

January 25, 2022



ENTECH
ENGINEERING, INC.

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

Joe Loidolt
2183 Flying Horse Club Drive
Colorado Springs, CO 80921

Re: OWTS – Wastewater Study
Lot 1, Flying Horse North Filing No. 2
Quartz Creek Drive
El Paso County, Colorado

Dear Mr. Loidolt:

GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in a portion of the SW¼ of Section 36 Township 11 South, Range 66 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately 2.5-miles northeast of Colorado Springs city limits, south of Stagecoach Road and Shortwall Drive in the Flying Horse North subdivision 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 north, with steeper slopes along the northern side of the lot. A drainage is located north of the lot and two minor drainage swales are located on the lot. Water was not observed in the drainages at the time of this investigation. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have included undeveloped agricultural land. The site contains field grasses, weeds, kinnikinic, and ponderosa pines. Site photographs taken January 7, 2022, are included in appendix A. Site mapping and test pit excavations were completed on January 7, 2022. Test Borings were drilled on December 17, 2021.

The proposed lot is 2.98-acres. One rural residential lot is proposed as part of the replat. The new lot will be serviced by an individual well and an on-site wastewater treatment system. The Site Plan with the proposed replat is presented in Figure 3.

The site was previously investigated as a part of a *Soil, Geology, Geologic Hazard, and Wastewater Study, Shamrock Ranch*, by Entech Engineering, Inc., dated February 26, 2015 (Reference 1), and the *Soil, Geology, Geologic Hazard, and Wastewater Study, Flying Horse North*, by Entech, dated February 22, 2016 (Reference 2). The site was recently investigation as part of a *Subsurface Soil Investigation*, by Entech, dated January 17, 2022, (Reference 3), and *OWTS Site Evaluation*, by Entech, dated January 4, 2022 (Reference 4, Appendix B). Information from these reports were used in evaluating the site.

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

Joe Loidolt
OWTS – Wastewater Study-Revised
Lot 1, Flying Horse North Filing No. 2
Quartz Creek Drive
El Paso County, Colorado

features, geologic descriptions and their effects on the development of the property with regards to on-site wastewater treatment systems (OWTS).

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 January 7, 2022.

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 January 7, 2022.

Four test borings were drilled and two tactile test pits were excavated on the site to determine general suitability of the soil characteristics for residential construction. The locations of the test borings and test pits are indicated on the Site Plan/Test Boring Location Map, Figure 3. The Test Pit 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.

SOIL AND GEOLOGIC CONDITIONS

Soil Survey

The Natural Resource Conservation Service (NRCS) (Reference 5, Figure 4), previously the Soil Conservation Service (Reference 6) has mapped one soil type on the site. Complete description of the soil type is 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>
26	Elbeth sandy loam, 8 – 15% 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.

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Lot 1, Flying Horse North Filing No. 2
Quartz Creek Drive
El Paso County, Colorado

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 pits consisted of sandy clay loam and sandy clay. The samples tested had 45 to 70 percent of the soil size particles passing the No. 200 sieve. The test pits were excavated to depths 6 and 7.5 feet.

Groundwater

Signs of seasonally occurring groundwater was observed in Test Pit No. 1 at 6 feet. Groundwater is not anticipated to affect shallow foundations on the site. 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 8 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 northerly direction (Reference 7). 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 claystone or siltstone.

The geology of the site was evaluated using the *Geologic Map of the Black Forest Quadrangle*, by Thorson and Madole in 2003, (Reference 8, Figure 5). The Geology Map for the site is presented in Figure 6. One mappable unit was identified on this site which is described as follows:

Tkd Dawson Formation of Tertiary to Cretaceous Age: The materials consist of a thin layer of residual soils overlying the bedrock materials on-site. The residual soils were derived from the in-situ weathering of the bedrock on site. These materials typically consist of silty to clayey sand with potential areas of sandy clays. The bedrock consists of the Dawson Formation. The Dawson Formation typically consists of coarse-grained, arkosic sandstone with interbedded lenses of fine-grained sandstone, siltstone and claystone.

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 8, Figure 5), The *Geologic Map of the Colorado Springs-Castle Rock Area*, distributed by the US Geological Survey in 1979 (Reference 9), and the *Geologic Map of the Denver 1° x 2° Quadrangle*, distributed by the US Geological Survey in 1981 (Reference 10). The test pits were used in evaluating the site and are included in Appendix B. The Geology Map prepared for the site is presented in Figure 6.

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Quartz Creek Drive
El Paso County, Colorado

Drainage Areas

A drainage is located north of the lot and two minor drainage swales are located on the lot. Water was not observed in the drainages at the time of this investigation, however, these areas have the potential for seasonal shallow groundwater. These areas are indicated in the Geology/Engineering Geology Map (Figure 6). Due to the size of the proposed lots these areas can either be avoided or redirected around proposed structures or proposed soil treatment area. The proposed building areas are not affected by these areas. The site does not lie within any floodplain zones according to the FEMA Map No. 08041CO315G dated December 7, 2018 (Figure 7, Reference 11). Exact locations of floodplain and specific drainage studies are beyond the scope of this report.

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 C. The soils are described as having moderate to rapid percolation rates.

Soils encountered in the tactile test pits consisted of sandy clay loam and sandy clay. The limiting layers encountered in the test pits are the sandy clay, which corresponds with USDA Soil Types 4A with an LTAR values of 0.20 gallons per day per square foot. Bedrock was not encountered in the test pits.

Signs of seasonally occurring groundwater was observed in Test Pit No.1 at 6 feet, but was not observed in Test Pit No. 2. 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. A designed system is anticipated for the lot.

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 a designed system will be required for the proposed lot. The Septic Suitability Map is presented in Figure 8. Proposed house locations, water wells, and two septic sites for the new lots are indicated. 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.

Joe Loidolt
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Quartz Creek Drive
El Paso County, Colorado

CLOSURE

This report has been prepared for Joe Loidolt, 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.

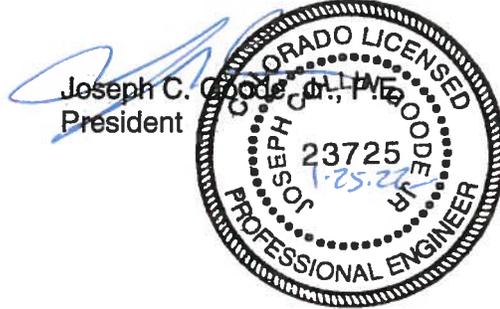
Respectfully Submitted,

ENTECH ENGINEERING, INC.

Reviewed by:



Logan L. Langford, P.G.
Geologist



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

LLL

Encl.

Entech Job No. 213271
AAprojects/2021/213271 wws

Joe Loidolt
OWTS – Wastewater Study-Revised
Lot 1, Flying Horse North Filing No. 2
Quartz Creek Drive
El Paso County, Colorado

BIBLIOGRAPHY

1. Entech Engineering, Inc., February 26, 2015. *Soil, Geology, Geologic Hazard, and Wastewater Study, Shamrock Ranch, El Paso County, Colorado*. Entech Job No. 141588.
2. Entech Engineering, Inc., February 22, 2016. *Soil, Geology, Geologic Hazard, and Wastewater Study, Flying Horse North, PUD Submittal, El Paso County, Colorado*. Entech Job No. 160118.
3. Entech Engineering, Inc., January 17, 2022. *Subsurface Soil Investigation, Lot 1, Flying Horse North Filing No. 2, Quartz Creek Drive, El Paso County, Colorado*. Entech Job No. 213271.
4. Entech Engineering, Inc., January 4, 2022. *OWTS Site Evaluation, Lot 1, Flying Horse North Filing No. 2, Quartz Creek Drive, El Paso County, Colorado*. Entech Job No. 213271.
5. Natural Resource Conservation Service, September 13, 2019. *Web Soil Survey*. United States Department Agriculture, <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.
6. United States Department of Agriculture Soil Conservation Service. June 1981. *Soil Survey of El Paso County Area, Colorado*.
7. 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.
8. Thorson, Jon P. 2003. *Geologic Map of the Black Forest Quadrangle, El Paso County, Colorado*. Colorado Geological Survey. Open-File Report 03-6.
9. 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.
10. 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.
11. Federal Emergency Management Agency. December 7, 2018. *Flood Insurance Rate Maps for the City of Colorado Springs, Colorado*. Map Number 08041CO315G.

FIGURES



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

VICINITY MAP
 FLYING HORSE NORTH FILING NO. 2
 LOT 1, QUARTZ CREEK DRIVE
 EL PASO COUNTY, CO.
 FOR: JOE LOIDOLT

DRAWN:
 LLL

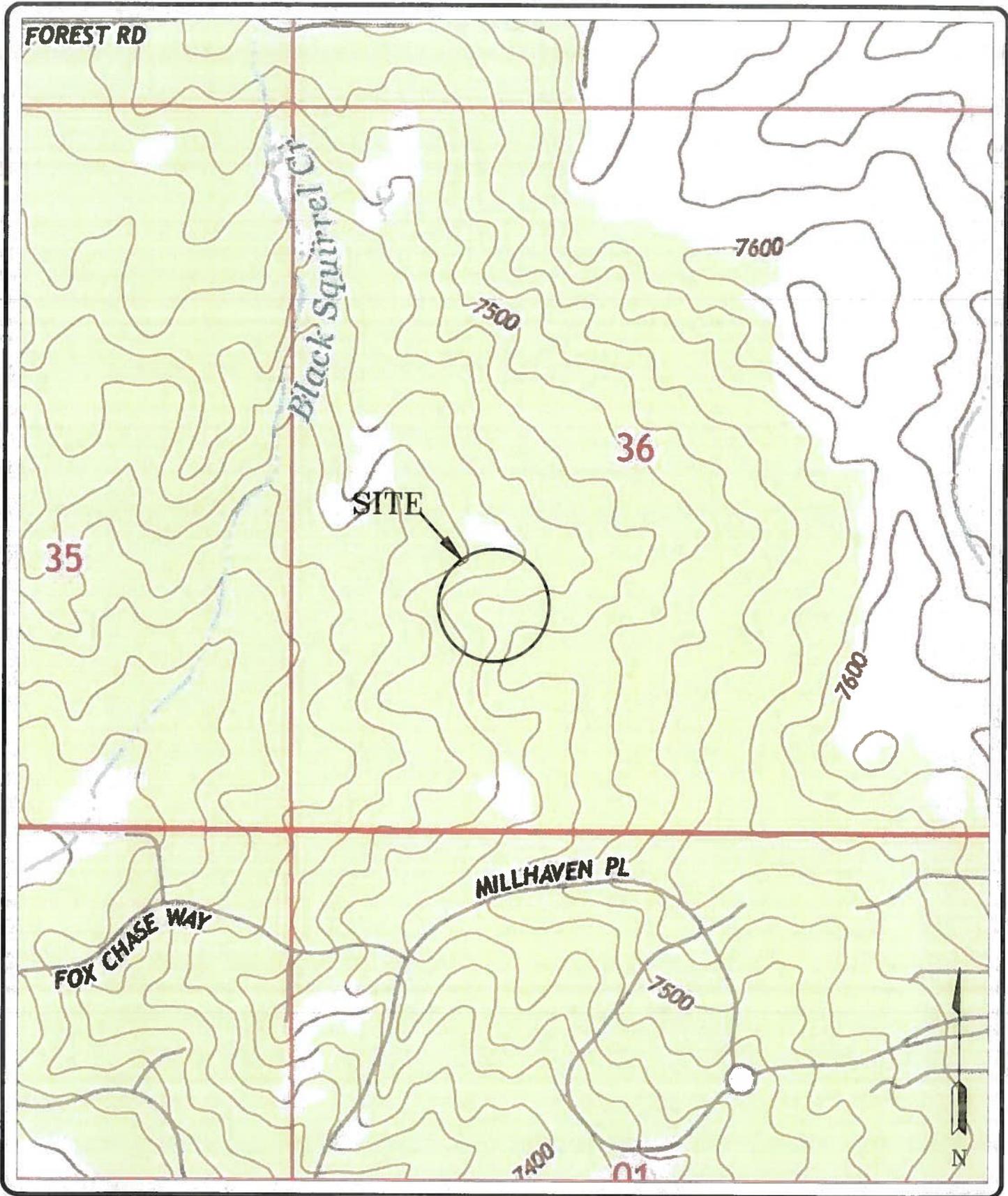
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JOB NO.:
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FIG NO.:
 1



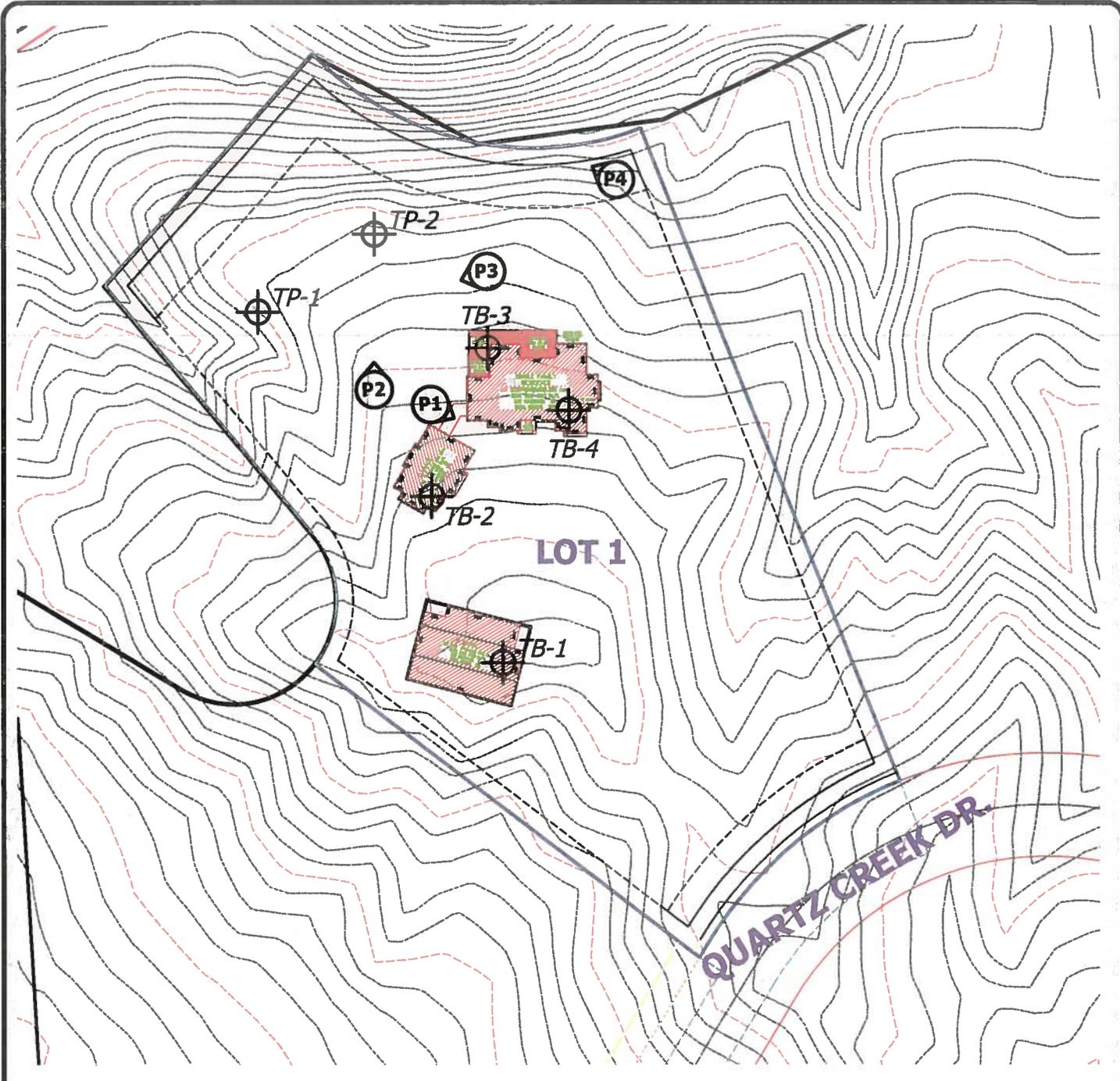
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USGS MAP
FLYING HORSE NORTH FILING NO. 2
LOT 1, QUARTZ CREEK DRIVE
EL PASO COUNTY, CO.
FOR: JOE LOIDOLT

DRAWN: LLL	DATE: 1/13/22	CHECKED:	DATE:
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JOB NO.:
213271

FIG NO.:
2



LEGEND:

-  TP- APPROXIMATE TEST PIT LOCATION AND NUMBER
-  - APPROXIMATE PHOTOGRAPH LOCATION AND NUMBER



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 COLORADO SPRINGS, CO. 80907 (719) 531-5399

SITE MAP/TEST BORING LOCATION MAP
FLYING HORSE NORTH FILING NO. 2
LOT 1, QUARTZ CREEK DRIVE
EL PASO COUNTY, CO.
FOR: JOE LOIDOLT

JOB NO.:
213271

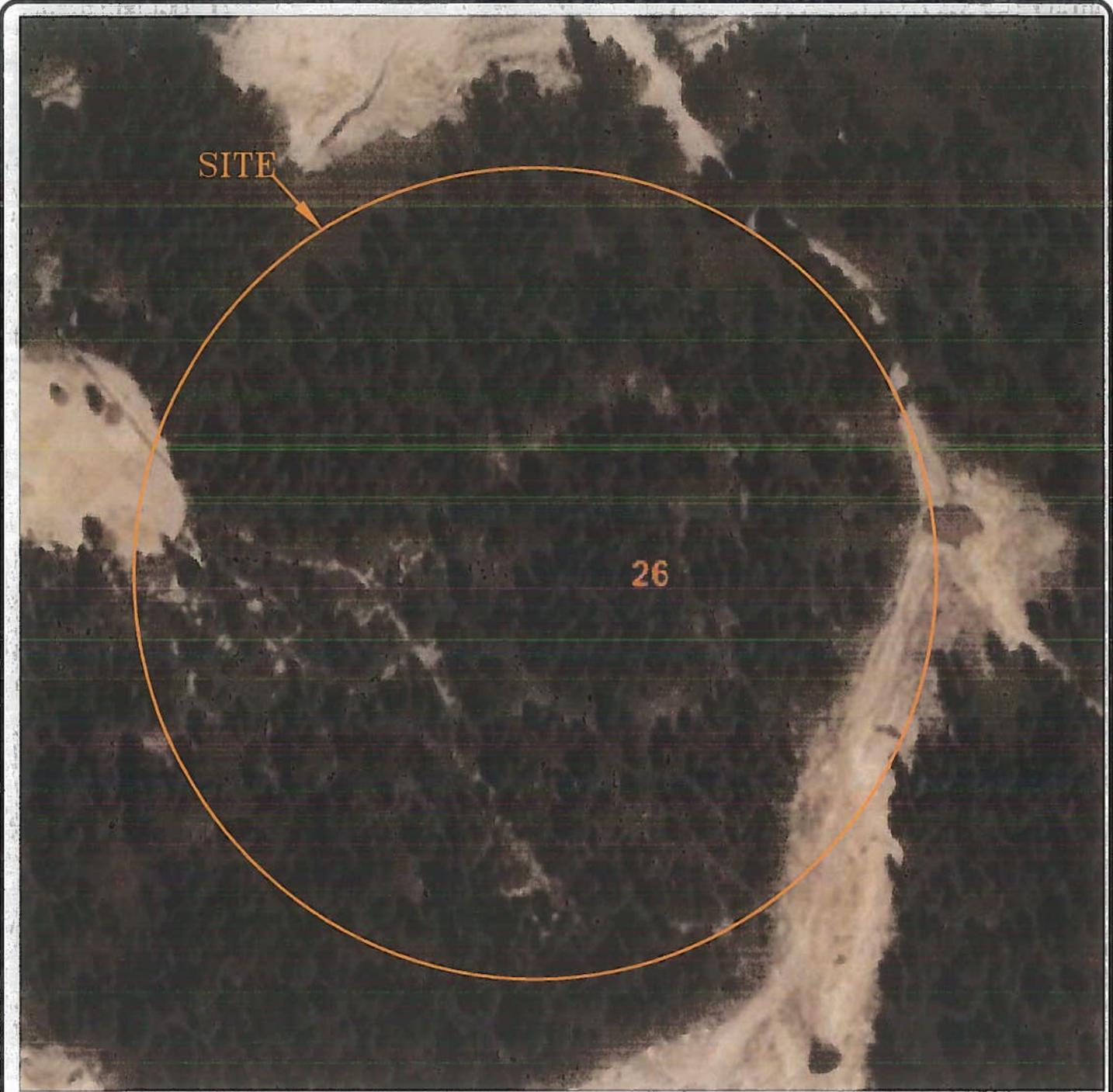
FIG NO.:
3

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DATE:
1/13/22

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DATE:



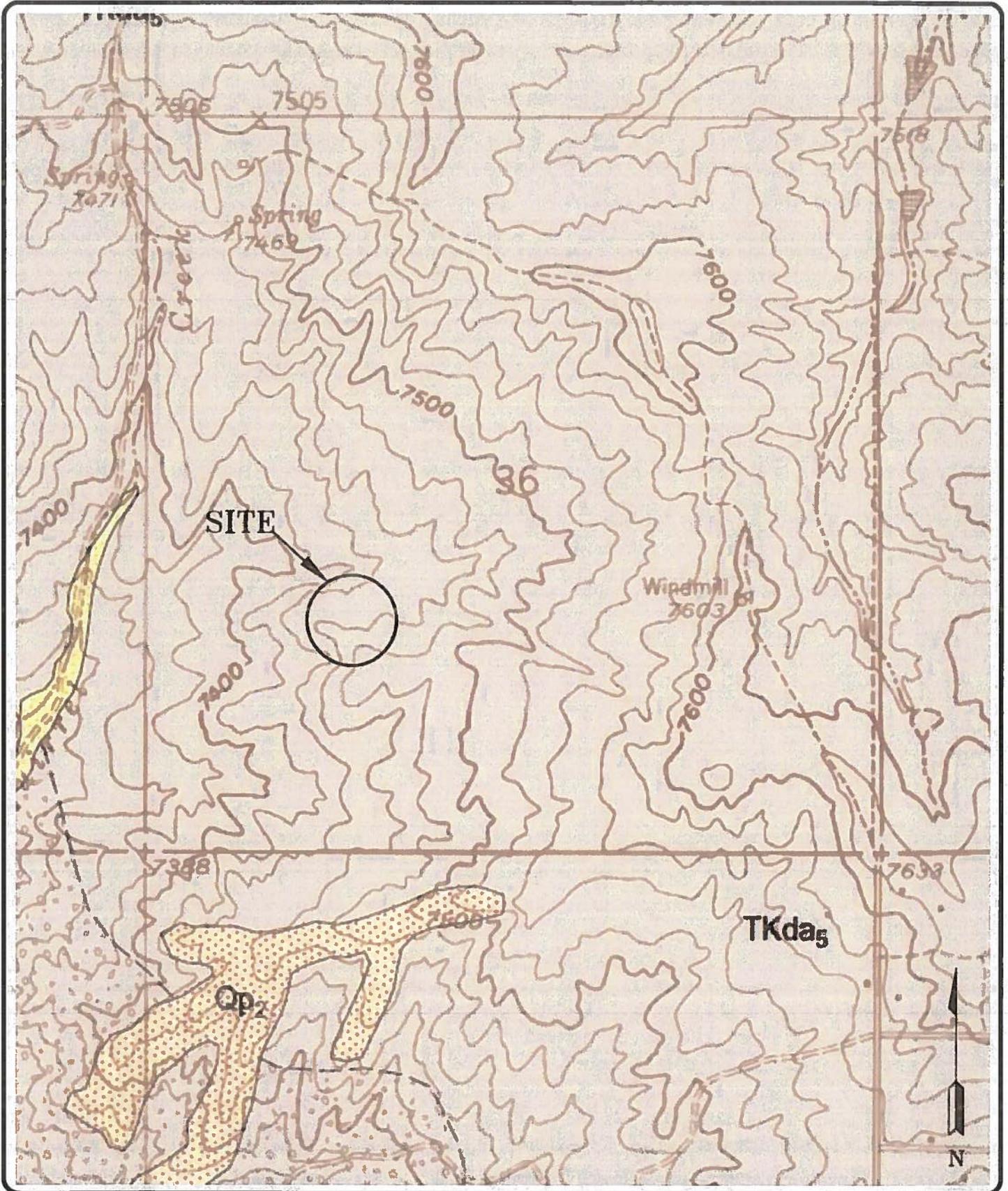

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COLORADO SPRINGS, CO. 80907 (719) 531-5599

SOIL SURVEY MAP
FLYING HORSE NORTH FILING NO. 2
LOT 1, QUARTZ CREEK DRIVE
EL PASO COUNTY, CO.
FOR: JOE LOIDOLT

DRAWN: LLL	DATE: 1/13/22	CHECKED:	DATE:
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JOB NO.:
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FIG NO.:
4



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COLORADO SPRINGS, CO. 80907 (719) 531-5599

BLACK FOREST QUADRANGLE GEOLOGIC MAP
FLYING HORSE NORTH FILING NO. 2
LOT 1, QUARTZ CREEK DRIVE
EL PASO COUNTY, CO.
FOR: JOE LOIDOLT

DRAWN:
LLL

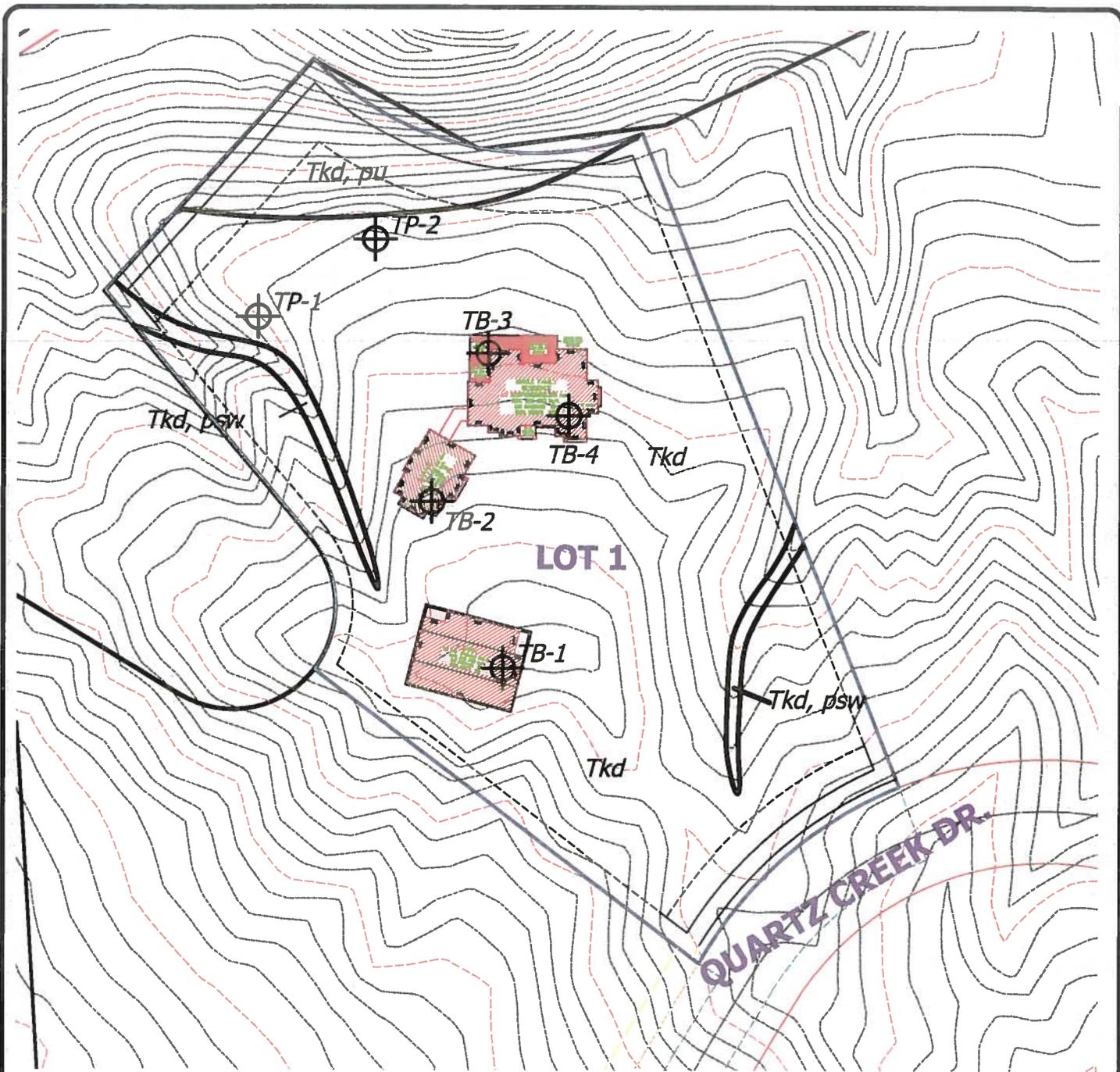
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1/13/22

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DATE:

JOB NO:
213271

FIG NO:
5



Legend:

- Tkd - Dawson Formation of Tertiary to Cretaceous Age: variable layer of residual soils overlying arkosic sandstone with interbedded fine-grained sandstone, siltstone and claystone
- psw - potentially shallow groundwater area
- pu - potentially unstable slope



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COLORADO SPRINGS, CO. 80907 (719) 531-5599

GEOLOGY/ENGINEERING GEOLOGY MAP
FLYING HORSE NORTH FILING NO. 2
LOT 1, QUARTZ CREEK DRIVE
EL PASO COUNTY, CO.
FOR: JOE LOIDOLT

DRAWN: LLL	DATE: 1/13/22	CHECKED:	DATE:
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JOB NO.:
213271

FIG NO.:
6



SITE



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

FEMA FLOODPLAIN MAP
FLYING HORSE NORTH FILING NO. 2
LOT 1, QUARTZ CREEK DRIVE
EL PASO COUNTY, CO.
FOR: JOE LOIDOLT

DRAWN:
LLL

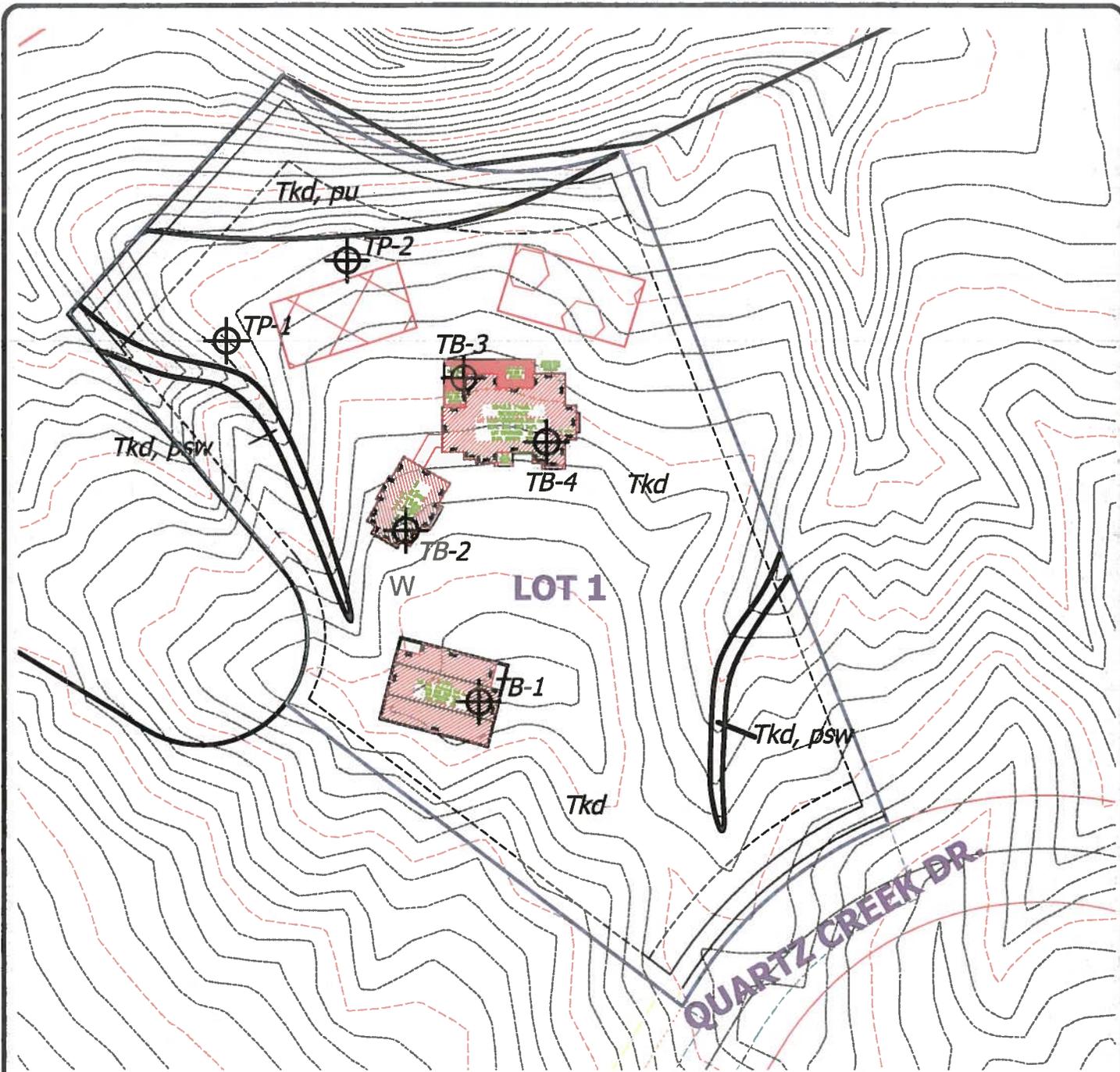
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1/13/22

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DATE:

JOB NO.:
213271

FIG NO.:
7



LEGEND:



- POSSIBLE OWTS LOCATIONS
- POSSIBLE OWTS ALTERNATE LOCATIONS

- OWTS ARE NOT RECOMMENDED IN AREAS OF POTENTIALLY UNSTABLE SLOPES OR POTENTIALLY SEASONAL SHALLOW GROUNDWATER

W *- WATER WELLS MUST BE A MINIMUM OF 100 FT FROM OWTS ABSORPTION FIELDS



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505 ELKTON DRIVE
 COLORADO SPRINGS, CO. 80907 (719) 531-5999

SEPTIC SUITABILITY MAP
FLYING HORSE NORTH FILING NO. 2
LOT 1, QUARTZ CREEK DRIVE
EL PASO COUNTY, CO.
FOR: JOE LOIDOLT

DRAWN:
LLL

DATE:
1/13/22

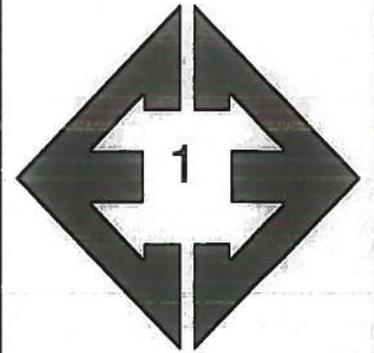
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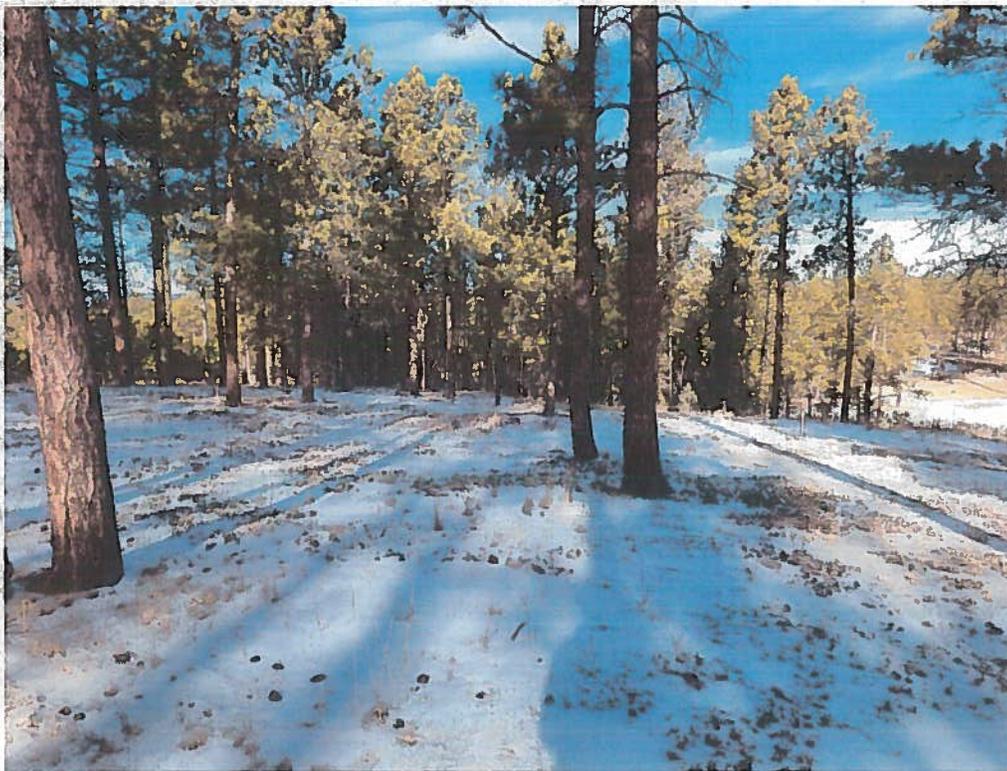
FIG NO.:
8

APPENDIX A: Photographs



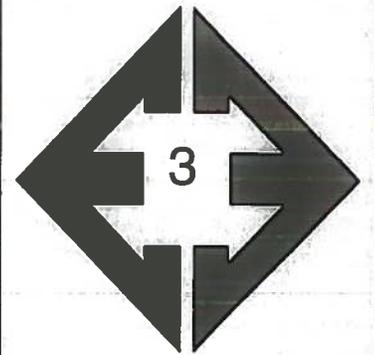
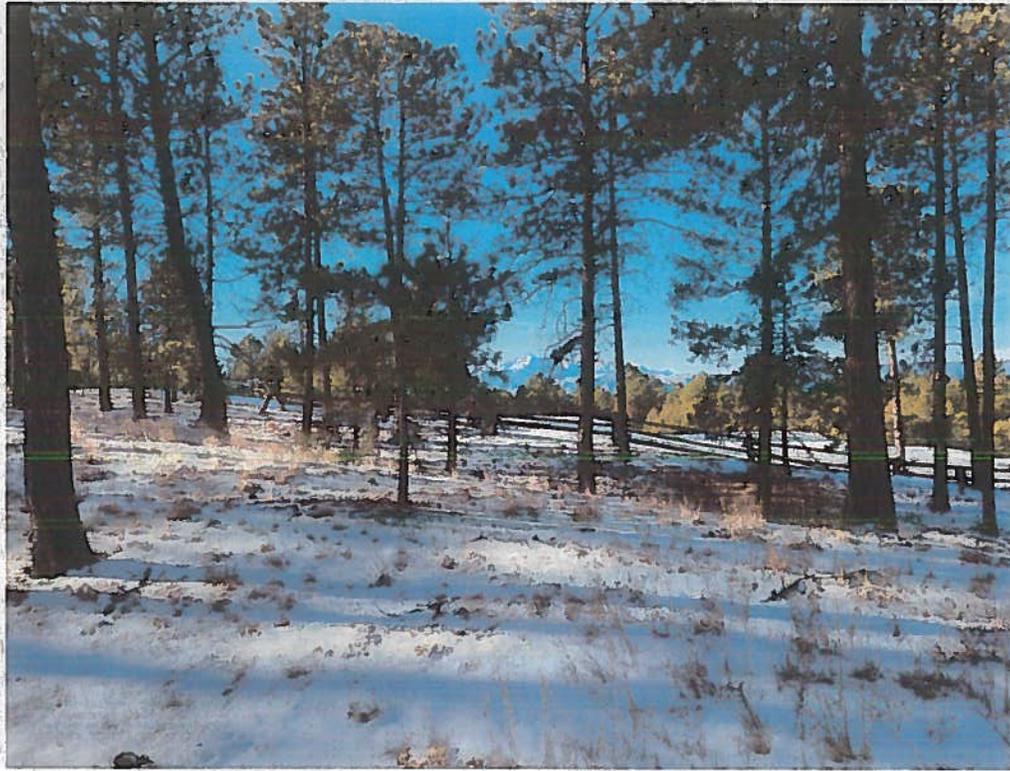
**Looking southeast
from the proposed
building area.**

January 7, 2022



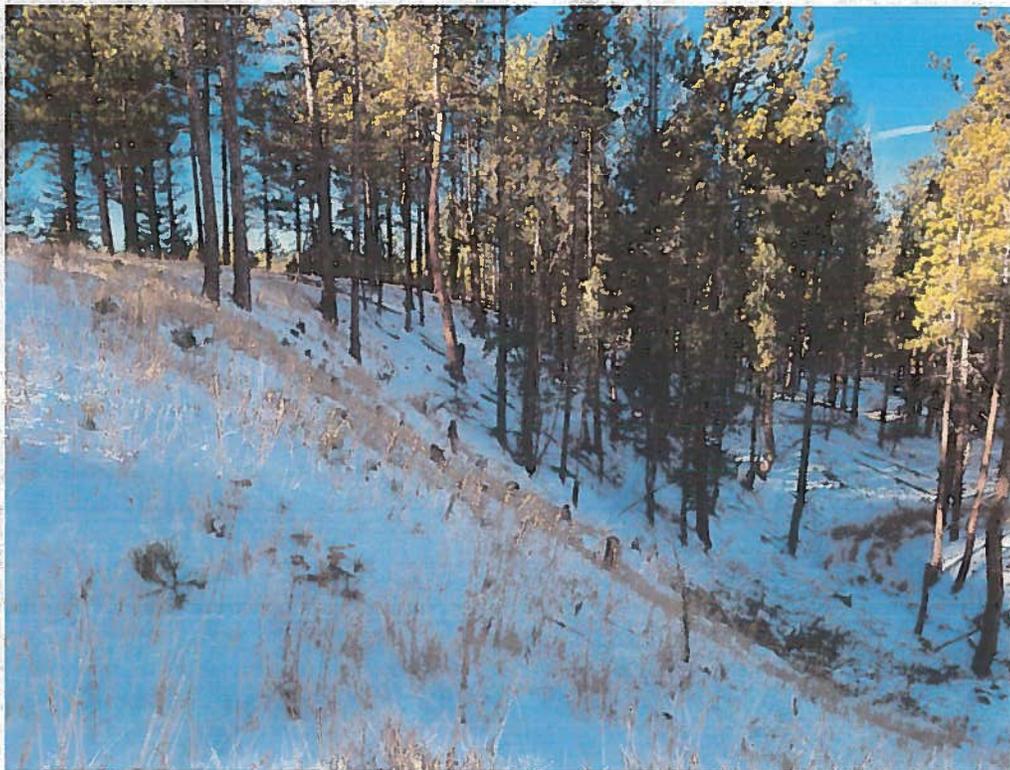
**Looking north from the
central portion of the
site.**

January 7, 2022



Looking west from the central portion of the lot.

January 7, 2022



Looking northwest along the potentially unstable slope in the northern side of the site.

January 7, 2022

**APPENDIX B: Entech Engineering, Inc., OWTS Site
Evaluation, Job No. 213271**



ENTECH
ENGINEERING, INC.

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

January 4, 2022

Joe Loidolt
2138 Flying Horse Club Drive
Colorado Springs, Colorado 80921

Re: OWTS Site Evaluation
Flying Horse North, Filing 2, Lot 1
El Paso County, Colorado

Dear Mr. Loidolt:

As requested, personnel of Entech Engineering, Inc. have observed the excavation of two test pits in the area of the proposed on-site wastewater treatment system (OWTS) absorption field location at the above referenced site. This letter presents the results of our testing.

The locations of the test pits are shown in Figure 1. The test pits were excavated on December 21, 2021, to approximate depths of 6 and 8 feet. Soils encountered in the test pits consisted of sandy clay loam overlying sandy clay in Test Pit No. 1 and sandy clay in Test Pit No. 2. The Test Pit Logs and Laboratory Test Results are shown in Figures 2 through 5. Refusal was reached at 6 feet in Test Pit No. 1. Redoximorphic features were encountered at 6 feet in Test Pit No. 1.

Visual and tactile evaluation of the soils was performed. The limiting layer encountered in the test pits is the sandy clay, which classified as USDA Soil Type 4A, and the redoximorphic features in Test Pit No. 1. For design purposes a LTAR Value of 0.15 gallons per day per square foot is recommended for Treatment Level 1. An engineer designed system is required for this site due to the Type 4A Soils and redoximorphic features. The 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,

ENTECH ENGINEERING, INC.

Joseph H. Robinson

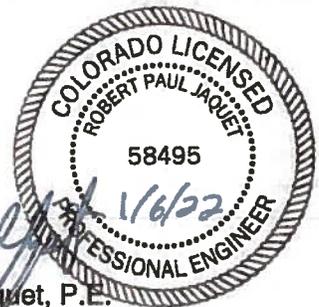
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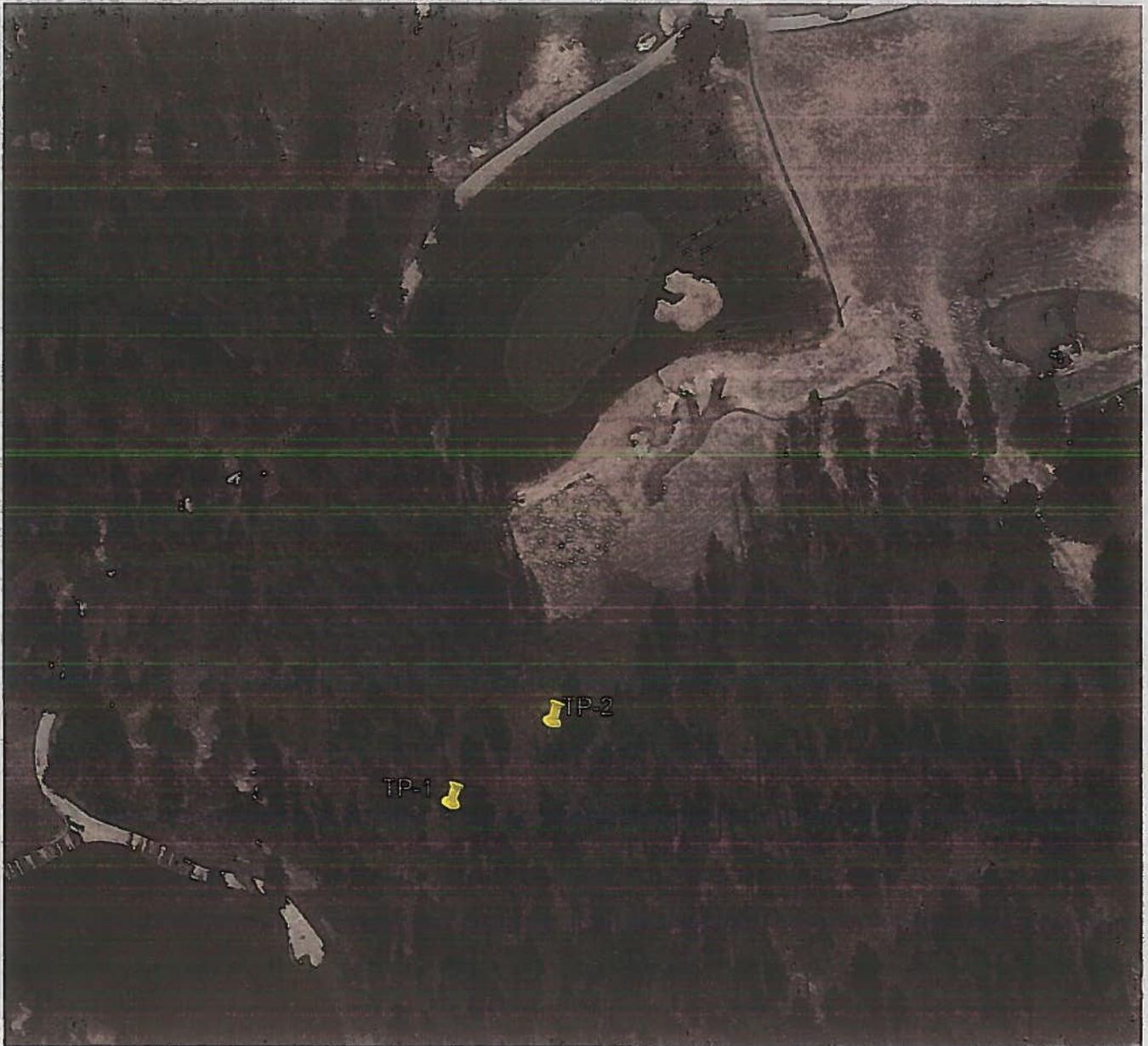
Encl.

Entech Job No. 213271
AA projects/2021/213271 owts site eval

Reviewed by:

Robert P. Jaquet, P.E.





TP- APPROXIMATE TEST PIT LOCATION AND NUMBER



- TP-1 39.004691°, -104.73396°
- TP-2 39.047043°, -104733748°W



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ENGINEERING, INC.
 905 ELAKTON DRIVE
 COLORADO SPRINGS, CO 80907 (719) 521-0399

TEST PIT LOCATION MAP
FLYING HORSE NORTH, FILING 2, LOT 1
EL PASO COUNTY, COLORADO
FOR: JOE LOIDOLT

DRAWN:
JHR

DATE:
1/4/22

CHECKED:
RJH

DATE:
1/4/22

JOB NO.:
213271

FIG NO.:
1

TEST PIT NO. 1
 DATE EXCAVATED 12/21/2021
 Job # 213271

TEST PIT NO. 2
 DATE EXCAVATED 12/21/2021
 CLIENT Joe Loidolt
 LOCATION Flying Horse North, Filing 2, Lot 1

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
Redoxomorphic Features @ 6'-0"													
topsoil, ~0-6 inches	1			gr	s	3	topsoil, ~0-6 inches	1					
sandy clay loam, fine to coarse grained, brown, moist	2						sandy clay, fine to coarse grained, brown, moist	2			ma		4A
	3							3					
sandy clay, fine to medium grained, pale brown, moist	4			ma		4A	sandy clay, fine to medium grained, pale brown, moist	4					
	5							5					
	6							6			ma		4A
	7							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



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505 ELKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

TEST PIT LOG

DRAWN: jhr

DATE: 1/4/2021

CHECKED: *[Signature]*

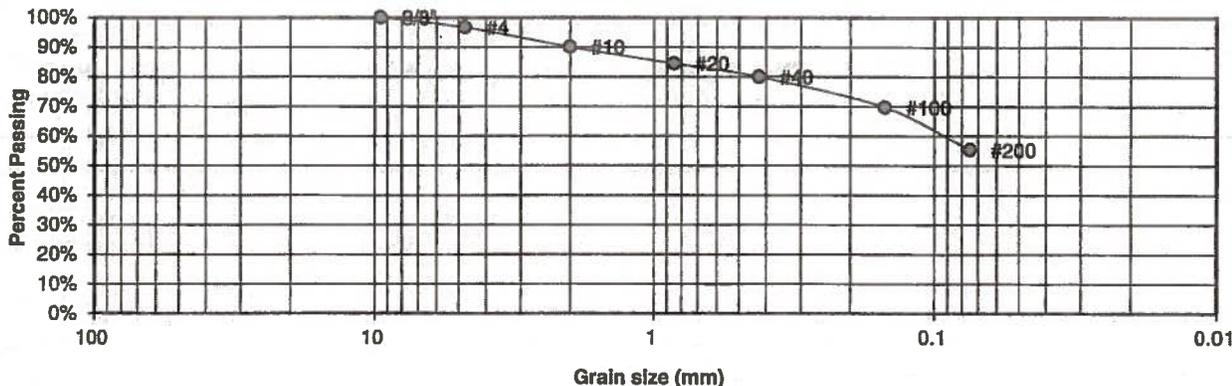
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JOB NO.: 213271

FIG NO.: 2

BORING NO.	TP-1	<u>UNIFIED CLASSIFICATION</u>	CL	<u>TEST BY</u>	BL
DEPTH(ft)	4	<u>AASHTO CLASSIFICATION</u>		<u>JOB NO.</u>	213271
CLIENT	JOE LOIDOLT				
PROJECT	FLYING HORSE N., F-2, L-1				

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.8%
10	90.0%
20	84.5%
40	80.0%
100	69.7%
200	55.4%

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: <i>RJA</i>	DATE: 1/6/22
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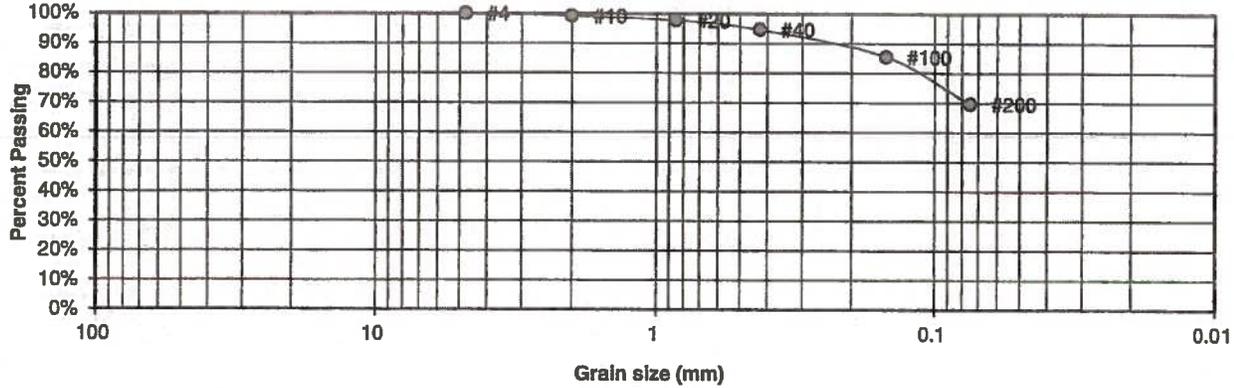
JOB NO.:
213271

FIG NO.:

3

BORING NO.	TP-2	<u>UNIFIED CLASSIFICATION</u>	CL	<u>TEST BY</u>	BL
DEPTH(ft)	2	<u>AASHTO CLASSIFICATION</u>		<u>JOB NO.</u>	213271
CLIENT	JOE LOIDOLT				
PROJECT	FLYING HORSE N., F-2, L-1				

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.2%
20	97.8%
40	94.7%
100	85.5%
200	69.6%

- Atterberg Limits
 Plastic Limit
 Liquid Limit
 Plastic Index
- Swell
 Moisture at start
 Moisture at finish
 Moisture increase
 Initial dry density (pcf)
 Swell (psf)



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ENGINEERING, INC.
 505 ELIKTON DRIVE
 COLORADO SPRINGS, COLORADO 80907

**LABORATORY TEST
RESULTS**

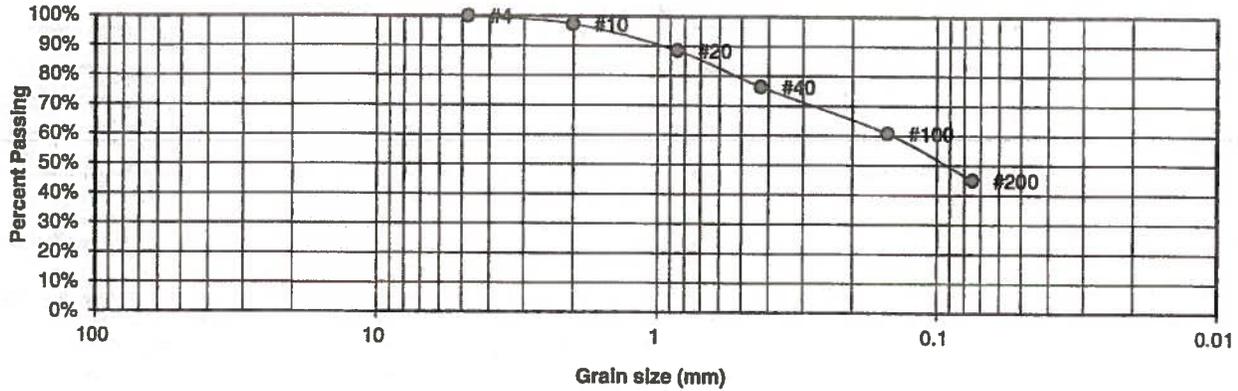
DRAWN:	DATE:	CHECKED:	DATE:
		<i>[Signature]</i>	1/6/22

JOB NO.:
213271

FIG NO.:
4

BORING NO.	TP-2	<u>UNIFIED CLASSIFICATION</u>	SC	<u>TEST BY</u>	BL
DEPTH(ft)	6	<u>AASHTO CLASSIFICATION</u>		<u>JOB NO.</u>	213271
CLIENT	JOE LOIDOLT				
PROJECT	FLYING HORSE N., F-2, L-1				

**Sieve Analysis
Grain Size Distribution**



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	97.4%
20	88.5%
40	76.3%
100	60.8%
200	45.1%

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**

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FIG NO.:

5

APPENDIX C: Soil Survey Descriptions

El Paso County Area, Colorado

26—Elbeth sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 367y

Elevation: 7,300 to 7,600 feet

Farmland classification: Not prime farmland

Map Unit Composition

Elbeth and similar soils: 85 percent

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

Description of Elbeth

Setting

Landform: Hills

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from arkose

Typical profile

A - 0 to 3 inches: sandy loam

E - 3 to 23 inches: loamy sand

Bt - 23 to 68 inches: sandy clay loam

C - 68 to 74 inches: sandy clay loam

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 (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 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: F048AY908CO - Mixed Conifer

Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit:

Landform: Depressions
Hydric soil rating: Yes

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 19, Aug 31, 2021