



**ENTECH**  
ENGINEERING, INC.

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

December 23, 2024

Thaddeous Jarosz  
8550 Kenosha Drive  
Colorado Springs, CO 80908

Re: OWTS – Wastewater Study  
Table Rock Homesteads  
Parcel Nos. 51000-00-012 and 51000-00-026  
Gambler Place  
El Paso County, Colorado  
Entech Job No. 241483

Dear Mr. Jarosz:

The project consists of subdividing 107-acres with ten rural residential lots proposed. The site is located southeast of East Palmer Divide Avenue and Thunder Road East at the eastern end of Gambler Place in northern El Paso County.

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

The site is located in a portion of the E½ of Section 6 Township 11 South, Range 65 West of the 6<sup>th</sup> Principal Meridian in El Paso County, Colorado. The site is located approximately 8 miles east of the town of Monument, Colorado, located at the eastern end of Gambler Place El Paso County. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site is primarily gradually to moderately sloping to the east with steeper slopes along drainages in the northeastern and southwestern portions of the site. The drainages flow in an easterly and southeasterly directions and were dry at the time of our site observations. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have included agricultural grazing with undeveloped/agricultural and rural residential properties to the north, east, and south, and existing rural residential properties located to the west. The site contains field grasses, weeds, cacti, yuccas, and scattered ponderosa pines in the eastern portion of the site. Site photographs were taken, and site mapping was completed on September 20, 2024. Site photographs are included in Appendix A.

Total acreage involved in the subdivision is 107-acres. Ten rural residential lots varying in size from approximately 5 to 20 acres. The lots will be serviced by individual wells and on-site wastewater treatment systems. Ten test borings were drilled, and four test pits were excavated as part of the subsurface exploration program completed for the investigation. The location of the test borings and test pits are shown on the Site and Exploration Plan 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 potentially expansive soils, potentially unstable slopes, potential seasonally and seasonally shallow groundwater, and the potential for elevated radon levels. 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 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 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 August 19, 2024.

Ten test borings were drilled, and four test pits were excavated on the site to determine general suitability of the soil characteristics for residential construction. The test borings were drilled in the potential house locations. The locations of the test borings/pits are indicated on the Site Plan/Test Boring Location Map, Figure 3. The Test Boring and 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 1, Figure 4), previously the Soil Conservation Service (Reference 2) has mapped two soil types on the site. Complete descriptions of the soil type are presented in Appendix D. In general, the soils consist of sandy loam to loam. The soils are described as follows:

Type	Description
15	Brussett loam, 3 to 5% slopes
69	Peyton-Pring complex, 8 to 15% 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 2).

### Soils

The soils encountered in the test borings and test pits can be grouped into three general soil and rock types. The soils were classified using the Unified Soil Classification System (USCS).

Soil Type 1 is a silty sand and clayey sand (SM, SC). The sand soils were encountered in five of the test borings and two of the test pits at depths ranging from the existing surface grade to 9 feet bgs and extending to depths of 4 to 19 feet bgs, and to the termination of TB-2 (20 feet). These soils were encountered at medium dense to dense states and at dry to moist conditions. The sands are anticipated to exhibit low expansion potential.

Soil Type 2 is a clay with varying amounts of sand (CL). The clay was encountered in nine of the test borings and all of the test pits at depths ranging from the existing surface grade to 4 feet bgs and extending to depths of 4 to 16 feet bgs, and to the termination of TB-7 (20 feet). The clay was soft to firm states and moist to very moist conditions. Swell/Collapse testing on samples of the sandy clay resulted in consolidations of 0.7 to 1.4%, indicating a low to moderate potential for consolidation.

Soil Type 3 is a highly weathered silty sandstone (SM) or a silty sand when classified as a soil. The sandstone was encountered seven of the test borings at depths ranging from 4 to 19 feet bgs and extending to the termination of the borings (20 feet). The sandstone was encountered at dense to very dense states and moist conditions. Expansive claystone and siltstone is commonly interbedded in the Dawson Formation in the area.

### Groundwater

Groundwater was not encountered during or subsequent to drilling in the test borings which were drilled to depths of 20 feet. Signs of seasonally occurring groundwater were not observed in the test pits which were excavated to depths of 8 feet. Groundwater is not anticipated to affect shallow foundations on the site. The drainages in the northeastern and southwestern portions property have been identified as a potential seasonally shallow and seasonally shallow groundwater areas, and are 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 11½ 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 3). 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 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 are described as follows:



- Qal Recent Alluvium of Holocene Age:** these are recent water deposits sands and gravel along drainages on the site consisting of silty to clayey sands and sandy clays.
- QTa Alluvium of Palmer Divide of Pleistocene Age:** These materials consist of water-deposited stream terrace deposits. They typically consist of silty to clayey sands with gravelly lenses and may contain areas pebble and cobble lenses.
- Qc/Tkd Colluvium of Quaternary Age overlying Dawson Formation of Tertiary to Cretaceous Age:** The materials consist of colluvial or residual soils overlying the bedrock materials on-site. The colluvial soils were deposited by the action of sheetwash and gravity. 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 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 Pueblo 1° x 2° Quadrangle*, distributed by the US Geological Survey in 1978 (Reference 6). 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

#### Drainage and Floodplain Areas – Constraint

The site is not mapped within any floodplains according to the FEMA Map No. 08041C0305G, dated December 7, 2018 (Figure 8, Reference 6). A minor drainage is located in the central portion of the property with a minor drainage swale in the southeastern portion of the property, and were dry at the time of our site observations. These drainages have been identified as potential seasonally shallow and seasonally shallow groundwater areas. Due to the size of the proposed lots these areas can be avoided. The potential exists for high groundwater levels during high moisture periods and should structures encroach on these areas the following precautions should be followed. Groundwater was not encountered in the test borings which were drilled to depths of 20 feet. Signs of seasonally occurring groundwater were not encountered in the test pits which excavated to depths of 8 feet.

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

The Natural Resource Conservation Service (Reference 1), previously the Soil Conservation Service (Reference 2) has been mapped with two soil descriptions. The Soil Survey Map (Reference 2) is presented in Figure 4, and the Soil Survey Descriptions are presented in Appendix D. The soils are described as having moderate to rapid percolation rates.

Soils encountered in the tactile test pits consisted gravelly sandy clay loam and sandy clay. The limiting layers encountered in the test pits are the gravelly sandy clay loam and sandy clay, which corresponds with USDA Soil Type R1 and 4A, with a LTAR values of 0.50 to 0.15 gallons per day per square foot. Bedrock was not encountered in the test pits, and signs of seasonally occurring groundwater were not observed. Absorption fields must be installed a minimum of 4 feet above



groundwater, bedrock, or confining layers. Should groundwater or bedrock be encountered within 6 feet of the surface, designed systems will be required. Designed systems are anticipated on the lots due to the restrictive clay soils and high percentage of gravel sized material. Areas where a conventional system can be utilized could possibly be determined with additional testing. Testing will be required to determine the site characteristics prior to construction.

On-site Wastewater Systems are to be designed on a per lot basis at the time of building permit. The systems are to meet County Chapter 8 OWTS criteria and State CDPHE criteria including any required mitigation to accommodate respective leach fields and infrastructure including, but not limited to earthwork grading, berming and diversion swale implementation, installation of secondary sand filters or any other higher treatment levels and dosing as required on a per lot basis and determined by test pit results and site topography. There are no identified geologic hazards on the site that are prohibitive to future OWTS design at this time.

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 are anticipated for the majority of the lots, depending on soils encountered. The Septic Suitability Map is presented in Figure 8. A potential house location, water well, and two septic sites for the lots are indicated on Figure 8. 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.

## 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 Thaddeus Jarosz, for application to the proposed project in accordance with generally accepted geologic soil and engineering practices. No other warranty expressed or implied is made.

Thaddeus Jarosz  
Wastewater Study  
Table Rock Homesteads  
Parcel Nos. 51000-00-012 and 51000-00-026  
Gambler Place  
El Paso County, Colorado  
Page 6



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



Encl.

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

LLL/jcg

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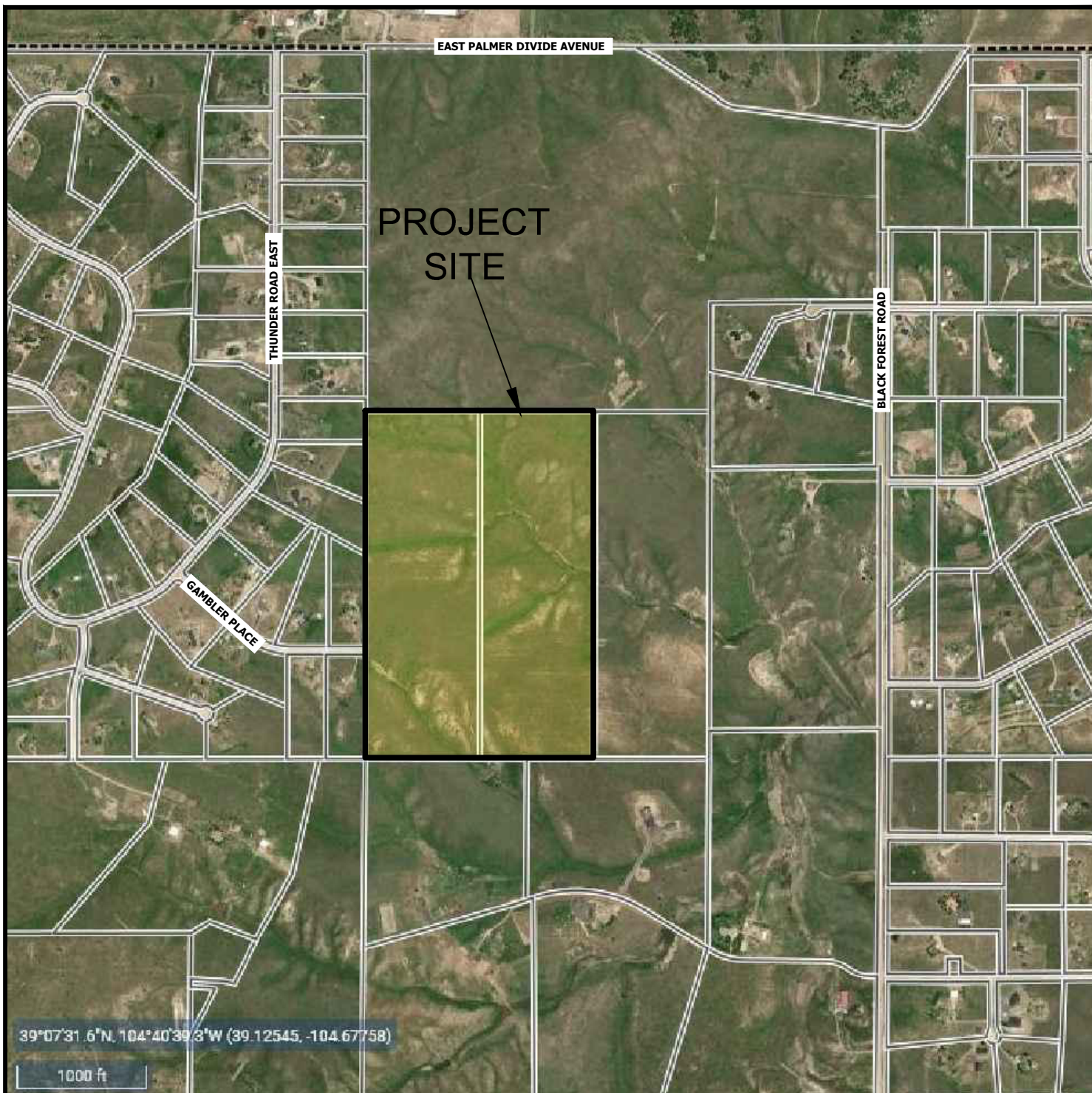


## REFERENCES

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8. Colorado Geological Survey. 1991. *Results of the 1987-88 EPA Supported Radon Study in Colorado*. Open-file Report 91-4.
9. El Paso County Planning Development. December 1995. *El Paso County Aggregate Resource Evaluation Maps*.
10. 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.
11. 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.

## FIGURES





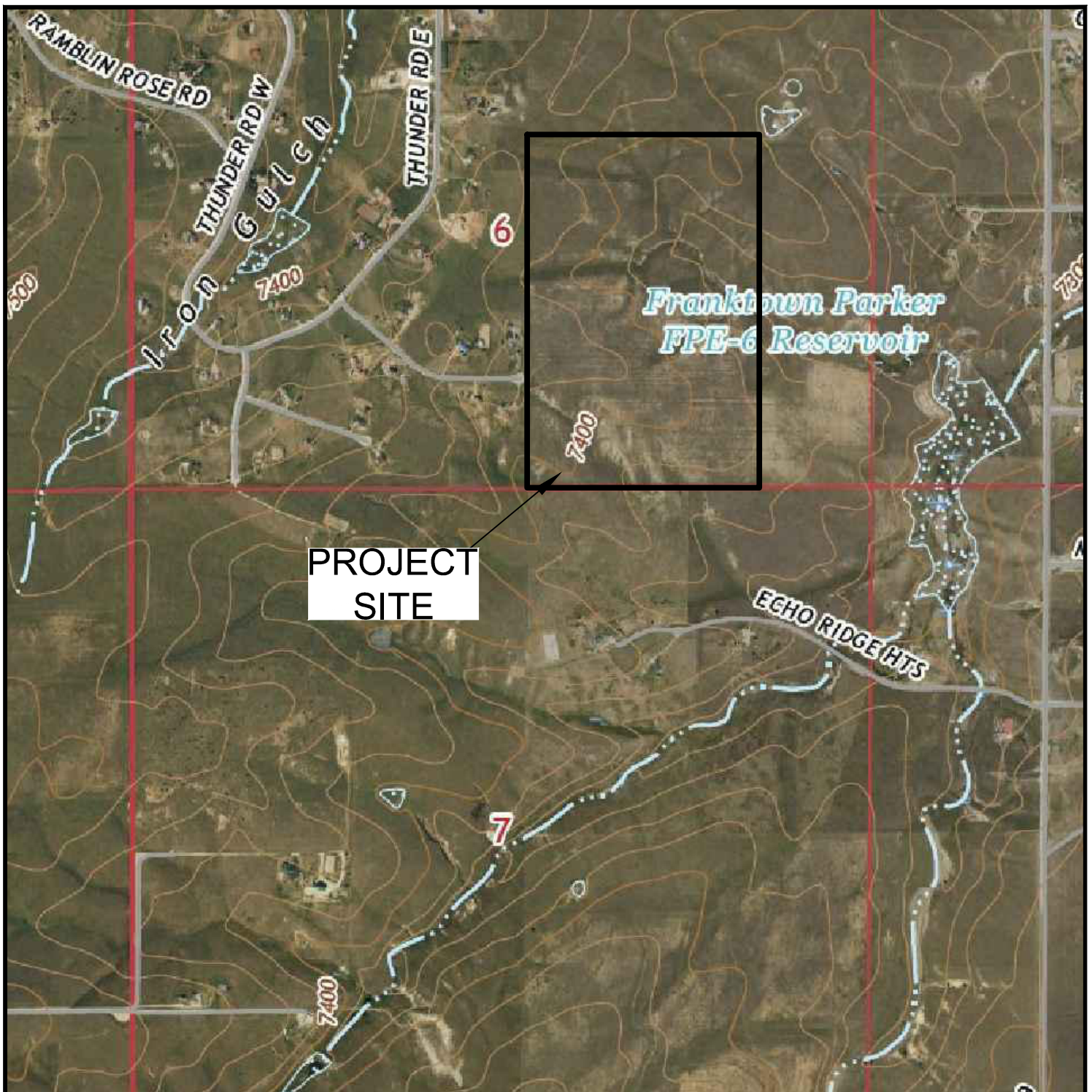
## VICINITY MAP

TABLE ROCK HOMESTEADS  
THADDEOUS JAROSZ

JOB NO.  
241483

**FIG. 1**





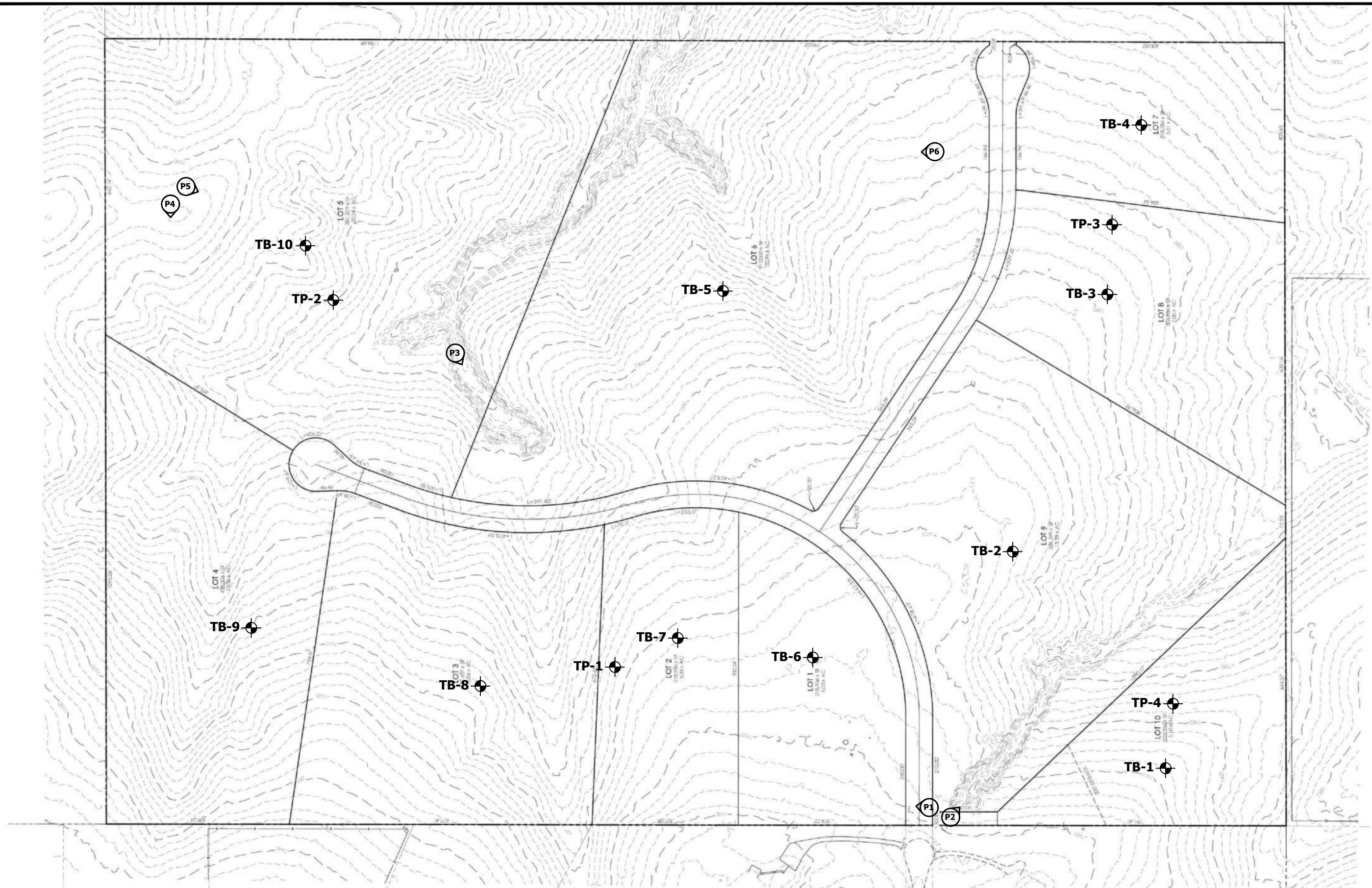
## USGS TOPOGRAPHY MAP

TABLE ROCK HOMESTEADS  
THADEOUS JAROSZ

JOB NO.  
241483

**FIG. 2**





-  **TB- APPROXIMATE TEST BORING LOCATION AND NUMBER**
-  **TB- APPROXIMATE TEST BORING LOCATION AND NUMBER**



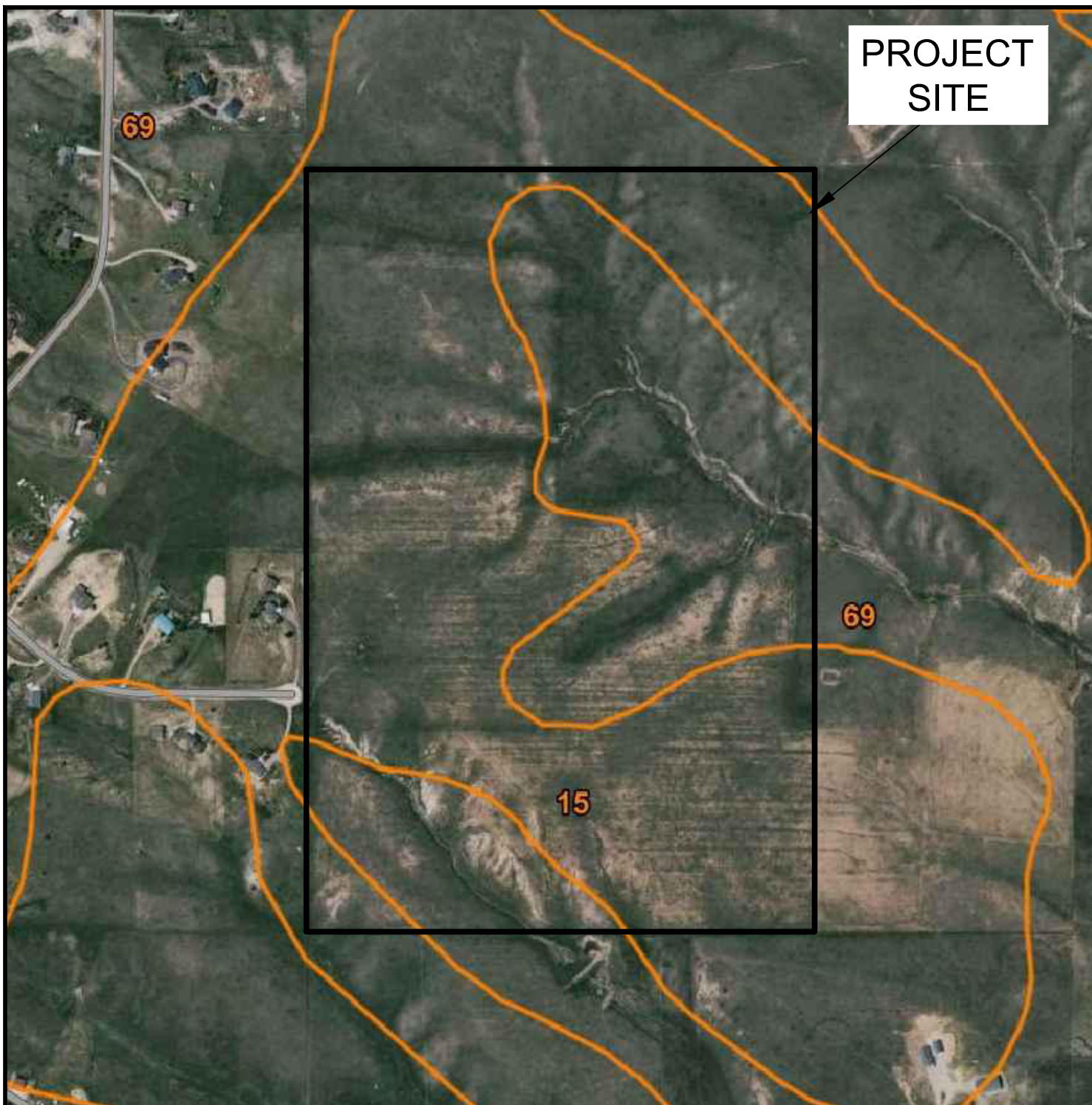
# **SITE AND EXPLORATION PLAN**

TABLE ROCK HOMESTEADS  
THADDEOUS JAROSZ

JOB NO.  
241483

**FIG. 3**





PROJECT  
SITE

69

69

15



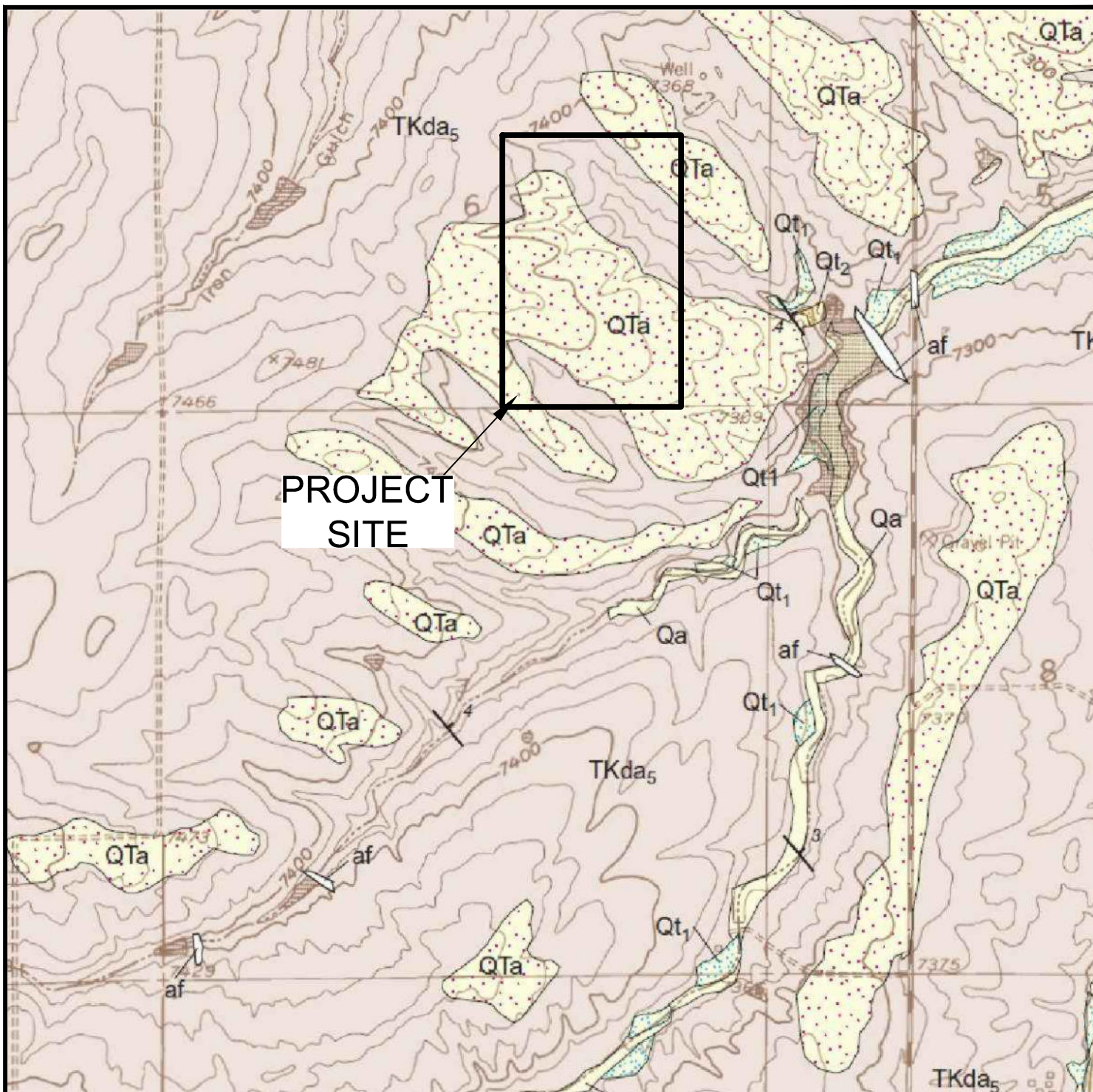
## SOIL SURVEY MAP

TABLE ROCK HOMESTEADS  
THADDEOUS JAROSZ

JOB NO.  
241483

**FIG. 4**



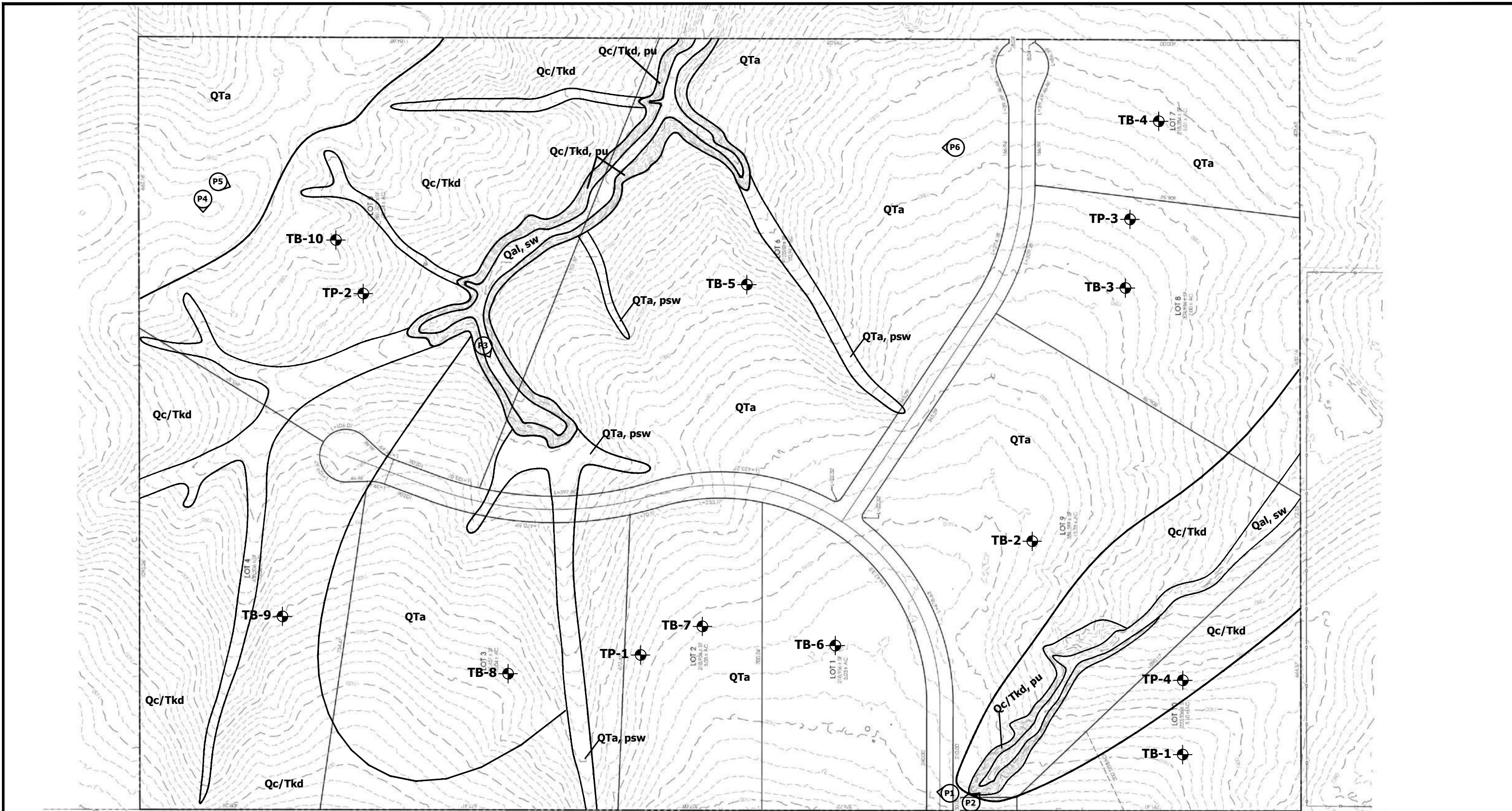


**GEOLOGIC MAP OF THE BLACK  
FOREST QUADRANGLE**  
TABLE ROCK HOMESTEADS  
THADDEOUS JAROSZ

JOB NO.  
241483

**FIG. 5**





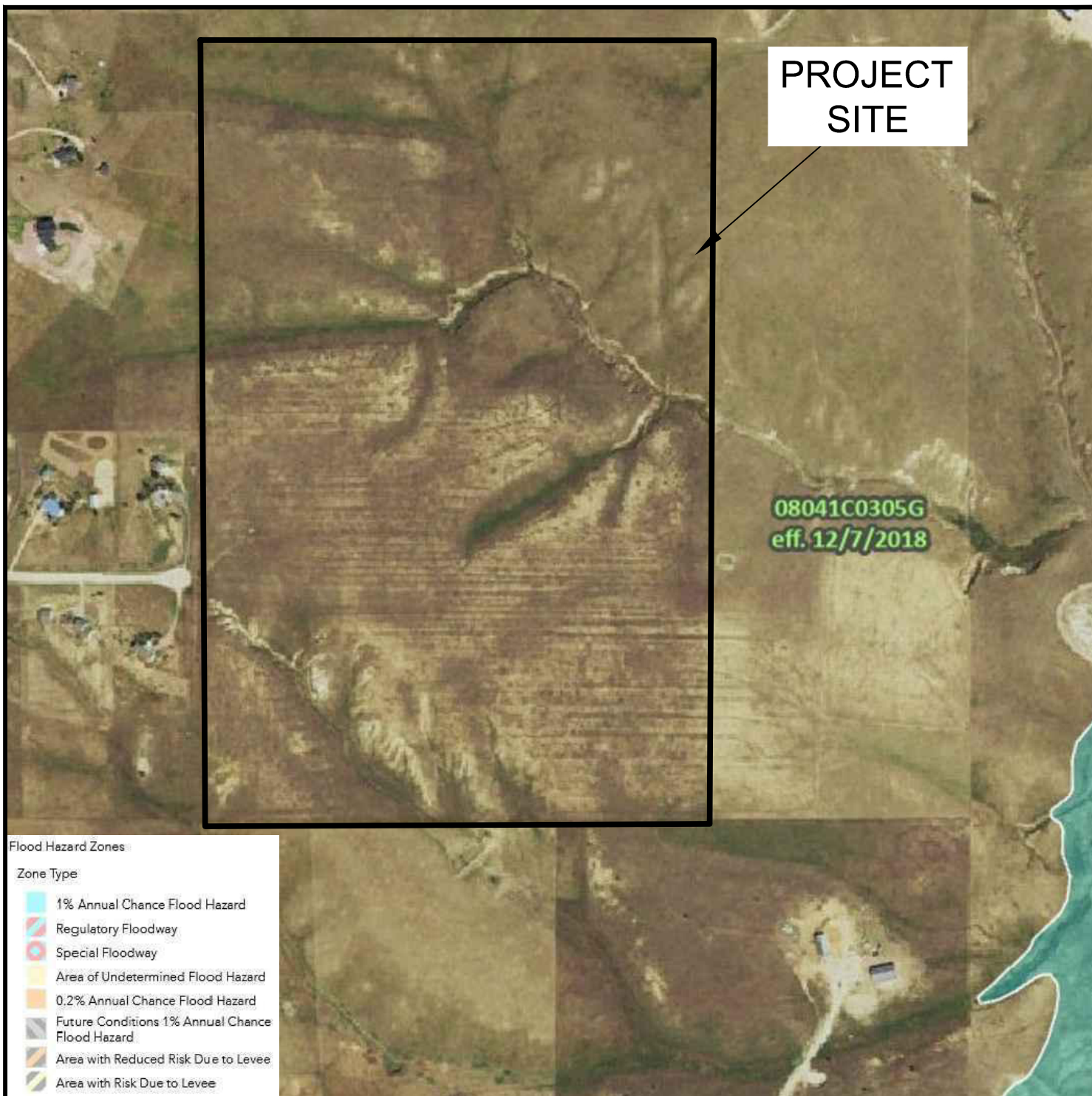
**Legend:**  
Qal - Recent Alluvium of Holocene Age:  
water deposited sands and gravel  
QTa - Alluvium of the Palmer Divide of early? Pleistocene or Pliocene? Age:  
terrace deposited sands and gravel  
Qc/Tkd - Colluvium of Quaternary Age overlying the Dawson Formation of Tertiary to Cretaceous Age:  
sheetwash and residual soil deposits overlying arkosic sandstone with interbedded claystone and  
siltstone  
  
pu- potentially unstable slopes  
psw - potential seasonally shallow groundwater area  
sw - seasonally shallow groundwater area



**GEOLOGY / ENGINEERING MAP**  
  
TABLE ROCK HOMESTEADS  
THADDEOUS JAROSZ

JOB NO.  
241483  
  
**FIG. 6**





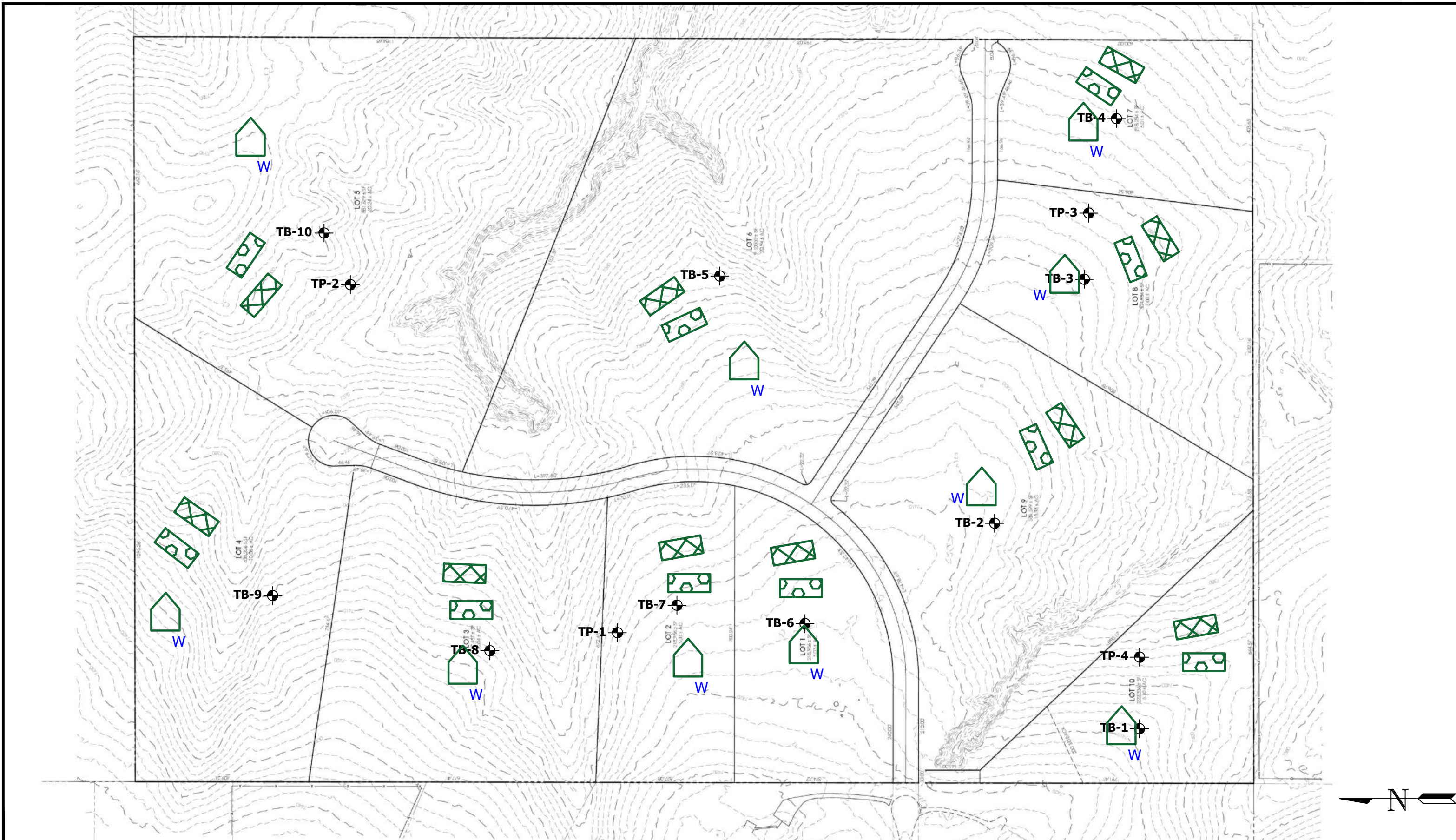
## FEMA FLOODPLAIN MAP

TABLE ROCK HOMESTEADS  
THADDEOUS JAROSZ


JOB NO.  
241483


**FIG. 7**








LEGEND:

 - POSSIBLE OWTS LOCATIONS

 - POSSIBLE OWTS ALTERNATE LOCATION

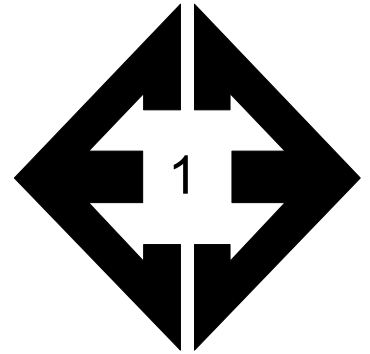
 - WATER WELLS MUST BE A MINIMUM OF 100 FT FROM OWTS ABSORPTION FIELDS

 - POSSIBLE HOUSE LOCATIONS

	<b>OWTS SUITABILITY MAP</b>	JOB NO. 241483
	TABLE ROCK HOMESTEADS THADDEOUS JAROSZ	
		<b>FIG. 8</b>

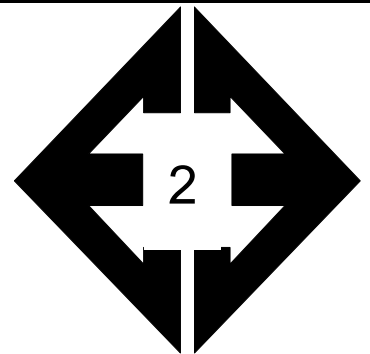
## **APPENDIX A: Site Photographs**





**Looking northeast  
from the southwest  
portion of the site.**

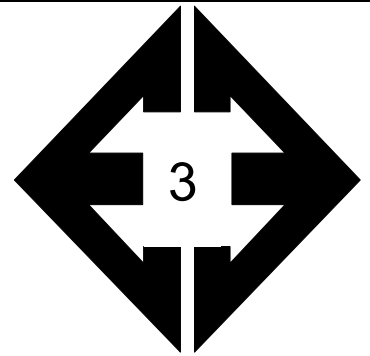
September 20, 2024



**Looking southeast  
along drainage in the  
southwest portion of  
the site.**

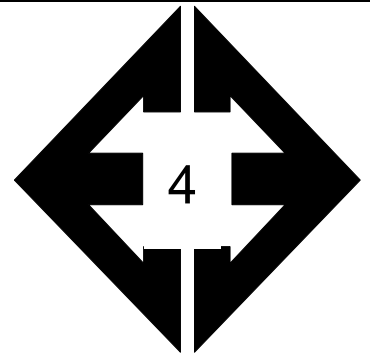
September 20, 2024





**Looking west along  
drainage in the north-  
central portion of the  
site.**

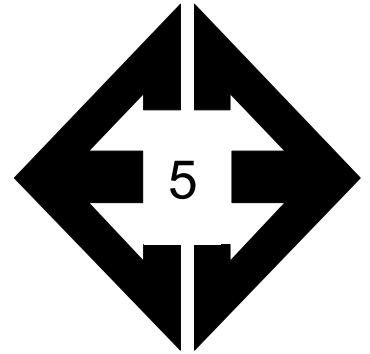
September 20, 2024



**Looking west from the  
northeastern portion of  
the site.**

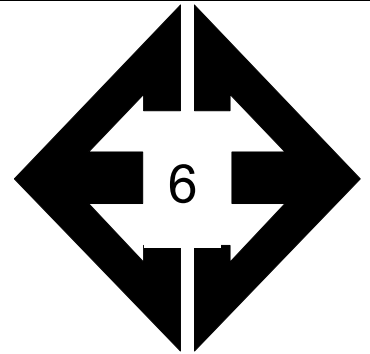
September 20, 2024





**Looking southwest  
from the northeastern  
portion of the site.**

September 20, 2024



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

September 20, 2024

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

**TABLE B-1**  
**DEPTH TO BEDROCK**

TEST BORING	DEPTH TO BEDROCK (ft.)
1	>20
2	4
3	16
4	9
5	>20
6	7
7	>20
8	19
9	17
10	19



TEST BORING 1  
DATE DRILLED 9/23/2024  
REMARKS

DRY TO 20', 10/1/24

6" TOPSOIL  
CLAY, SLIGHTLY SANDY, BROWN,  
STIFF, MOIST

SAND, SILTY, OLIVE, DENSE,  
MOIST to DRY

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			9	7.7	2
5			9	9.7	2
10			32	6.6	1
15			35	2.4	1
20			35	6.8	1

TEST BORING 2  
DATE DRILLED 9/23/2024  
REMARKS

DRY TO 19.5', 10/1/24

6" TOPSOIL  
CLAY, SLIGHTLY SANDY, BROWN,  
STIFF, MOIST  
SANDSTONE, VERY WEAK, TAN to  
OLIVE, COMPLETELY WEATHERED  
(SAND, SILTY, VERY DENSE,  
MOIST)

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			13	8.0	2
5			$\frac{50}{10''}$	1.7	3
10			$\frac{50}{9''}$	1.9	3
15			$\frac{50}{11''}$	5.4	3
20			$\frac{50}{11''}$	9.1	3



## TEST BORING LOGS

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

FIG. B-1

TEST BORING 3  
DATE DRILLED 9/23/2024  
REMARKS

DRY TO 19.5', 10/1/24

6" TOPSOIL  
CLAY, WITH SAND, BROWN to  
OLIVE, STIFF to HARD, MOIST

SANDSTONE, VERY WEAK, GREEN-  
GRAY, HIGHLY WEATHERED  
(SAND, SILTY, VERY DENSE,  
MOIST)

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			9	6.8	2
5			18	8.4	2
10			31	9.9	2
15			47	9.7	2
20			50 9"	8.1	3

TEST BORING 4  
DATE DRILLED 9/23/2024  
REMARKS

DRY TO 18.5', 10/1/24

6" TOPSOIL  
CLAY, SLIGHTLY SANDY, BROWN,  
STIFF to VERY STIFF, MOIST

SANDSTONE, VERY WEAK, OLIVE,  
HIGHLY WEATHERED (SAND,  
SILTY, VERY DENSE to DENSE,  
MOIST)

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			9	6.6	2
5			16	8.2	2
10			50	2.9	3
15			50 11"	6.0	3
20			42	12.7	3



## TEST BORING LOGS

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483




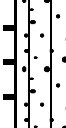

FIG. B-2

TEST BORING 5  
DATE DRILLED 9/23/2024  
REMARKS

DRY TO 20', 10/1/24

6" TOPSOIL  
CLAY, SLIGHTLY SANDY, BROWN,  
VERY STIFF, MOIST

SAND, SILTY, OLIVE, DENSE to  
MEDIUM DENSE, DRY to MOIST

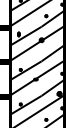
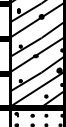
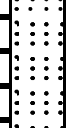
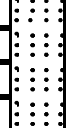
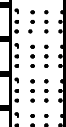
Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			22	8.0	2
5			38	2.2	1
10			24	4.9	1
15			22	5.7	1
20			29	7.7	1

TEST BORING 6  
DATE DRILLED 9/23/2024  
REMARKS

DRY TO 19', 10/1/24

12" TOPSOIL  
CLAY, SLIGHTLY SANDY, BROWN,  
STIFF to HARD, MOIST

SANDSTONE, VERY WEAK, TAN to  
OLIVE, COMPLETELY WEATHERED  
(SAND, SILTY, VERY DENSE, DRY  
to MOIST)

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			14	7.9	2
5			37	4.6	2
10			50 10"	2.8	3
15			50 9"	5.0	3
20			50	5.5	3



## TEST BORING LOGS

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

FIG. B-3

TEST BORING 7  
DATE DRILLED 9/24/2024  
REMARKS

DRY TO 19', 10/1/24

6" TOPSOIL  
CLAY, SANDY, BROWN to GREEN-GRAY, STIFF to HARD, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			14	7.5	2
5			17	8.1	2
10			33	6.4	2
15			30	6.4	2
20			40	4.8	2

TEST BORING 8  
DATE DRILLED 9/24/2024  
REMARKS

DRY TO 20', 10/1/24

12" TOPSOIL  
SAND, SILTY, BROWN to OLIVE, MEDIUM DENSE, DRY to MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			14	2.8	1
5			12	2.0	1
10			22	5.7	1
15			28	9.4	1
20			50	8.2	3

SANDSTONE, EXTREMELY WEAK, OLIVE, HIGHLY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)



## TEST BORING LOGS

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

FIG. B-4

TEST BORING 9  
DATE DRILLED 9/24/2024  
REMARKS

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 10/1/24						
12" TOPSOIL						
SAND, CLAYEY, BROWN, MEDIUM DENSE, MOIST				25	6.5	1
CLAY, SLIGHTLY SANDY, BROWN, HARD, MOIST	5			44	7.7	2
SAND, SILTY, OLIVE, DENSE to MEDIUM DENSE, MOIST	10			45	3.0	1
	15			15	10.9	1
SANDSTONE, VERY WEAK, OLIVE, COMPLETELY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)	20			50 9"	8.2	3

TEST BORING 10  
DATE DRILLED 9/24/2024  
REMARKS

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 19.5', 10/1/24						
12" TOPSOIL						
CLAY, SANDY, OLIVE, HARD, MOIST				43	10.0	2
SAND, CLAYEY, OLIVE, DENSE, MOIST	5			42	4.6	1
	10			32	12.0	1
	15			34	11.5	1
SANDSTONE, EXTREMELY WEAK, OLIVE, HIGHLY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)	20			50	11.1	1



## TEST BORING LOGS

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

FIG. B-5

TEST PIT 1  
DATE EXCAVATED 9/25/2024  
REMARKS

REMARKS	Depth (ft.)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, sandy clay loam, dark brown, moist	1					
sandyclayl, fine to coarse grained, light brown, moist	2			gr	m	4
	3					
	4					
	5					
	6					
gravelly, sandy clay loam, fine to coarse grained, light brown, moist	7			gr	w	3A R1
	8					
	9					
	10					

Soil Structure Shape

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

TEST PIT 2  
DATE EXCAVATED 9/25/2024  
REMARKS

REMARKS	Depth (ft.)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, sandy clay loam, dark brown, moist	1					
sandy clay, fine to medium grained, gray brown, moist	2			gr	m	4
	3					
	4					
clay, fine grained, gray brown, moist	5			ma		4A
	6					
	7					
	8					
	9					
	10					

Soil Structure Grade

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



**TEST PIT LOGS**

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241362

**FIG. B-6**

TEST PIT 3  
DATE EXCAVATED 9/25/2024  
REMARKS

REMARKS	Depth (ft.)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, sandy clay loam, dark brown, moist	1					
sandy clay, fine to medium grained, dark brown, moist	2			bl	m	4
	3					
	4					
sandy clay, fine to medium grained, brown, moist	5			ma		4A
	6					
	7					
	8					
	9					
	10					

Soil Structure Shape

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

TEST PIT 4  
DATE EXCAVATED 9/25/2024  
REMARKS

REMARKS	Depth (ft.)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, sandy clay loam, dark brown, moist	1					
sandy clay, fine to medium grained, brown, moist	2			bl	m	4
	3					
gravelly, sandy clay loam, fine to coarse grained, light brown, moist	4			gr	w	3A R1
	5					
	6					
	7					
	8					
	9					
	10					

Soil Structure Grade

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



**TEST PIT LOGS**

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241362

**FIG. B-7**



## **APPENDIX C: Laboratory Testing Results**

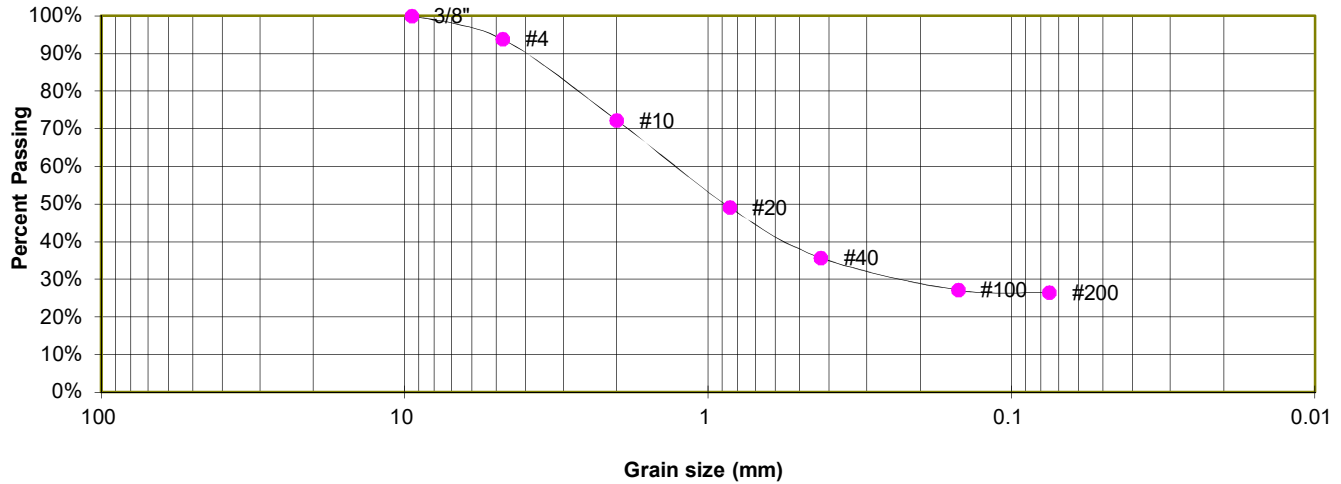
**TABLE C-1**  
**SUMMARY OF LABORATORY TEST RESULTS**

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	SULFATE (WT %)	SWELL/ CONSOL (%)	USCS	SOIL DESCRIPTION
1	5	10			26.5						SM	SAND, SILTY
1	8	5			30.9				0.00		SM	SAND, SILTY
2	1	5	13.4	95.9	93.1	31	21	10		-1.3	CL	CLAY, SLIGHTLY SANDY
2	3	10			75.6	31	20	11	<0.01		CL	CLAY, WITH SAND
2	4	5	11.2	92.1	98.7					-0.7	CL	CLAY, SLIGHTLY SANDY
2	6	2-3	15.6	95.5	88.0					-1.4	CL	CLAY, SLIGHTLY SANDY
2	7	15			53.8						CL	CLAY, SANDY
2	9	5	9.9	106.0	93.3					-1.3	CL	CLAY, SLIGHTLY SANDY
2	10	2-3			79.4						CL	CLAY, SANDY
3	2	10			18.1	NV	NP	NP	0.00		SM	SANDSTONE (SAND, SILTY)

TEST BORING 5  
DEPTH (FT) 10

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"	
3/8"	100.0%
4	93.8%
10	72.3%
20	49.2%
40	35.7%
100	27.1%
200	26.5%

**SOIL CLASSIFICATION**

USCS CLASSIFICATION: SM



**LABORATORY TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

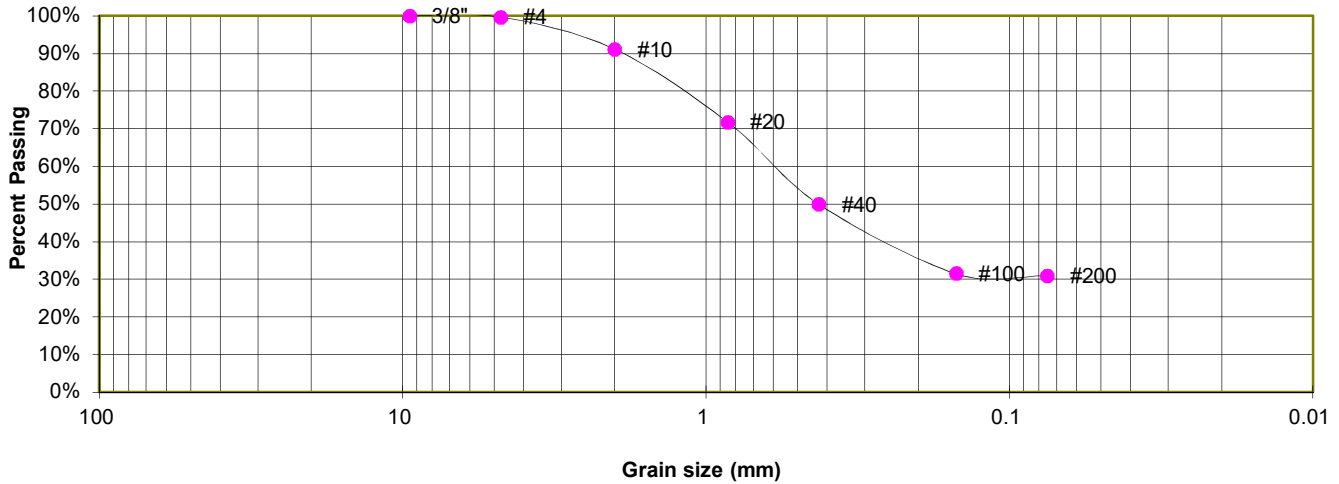
JOB NO.  
241483

**FIG. C-1**

TEST BORING 8  
DEPTH (FT) 5

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"	
3/8"	100.0%
4	99.7%
10	91.1%
20	71.8%
40	49.9%
100	31.5%
200	30.9%

#### SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



### LABORATORY TEST RESULTS

GAMBLER PLACE  
THADDEOUS JAROSZ

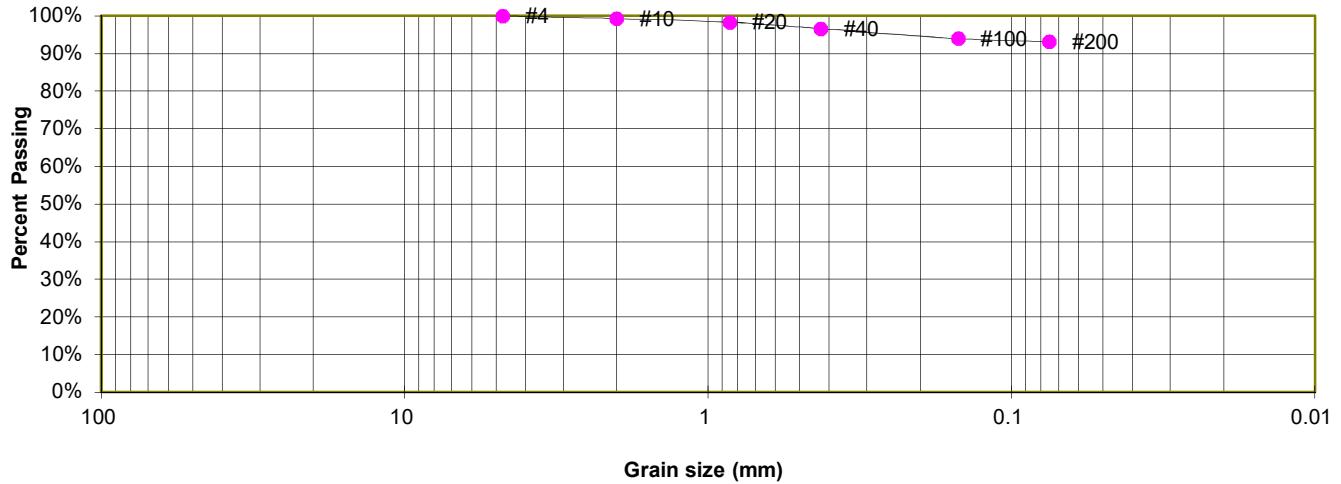
JOB NO.  
241483

**FIG. C-2**

TEST BORING	1
DEPTH (FT)	5

SOIL DESCRIPTION	CLAY, SLIGHTLY SANDY
SOIL TYPE	2

### Sieve Analysis Grain Size Distribution



#### GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.3%
20	98.4%
40	96.6%
100	94.0%
200	93.1%

#### ATTERBERG LIMITS

Plastic Limit	21
Liquid Limit	31
Plastic Index	10

#### SOIL CLASSIFICATION

USCS CLASSIFICATION: CL



### LABORATORY TEST RESULTS

GAMBLER PLACE  
THADDEOUS JAROSZ

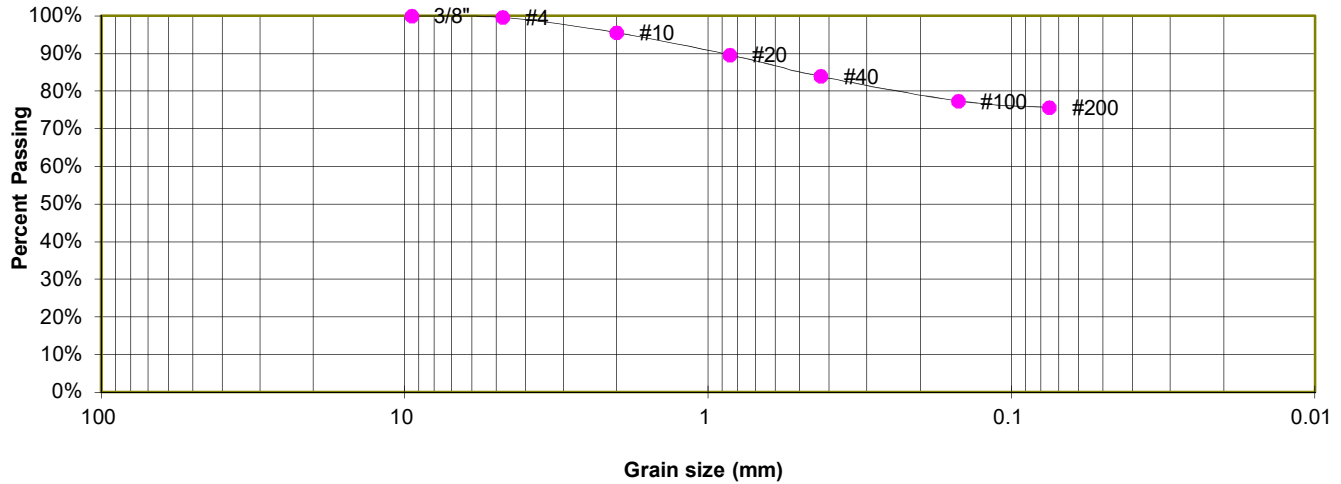
JOB NO.  
241483

**FIG. C-3**

TEST BORING	3
DEPTH (FT)	10

SOIL DESCRIPTION CLAY, WITH SAND
SOIL TYPE 2

### 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	99.6%
10	95.6%
20	89.6%
40	83.9%
100	77.4%
200	75.6%

#### ATTERBERG LIMITS

Plastic Limit	20
Liquid Limit	31
Plastic Index	11

#### SOIL CLASSIFICATION

USCS CLASSIFICATION: CL



### LABORATORY TEST RESULTS

GAMBLER PLACE  
THADDEOUS JAROSZ

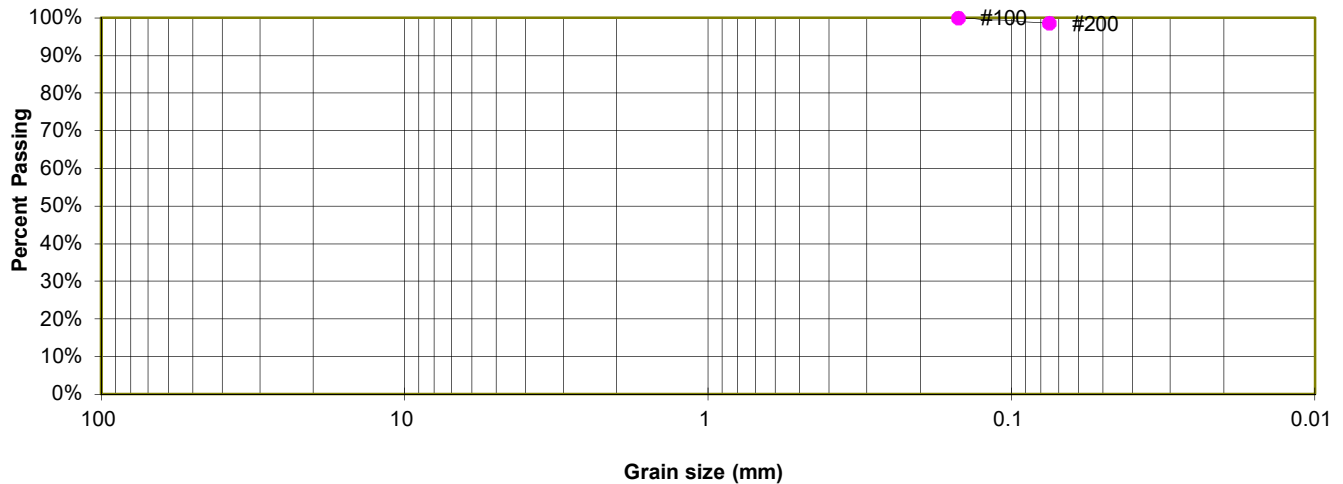
JOB NO.  
241483

**FIG. C-4**

TEST BORING	4
DEPTH (FT)	5

SOIL DESCRIPTION	CLAY, SLIGHTLY SANDY
SOIL TYPE	2

**Sieve Analysis  
Grain Size Distribution**



**GRAIN SIZE ANALYSIS**

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	
20	
40	
100	100.0%
200	98.7%

**SOIL CLASSIFICATION**

USCS CLASSIFICATION: CL



**LABORATORY TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

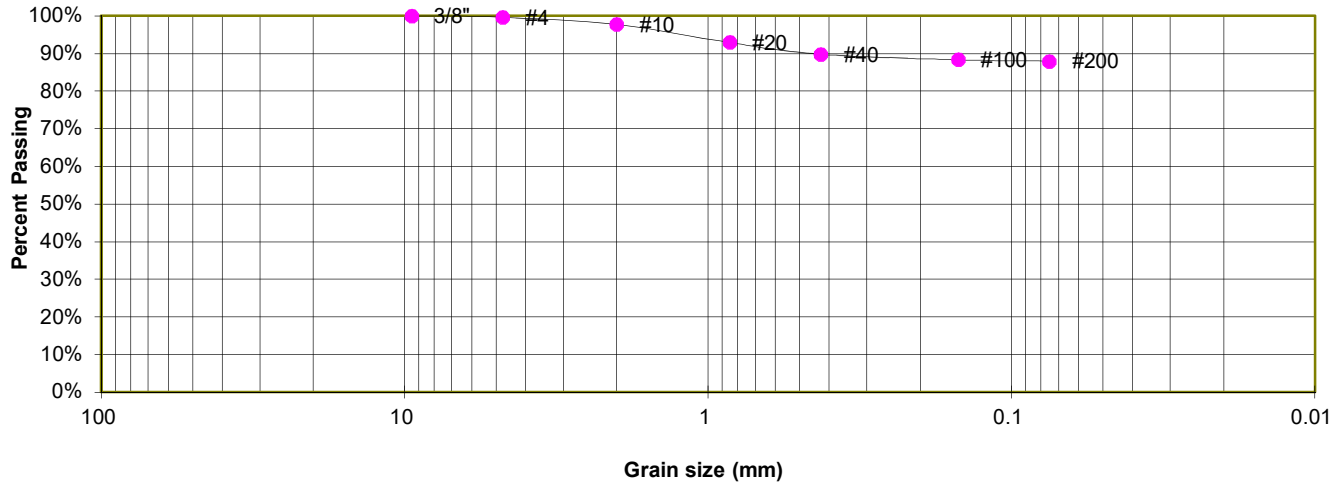
**FIG. C-5**



TEST BORING 6  
DEPTH (FT) 2-3

SOIL DESCRIPTION CLAY, SLIGHTLY SANDY  
SOIL TYPE 2

**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	99.6%
10	97.7%
20	92.9%
40	89.8%
100	88.3%
200	88.0%

**SOIL CLASSIFICATION**

USCS CLASSIFICATION: CL



**LABORATORY TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

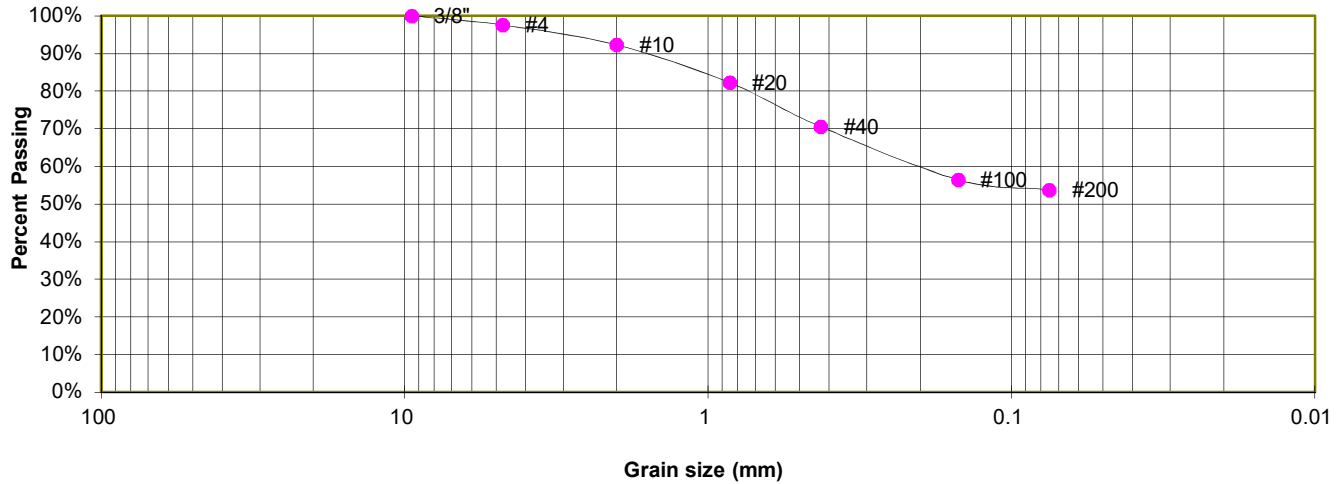
JOB NO.  
241483

**FIG. C-6**

TEST BORING 7  
DEPTH (FT) 15

SOIL DESCRIPTION CLAY, SANDY  
SOIL TYPE 2

**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	97.6%
10	92.3%
20	82.2%
40	70.6%
100	56.5%
200	53.8%

**SOIL CLASSIFICATION**

USCS CLASSIFICATION: CL



**LABORATORY TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

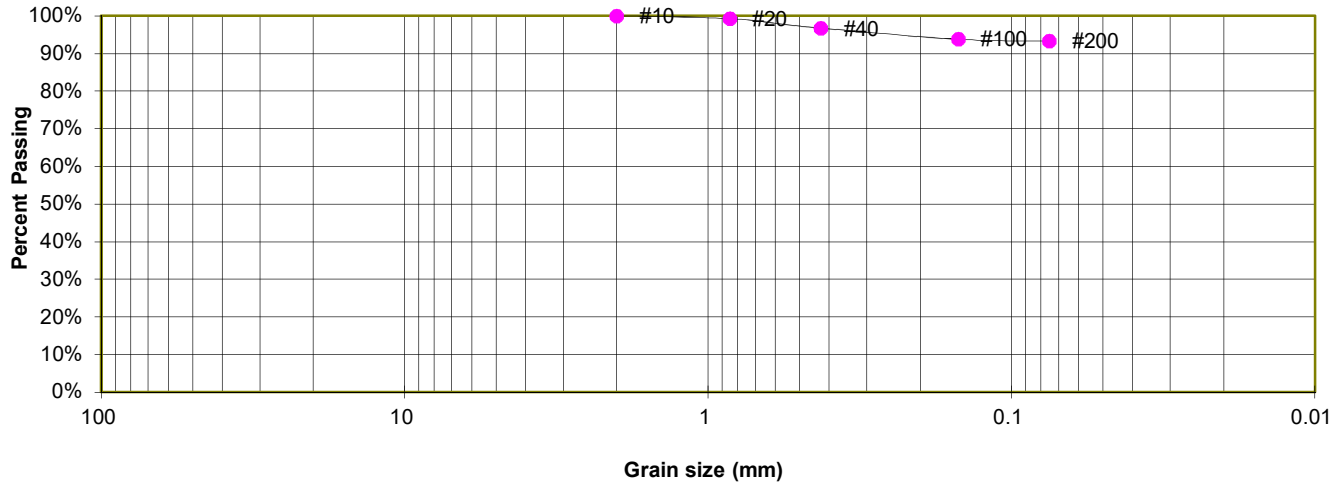
JOB NO.  
241483

**FIG. C-7**

TEST BORING	9
DEPTH (FT)	5

SOIL DESCRIPTION CLAY, SLIGHTLY SANDY
SOIL TYPE 2

### Sieve Analysis Grain Size Distribution



#### GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	100.0%
20	99.3%
40	96.7%
100	93.8%
200	93.3%

#### SOIL CLASSIFICATION

USCS CLASSIFICATION: CL



### LABORATORY TEST RESULTS

GAMBLER PLACE  
THADDEOUS JAROSZ

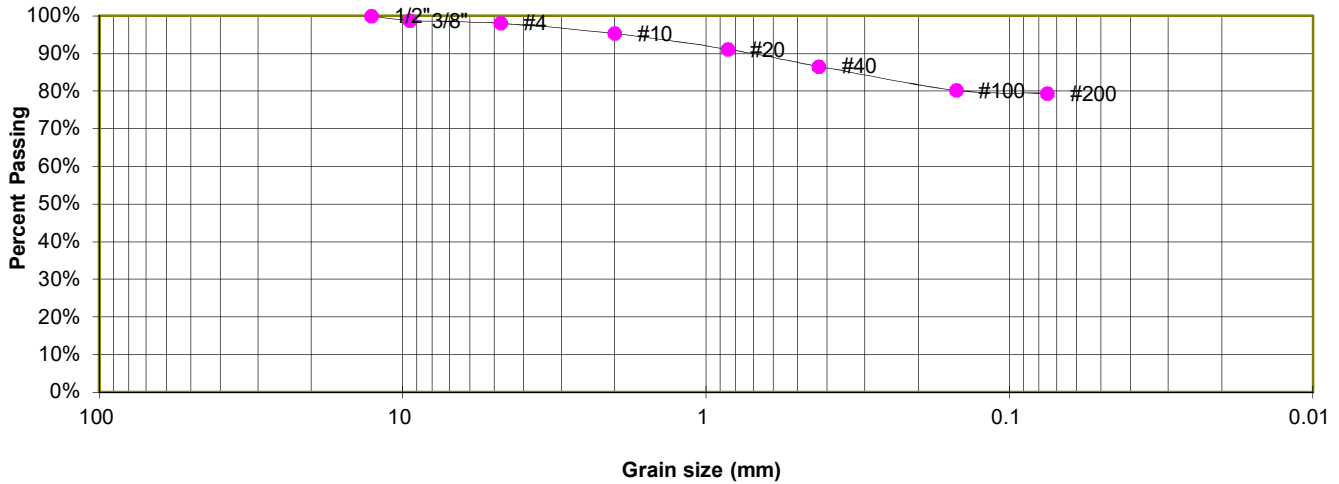
JOB NO.  
241483

**FIG. C-8**

TEST BORING	10
DEPTH (FT)	2-3

SOIL DESCRIPTION CLAY, SANDY
SOIL TYPE 2

### 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"	98.8%
4	98.0%
10	95.3%
20	91.2%
40	86.6%
100	80.2%
200	79.4%

#### SOIL CLASSIFICATION

USCS CLASSIFICATION: CL



### LABORATORY TEST RESULTS

GAMBLER PLACE  
THADDEOUS JAROSZ

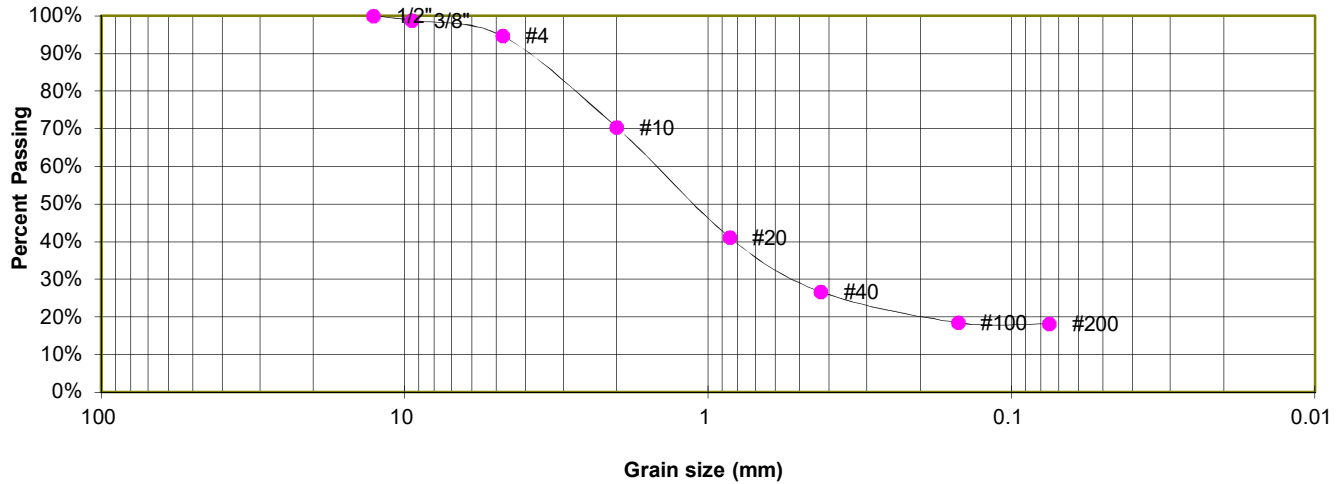
JOB NO.  
241483

**FIG. C-9**

TEST BORING 2  
DEPTH (FT) 10

SOIL DESCRIPTION SANDSTONE (SAND, SILTY)  
SOIL TYPE 3

### 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"	98.8%
4	94.6%
10	70.3%
20	41.2%
40	26.7%
100	18.5%
200	18.1%

#### ATTERBERG LIMITS

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

#### SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



### LABORATORY TEST RESULTS

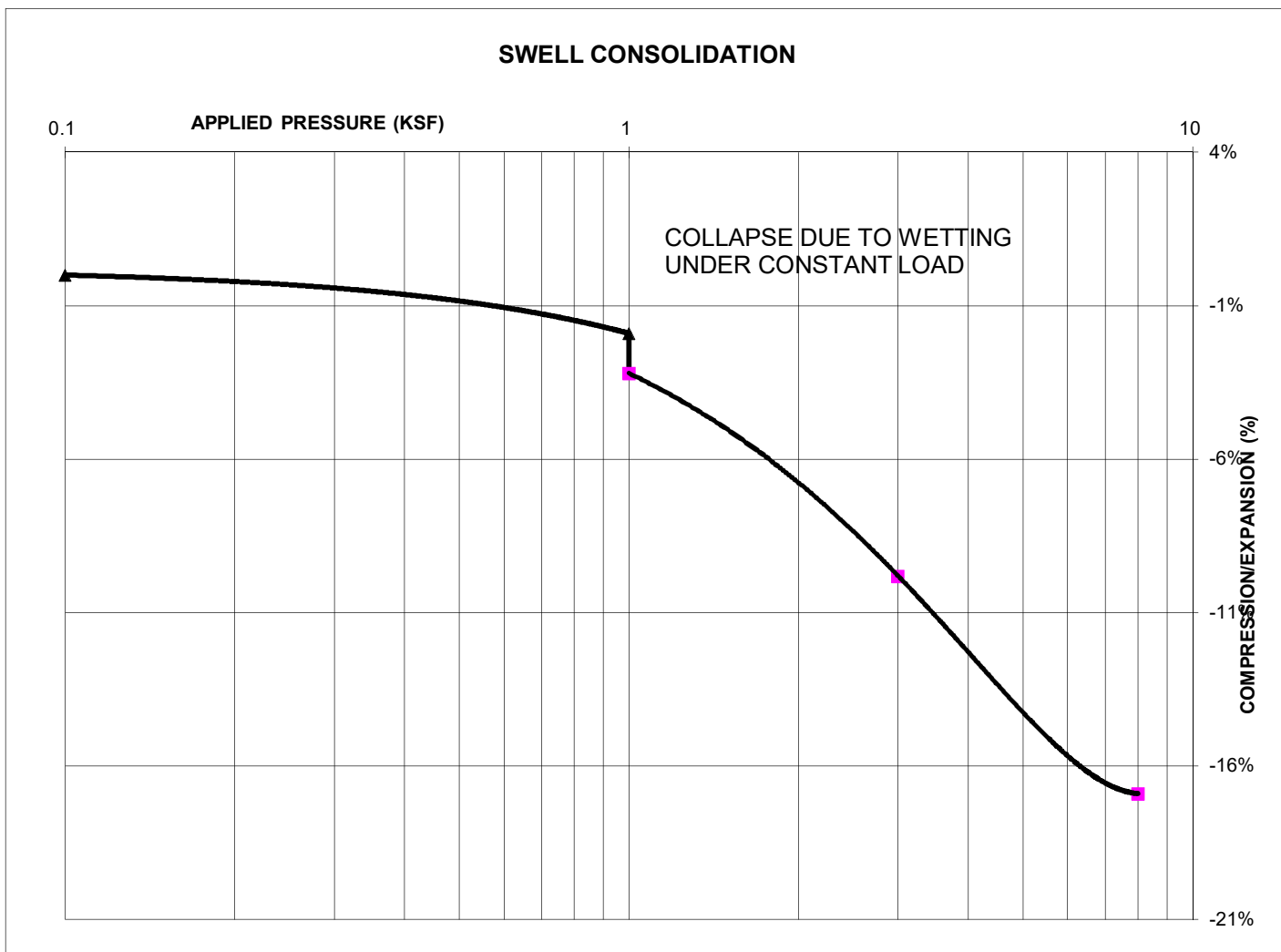
GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

FIG. C-10

TEST BORING 1  
DEPTH (FT) 5

SOIL DESCRIPTION CLAY, SANDY  
SOIL TYPE 2



**SWELL/COLLAPSE TEST RESULTS**

NATURAL UNIT DRY WEIGHT (PCF): 96  
NATURAL MOISTURE CONTENT: 13.4%  
SWELL/COLLAPSE (%): -1.3%



**SWELL TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

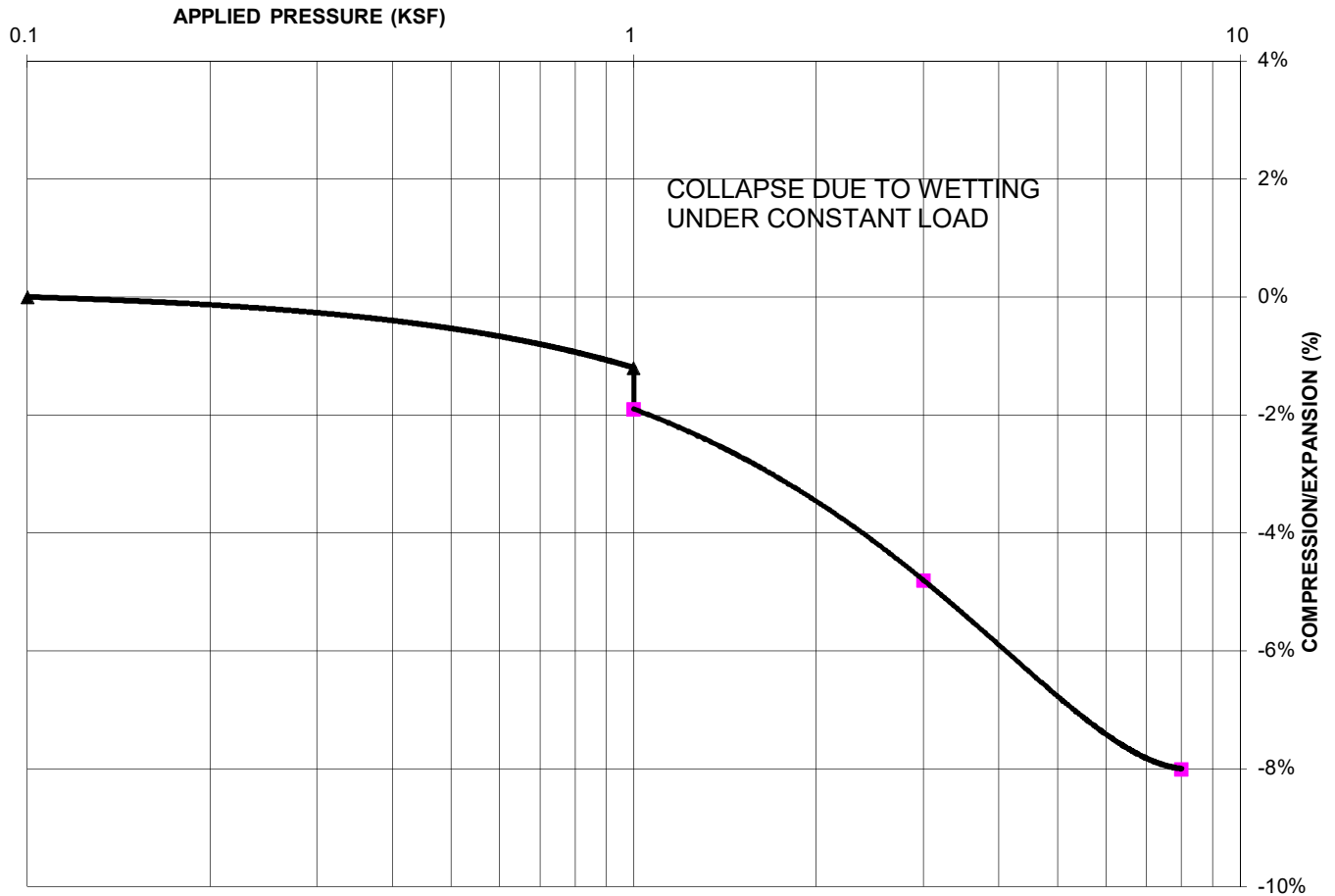
JOB NO.  
241483

**FIG. C-11**

TEST BORING 4  
DEPTH (FT) 5

SOIL DESCRIPTION CLAY, SANDY  
SOIL TYPE 2

### SWELL CONSOLIDATION



#### **SWELL/COLLAPSE TEST RESULTS**

NATURAL UNIT DRY WEIGHT (PCF): 92  
NATURAL MOISTURE CONTENT: 11.2%  
SWELL/COLLAPSE (%): -0.7%



### SWELL TEST RESULTS

GAMBLER PLACE  
THADDEOUS JAROSZ

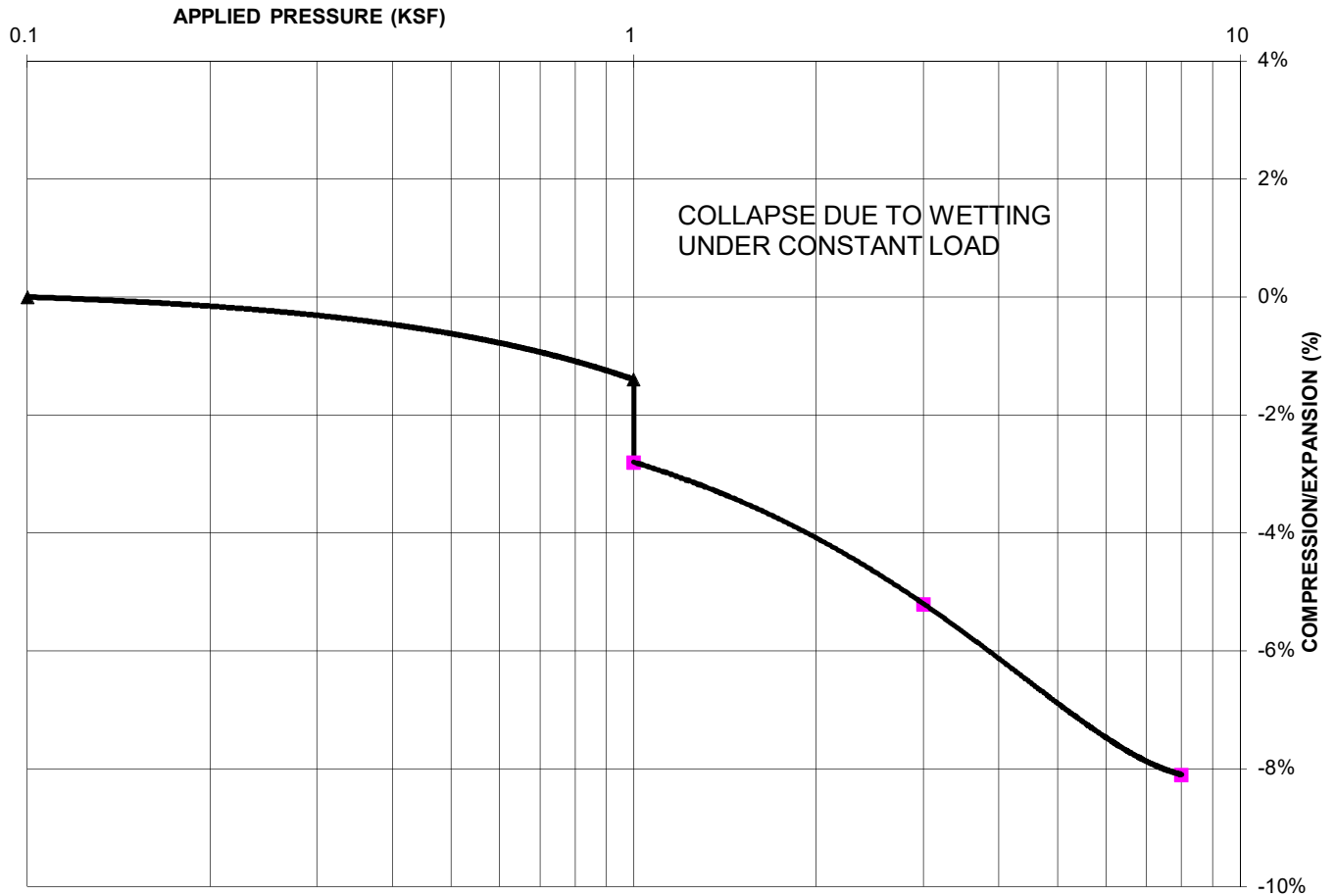
JOB NO.  
241483

**FIG. C-12**

TEST BORING 6  
DEPTH (FT) 2-3

SOIL DESCRIPTION CLAY, SANDY  
SOIL TYPE 2

### SWELL CONSOLIDATION



#### **SWELL/COLLAPSE TEST RESULTS**

NATURAL UNIT DRY WEIGHT (PCF): 95  
NATURAL MOISTURE CONTENT: 15.6%  
SWELL/COLLAPSE (%): -1.4%



### SWELL TEST RESULTS

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

**FIG. C-13**



TEST BORING 9  
DEPTH (FT) 5

SOIL DESCRIPTION CLAY, SANDY  
SOIL TYPE 2



**SWELL/COLLAPSE TEST RESULTS**

NATURAL UNIT DRY WEIGHT (PCF): 106  
NATURAL MOISTURE CONTENT: 9.9%  
SWELL/COLLAPSE (%): -1.3%



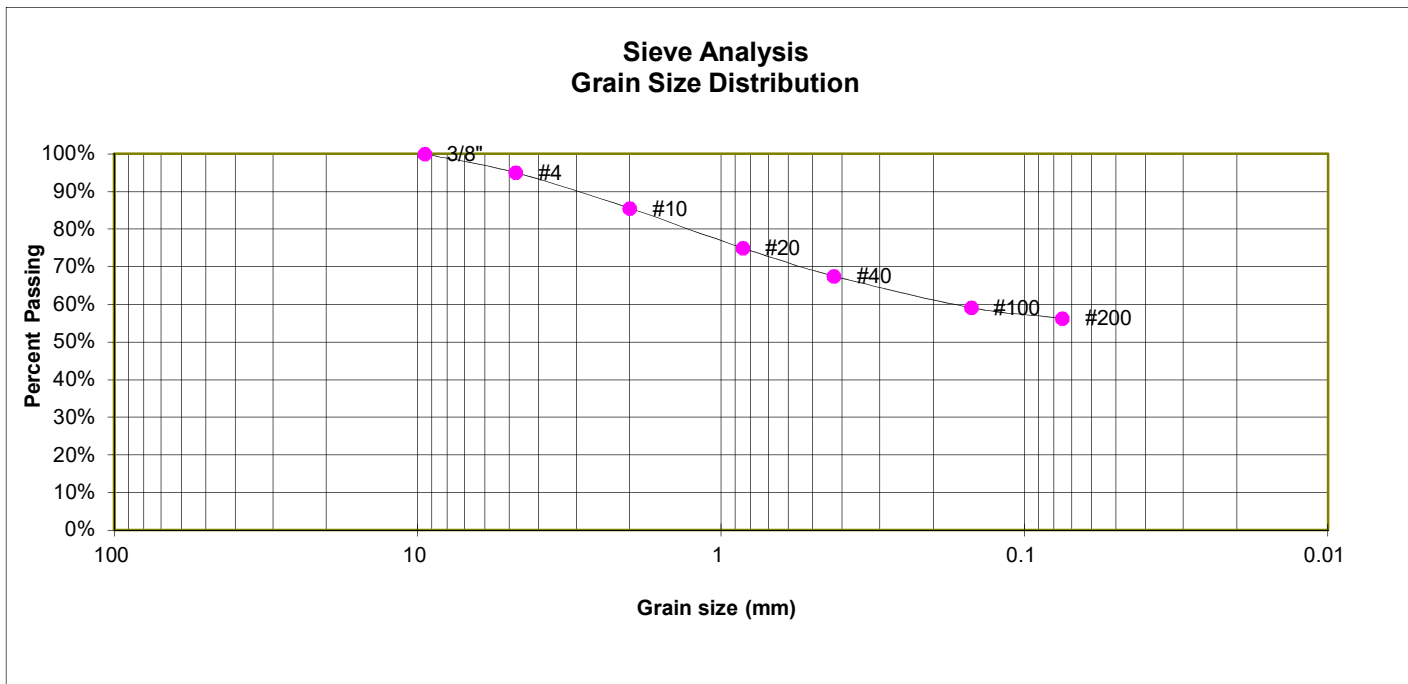
**SWELL TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

**FIG. C-14**

TEST PIT	TP-1	SOIL DESCRIPTION CLAY, SANDY
DEPTH (FT)	2-3	SOIL TYPE 1



#### **GRAIN SIZE ANALYSIS**

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.0%
10	85.6%
20	75.0%
40	67.6%
100	59.1%
200	56.3%

#### **SOIL CLASSIFICATION**

USCS CLASSIFICATION: CL



#### **LABORATORY TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

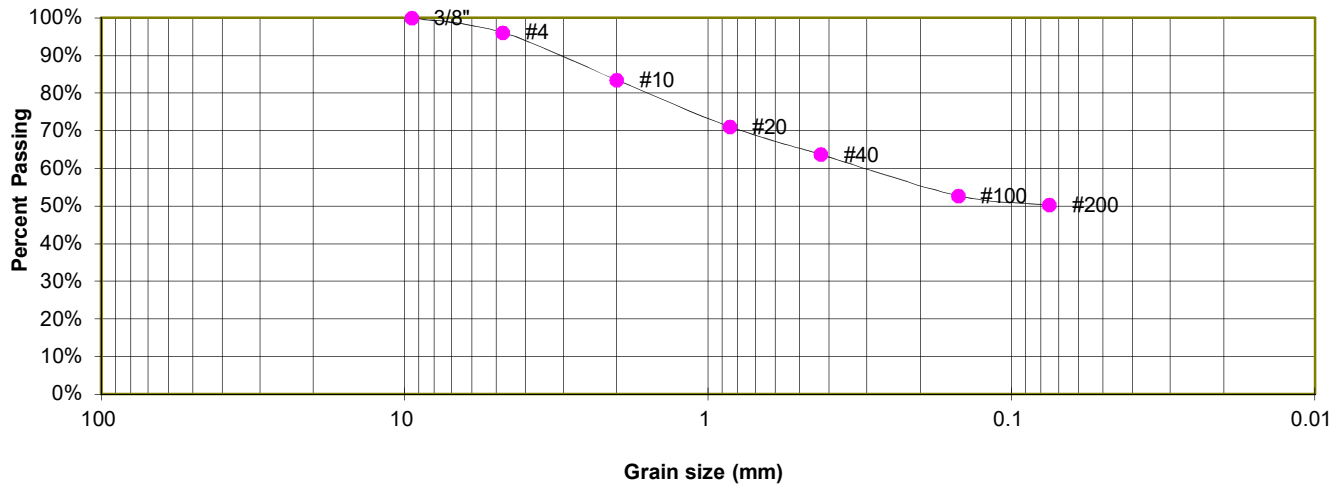
JOB NO.  
241483

**FIG. C-15**

TEST PIT TP-2  
DEPTH (FT) 4-5

SOIL DESCRIPTION CLAY, SANDY  
SOIL TYPE 1

**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	96.1%
10	83.5%
20	71.1%
40	63.7%
100	52.8%
200	50.2%

**SOIL CLASSIFICATION**

USCS CLASSIFICATION: CL



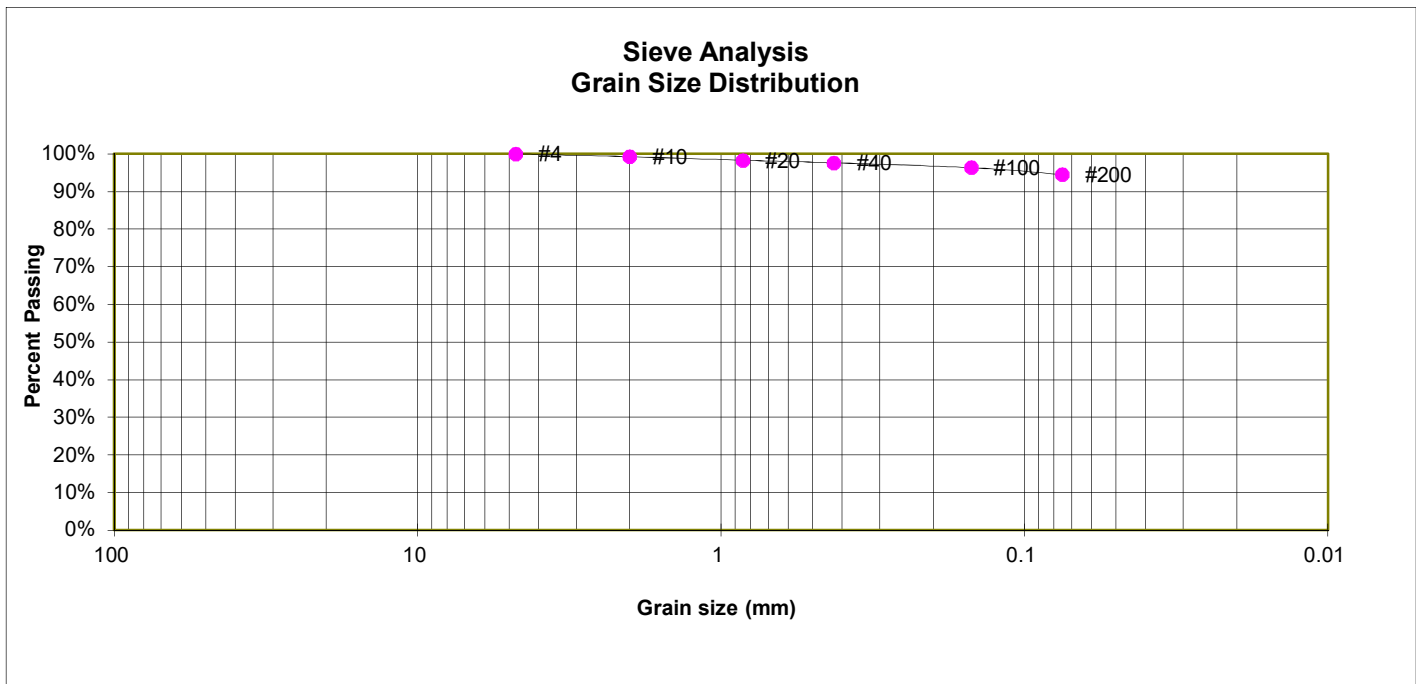
**LABORATORY TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

**FIG. C-16**

TEST PIT	TP-3	SOIL DESCRIPTION	CLAY, SLIGHTLY SANDY
DEPTH (FT)	2-3	SOIL TYPE	1



#### **GRAIN SIZE ANALYSIS**

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.3%
20	98.3%
40	97.6%
100	96.3%
200	94.5%

#### **SOIL CLASSIFICATION**

USCS CLASSIFICATION: CL



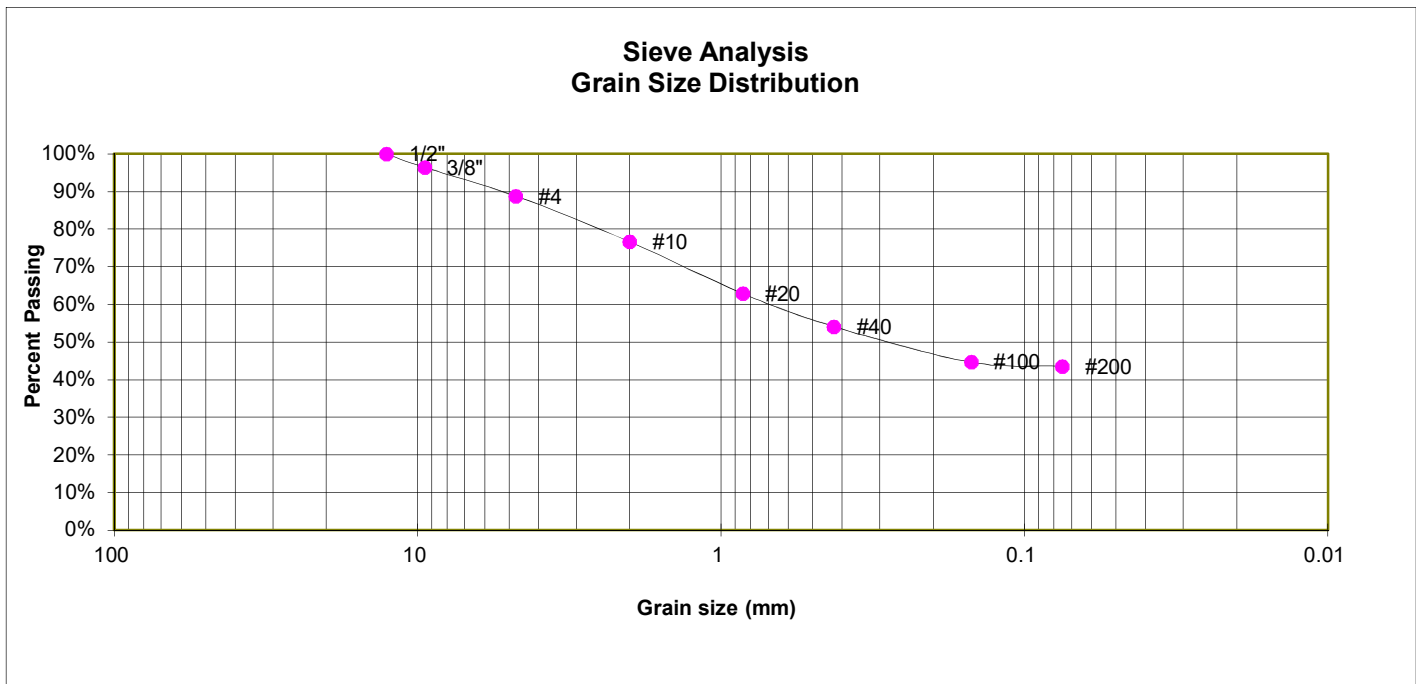
### **LABORATORY TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

**FIG. C-17**

TEST PIT	TP-4	SOIL DESCRIPTION SAND, CLAYEY
DEPTH (FT)	5-6	SOIL TYPE 2



#### **GRAIN SIZE ANALYSIS**

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.4%
4	88.8%
10	76.7%
20	62.9%
40	54.1%
100	44.6%
200	43.6%

#### **SOIL CLASSIFICATION**

USCS CLASSIFICATION: SC



#### **LABORATORY TEST RESULTS**

GAMBLER PLACE  
THADDEOUS JAROSZ

JOB NO.  
241483

**FIG. C-18**

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

## El Paso County Area, Colorado

### 15—Brussett loam, 3 to 5 percent slopes

#### Map Unit Setting

*National map unit symbol:* 367k

*Elevation:* 7,200 to 7,500 feet

*Frost-free period:* 115 to 125 days

*Farmland classification:* Prime farmland if irrigated

#### Map Unit Composition

*Brussett and similar soils:* 85 percent

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

#### Description of Brussett

##### Setting

*Landform:* Hills

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

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Eolian deposits

##### Typical profile

*A - 0 to 8 inches:* loam

*BA - 8 to 12 inches:* loam

*Bt - 12 to 26 inches:* clay loam

*Bk - 26 to 60 inches:* silt 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

*Calcium carbonate, maximum content:* 5 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* High (about 9.1 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*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

## **Data Source Information**

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 22, Sep 3, 2024



## El Paso County Area, Colorado

### 69—Peyton-Pring complex, 8 to 15 percent slopes

#### Map Unit Setting

*National map unit symbol:* 369g

*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

*Minor components:* 5 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 clay loam

*C - 35 to 60 inches:* sandy loam

##### Properties and qualities

*Slope:* 8 to 9 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 7.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*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:* 8 to 15 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):* 6e

*Hydrologic Soil Group:* B

*Ecological site:* R048AY222CO - Loamy Park

*Hydric soil rating:* No

## Minor Components

### Pleasant

*Percent of map unit:* 5 percent

*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 22, Sep 3, 2024