTH (FT) 10

SOIL DESCRIPTION SANDSTONE (SAND, WITH SILT)  
 SOIL TYPE 2



**GRAIN SIZE ANALYSIS**

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	99.0%
4	92.1%
10	68.5%
20	40.8%
40	25.9%
100	14.7%
200	11.0%

**ATTERBERG LIMITS**

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

**SOIL CLASSIFICATION**

USCS CLASSIFICATION: SW-SM



**LABORATORY TEST RESULTS**

2415 HODGEN ROAD  
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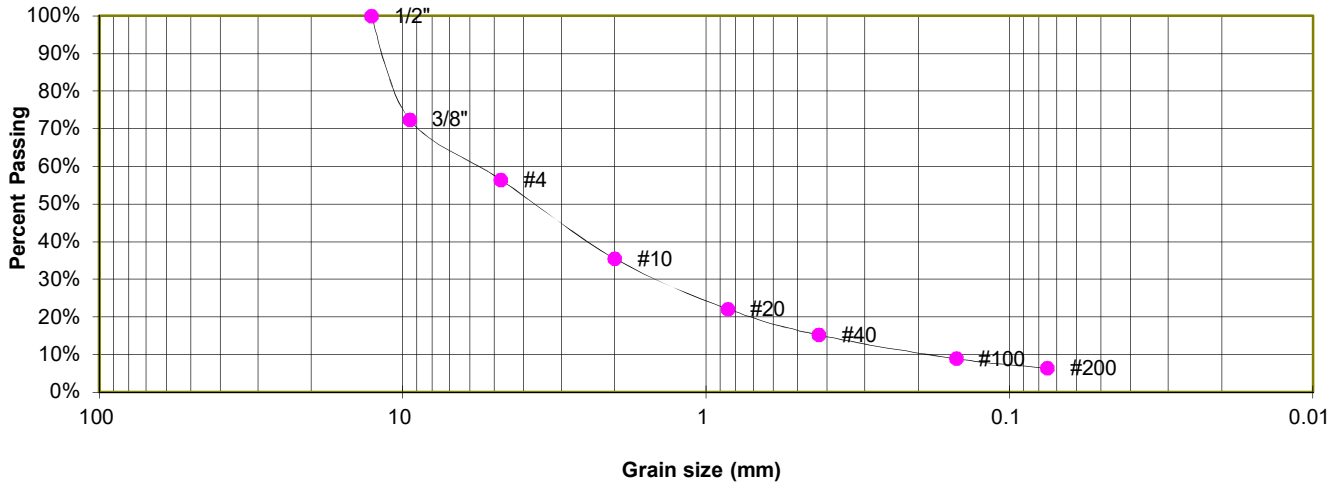
**FIG. C-3**



TEST BORING TP-1  
DEPTH (FT) 2

SOIL DESCRIPTION SAND, WITH SILT

### Sieve Analysis Grain Size Distribution



#### GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	72.5%
4	56.5%
10	35.5%
20	22.2%
40	15.2%
100	8.9%
200	6.4%

#### SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM



### LABORATORY TEST RESULTS

2415 HODGEN ROAD  
VERTEX CONSULTING

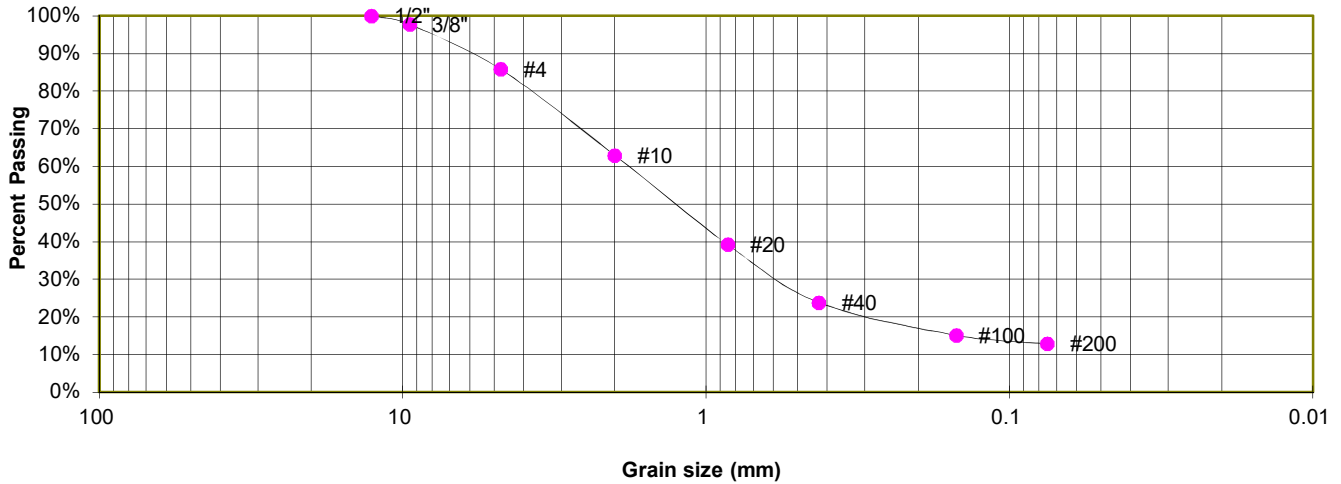
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FIG. C-4

TEST BORING TP-1  
DEPTH (FT) 7

SOIL DESCRIPTION SAND, SILTY

### Sieve Analysis Grain Size Distribution



#### GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.7%
4	85.8%
10	62.9%
20	39.3%
40	23.8%
100	15.1%
200	12.9%

#### SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



### LABORATORY TEST RESULTS

2415 HODGEN ROAD  
VERTEX CONSULTING

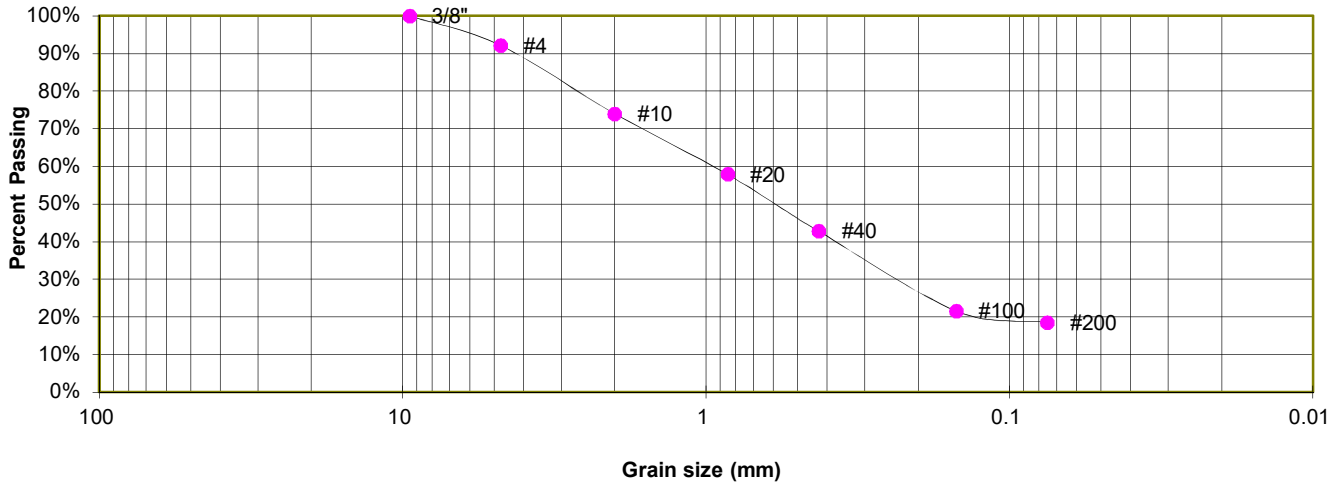
JOB NO.  
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FIG. C-5

TEST BORING TP-2  
DEPTH (FT) 3

SOIL DESCRIPTION SAND, SILTY

### Sieve Analysis Grain Size Distribution



#### GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	92.1%
10	74.0%
20	57.9%
40	42.8%
100	21.6%
200	18.6%

#### SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



#### LABORATORY TEST RESULTS

2415 HODGEN ROAD  
VERTEX CONSULTING

JOB NO.  
231709

FIG. C-6





## **APPENDIX D: Soil Survey Descriptions**

## El Paso County Area, Colorado

### 41—Kettle gravelly loamy sand, 8 to 40 percent slopes

#### Map Unit Setting

*National map unit symbol:* 368h

*Elevation:* 7,000 to 7,700 feet

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Kettle and similar soils:* 85 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Kettle

##### Setting

*Landform:* Hills

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Sandy alluvium derived from arkose

##### Typical profile

*E - 0 to 16 inches:* gravelly loamy sand

*Bt - 16 to 40 inches:* gravelly sandy loam

*C - 40 to 60 inches:* extremely gravelly loamy sand

##### Properties and qualities

*Slope:* 8 to 40 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Somewhat excessively drained

*Runoff class:* Medium

*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

*Available water supply, 0 to 60 inches:* Low (about 3.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Ecological site:* F048AY908CO - Mixed Conifer

*Hydric soil rating:* No

#### Minor Components

##### Other soils

*Percent of map unit:*

*Hydric soil rating:* No



**Pleasant**

*Percent of map unit:*

*Landform:* Depressions

*Hydric soil rating:* Yes

**Data Source Information**

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 21, Aug 24, 2023

## El Paso County Area, Colorado

### 68—Peyton-Pring complex, 3 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 369f

*Elevation:* 6,800 to 7,600 feet

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Peyton and similar soils:* 40 percent

*Pring and similar soils:* 30 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Peyton

##### Setting

*Landform:* Hills

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Arkosic alluvium derived from sedimentary rock and/or arkosic residuum weathered from sedimentary rock

##### Typical profile

*A - 0 to 12 inches:* sandy loam

*Bt - 12 to 25 inches:* sandy clay loam

*BC - 25 to 35 inches:* sandy loam

*C - 35 to 60 inches:* sandy loam

##### Properties and qualities

*Slope:* 3 to 5 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):* Moderately high (0.20 to 0.60 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Moderate (about 7.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4c

*Hydrologic Soil Group:* B

*Ecological site:* R049XY216CO - Sandy Divide

*Hydric soil rating:* No



## Description of Pring

### Setting

*Landform:* Hills

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Arkosic alluvium derived from sedimentary rock

### Typical profile

*A - 0 to 14 inches:* coarse sandy loam

*C - 14 to 60 inches:* gravelly sandy loam

### Properties and qualities

*Slope:* 3 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Runoff class:* Low

*Capacity of the most limiting layer to transmit water (Ksat):* High  
(2.00 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Low (about 6.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Ecological site:* R048AY222CO - Loamy Park

*Hydric soil rating:* No

## Minor Components

### Other soils

*Percent of map unit:*

*Hydric soil rating:* No

### Pleasant

*Percent of map unit:*

*Landform:* Depressions

*Hydric soil rating:* Yes

## Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 21, Aug 24, 2023

## El Paso County Area, Colorado

### 93—Tomah-Crowfoot complex, 8 to 15 percent slopes

#### Map Unit Setting

*National map unit symbol:* 36bb

*Elevation:* 7,300 to 7,600 feet

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Tomah and similar soils:* 50 percent

*Crowfoot and similar soils:* 30 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Tomah

##### Setting

*Landform:* Alluvial fans, hills

*Landform position (three-dimensional):* Crest, side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium derived from arkose and/or residuum weathered from arkose

##### Typical profile

*A - 0 to 10 inches:* loamy sand

*E - 10 to 22 inches:* coarse sand

*Bt - 22 to 48 inches:* stratified coarse sand to sandy clay loam

*C - 48 to 60 inches:* coarse sand

##### Properties and qualities

*Slope:* 8 to 15 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

*Available water supply, 0 to 60 inches:* Low (about 4.6 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e

*Hydrologic Soil Group:* B

*Ecological site:* R049XY216CO - Sandy Divide

*Hydric soil rating:* No



## Description of Crowfoot

### Setting

*Landform:* Alluvial fans, hills  
*Landform position (three-dimensional):* Crest, side slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium

### Typical profile

*A - 0 to 12 inches:* loamy sand  
*E - 12 to 23 inches:* sand  
*Bt - 23 to 36 inches:* sandy clay loam  
*C - 36 to 60 inches:* coarse sand

### Properties and qualities

*Slope:* 8 to 15 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  
*Available water supply, 0 to 60 inches:* Low (about 4.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 6e  
*Hydrologic Soil Group:* B  
*Ecological site:* R049XY216CO - Sandy Divide  
*Hydric soil rating:* No

### Minor Components

#### Other soils

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

#### Pleasant

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

## Data Source Information

Soil Survey Area: El Paso County Area, Colorado  
Survey Area Data: Version 21, Aug 24, 2023



**APPENDIX E: El Paso County Health Department  
Septic Records**



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

Permit # 0N0001783  
Date 10/16/00

**P**  
*MD*

APPROVED: YES  NO  # 6128100014

ENVIRONMENTALIST KRUEGER

Address 028-11-66  
2415 HODGEN RD

Owner HH NORMAN CONSTRUCTION

Legal Description ATTACHED  
Residence       , # of bedrooms 3; Commercial       ; System Installer RIP DREHNS

**\* SEPTIC TANK:**

Commercial ; Noncommercial       , L       , W       , WD         
Construction Material 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:**

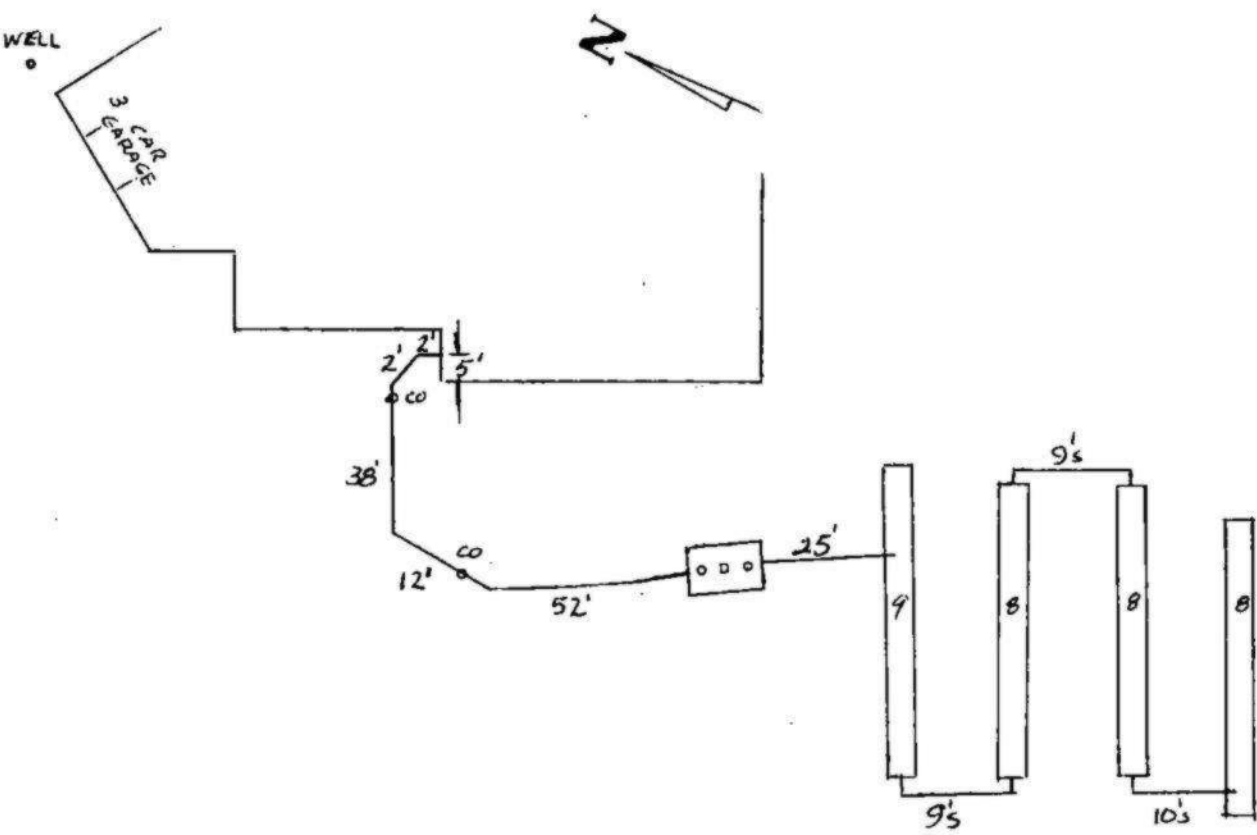
Chamber: Type INFILTRATOR, number of chambers 33, bed       , trench   
sq. ft./section 15.5, reduction allowed 40%, sq. ft required 837  
total sq. ft. installed 852, depth of installation 24"-36"

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:** \* SEPTIC TANK, INSTALLED  
~~ON~~ OCTOBER/2000, MEETS  
CODE FOR 4 BR HOUSE



EL PASO COUNTY  
DEPARTMENT OF HEALTH AND ENVIRONMENT  
301 S Union Blvd, Colorado Springs, Colorado 719-578-3126

INDIVIDUAL SEWAGE DISPOSAL SYSTEM PERMIT

WATER SOURCE: WELL

PERMIT NUMBER: ON0001783

OWNER NAME: HH NORMAN CONSTRUCTIO

DATE PERMITTED: 5/2/00

ADDRESS: 2415 HODGEN RD

CITY,STATE,ZIP: COLORADO SPRINGS 80908

PHONE NUMBER: 7195761670

INSTALLED BY: ~~MURRAY, MICHAEL (MURRAY CONSTRUC~~ RTR

*This permit is issued in accordance with 25-10-107 Colorado Revised Statutes. 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). If both a building and an ISDS permit are issued for the same property and construction has not commenced prior to the expiration date of the building permit, the ISDS permit shall expire at the same time as the building permit. This permit is revokable if all stated requirements are not met.  
Sewage disposal system to be installed by an El Paso County Licensed System Contractor or the property owner.*

**THIS PERMIT DOES NOT DENOTE APPROVAL OF ZONING AND ACREAGE REQUIREMENTS.**

PERMIT FEE( NON REFUNDABLE) :

New Permit----\$ 300.00

ISDS Repair -\$ 50.00

Voided/Altered permit --\$ 25.00

*Jisha Dowerms*  
DIRECTOR, EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT

PERMIT EXPIRATION DATE :

Expires twelve months from date of issue

*Krueger 578-3132*  
ENVIRONMENTALIST / PHONE NUMBER

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

MINIMUM SEPTIC TANK SIZE: 1,250 GALLONS

MINIMUM ABSORPTION AREA REQUIRED

837 SQ FT

PLANNING DEPARTMENT

ENUMERATION

FLOOD PLAIN

WASTEWATER

COMMENTS:

MEET ALL APPLICABLE I.S.D.S. REGULATIONS. STAY IN AREA OF PERC. TEST. LEACH FIELD TO BE NO LESS THAN 25 FEET FROM SMALL DRY GULCH.

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.

CALLID 5-3-00



Inspector

Gary

Record I.D.

1783

**EL PASO COUNTY ENVIRONMENTAL HEALTH SERVICES**

301 South Union Boulevard • Colorado Springs, CO • 80910-3123 • (719) 578-3126

APPLICATION FOR A  NEW  REMODEL  REPAIR OR  ADDITION  
TO AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM  P.E. DESIGN

Owner H. H. NORMAN CONSTRUCTION, INC. Daytime Phone 719.576.1670  
Address of Property 2415 HODGEN ROAD City & Zip COLORADO SPRINGS  
Legal Description SEE PLOT PLAN ATTACHED 4/18/00 Sec 28-11-66  
Tax Schedule # 61281 00 001 Lot Size 80 AC Septic Contractor MURRAY CONSTRUCTION  
Inside City Limits  No  Yes-City \_\_\_\_\_ Water Supply  Well or Spring  Cistern  Public  
Type of Building  Frame  Modular  Mobile  Commercial  Manufactured  Other \_\_\_\_\_  
Owner's MAILING Address 335 OAKHURST LN, GSE 80906 City, State & Zip COLORADO SPRINGS, CO 80906  
 MAIL PERMIT OR  PICK UP PERMIT  THERE IS AN ADDITIONAL RESIDENCE ON THIS PROPERTY

MAXIMUM POTENTIAL BEDROOMS 3

Percolation Test Attached  Y  N Garbage Disposal  Y  N Basement 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 an 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. 25-10-107 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 [Signature]

Date 4/19/00

DEPARTMENT OF HEALTH USE ONLY

837F  
Minimum Absorption Area

1250  
Minimum Tank Capacity

4/25/00  
Date of Site Inspection

REMARKS MEET ALL APPLICABLE ISDS REQS. STAY IN AREA OF PERC. TEST. LEACH FIELD TO BE  $\geq$  25' FROM SMALL DRY GULCH

EHS INSPECTOR [Signature]  
FEE NO FEE

DATE 4/25/00

APPROVED  DENIED

DATE TO PLANNING / WASTEWATER 4/26/00

We require a copy of your percolation (**PERC**) TEST with an original professional engineer's (PE) stamp and signature.

- 2) A **PLOT PLAN** must be drawn (not to scale) on a 8 1/2 x 11 sheet of paper. The plot plan must include
- |                        |                                            |                                                                 |
|------------------------|--------------------------------------------|-----------------------------------------------------------------|
| 1) a north bearing     | 4) all buildings (proposed or existing)    | 7) driveway (proposed or existing and name of adjoining street) |
| 2) property lines      | 5) proposed septic system site             |                                                                 |
| 3) property dimensions | 6) designated alternate septic system site |                                                                 |
- 3) Initial any of the following features that apply to your property and include them on your plot plan.
- |                                             |                                                    |                                        |
|---------------------------------------------|----------------------------------------------------|----------------------------------------|
| <input checked="" type="checkbox"/> Well(s) | <input type="checkbox"/> Adjacent property well(s) | <input type="checkbox"/> Subsoil drain |
| <input type="checkbox"/> Cistern            | <input type="checkbox"/> Water line                |                                        |
- 4) Initial any of the following that are within 100 feet of your proposed septic system and include on your plot plan.
- |                                        |                                                     |
|----------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Spring(s)     | <input type="checkbox"/> Lake(s)                    |
| <input type="checkbox"/> Pond(s)       | <input type="checkbox"/> Stream(s)                  |
| <input type="checkbox"/> Dry Gulch(es) | <input type="checkbox"/> Natural drainage course(s) |
- 5) **PROPERTY ADDRESS OR LOT NUMBER MUST BE POSTED AND CLEARLY VISIBLE FROM ROAD. PERC HOLES MUST BE CLEARLY MARKED.**

6) GIVE COMPLETE DIRECTIONS TO THE PROPERTY FROM A MAIN HIGHWAY

WEST ON HODGEN ROAD FROM Hwy 83 FOR APPROX 3/4 MILE  
WHERE HODGEN DEAD ENDS. FOLLOW NEWLY CUT TRAIL (DRIVEWAY)  
FROM END OF HODGEN TO HOUSE - SEE SITE PLAN.