CMT TECHNICAL SERVICES

ENGINEERING •GEOTECHNICAL •ENVIRONMENTAL (ESA I & II) •
MATERIALS TESTING •SPECIAL INSPECTIONS •
ORGANIC CHEMISTRY • PAVEMENT
DESIGN •GEOLOGY

GEOTECHNICAL
ENGINEERING STUDY

Proposed Deseret Peak
Grantsville

NW of the Intersection of Lamb Lane and SR 112
Grantsville, Utah

CMT Project No. 900217

FOR:
Mr. Jeff Allen
Meritage Homes
8400 East Crescent Parkway, Suite 200
Greenwood Village, CO 80111

June 30, 2022

CMT TECHNICAL SERVICES

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Subject: Geotechnical Engineering Study
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Mr. Allen:

Submitted herewith is the report of our geotechnical engineering study for the subject site. This report contains the results of our findings and an engineering interpretation of the results with respect to the available project characteristics. It also contains recommendations to aid in the design and construction of the earth related phases of this project.

On May 9 through May 11, 2022, and on May 31 through June 1, 2022 a CMT Technical Services (CMT) staff professional was on-site and supervised the excavation of 40 test pits extending about 7.5 to 8 feet below the ground surface and drilling of 18 bore holes extending to depths of about 11.5 to 36.5 feet below the existing ground surface. Soil samples were obtained during the field operations and subsequently transported to our laboratory for further testing and observation.

Poorly consolidated, low-density fine-grained soils with some pinholes, indicative of potentially collapsible soil, was observed at many of the explorations within the upper about 2 to 6 feet. Conventional spread and/or continuous footings may be utilized to support the proposed structure, provided the recommendations in this report are followed. This report presents detailed discussions of design and construction criteria for this site.

We appreciate the opportunity to work with you at this stage of the project. CMT offers a full range of Geotechnical Engineering, Geological, Material Testing, Special Inspection services, and Phase I and II Environmental Site Assessments. With offices throughout Utah, Idaho, Arizona, Colorado and Texas, our staff is capable of efficiently serving your project needs. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at 801-590-0394.

Sincerely,
CMT Technical Services

Bryan N. Roberts, P.E.
Senior Geotechnical Engineer

LICENSED PROFESSIONAL ENGINEER
276476
BRYAN N. ROBERTS
6/30/2022
STATE OF UTAH

Reviewed by:

Andrew M. Harris, P.E.
Geotechnical Division Manager

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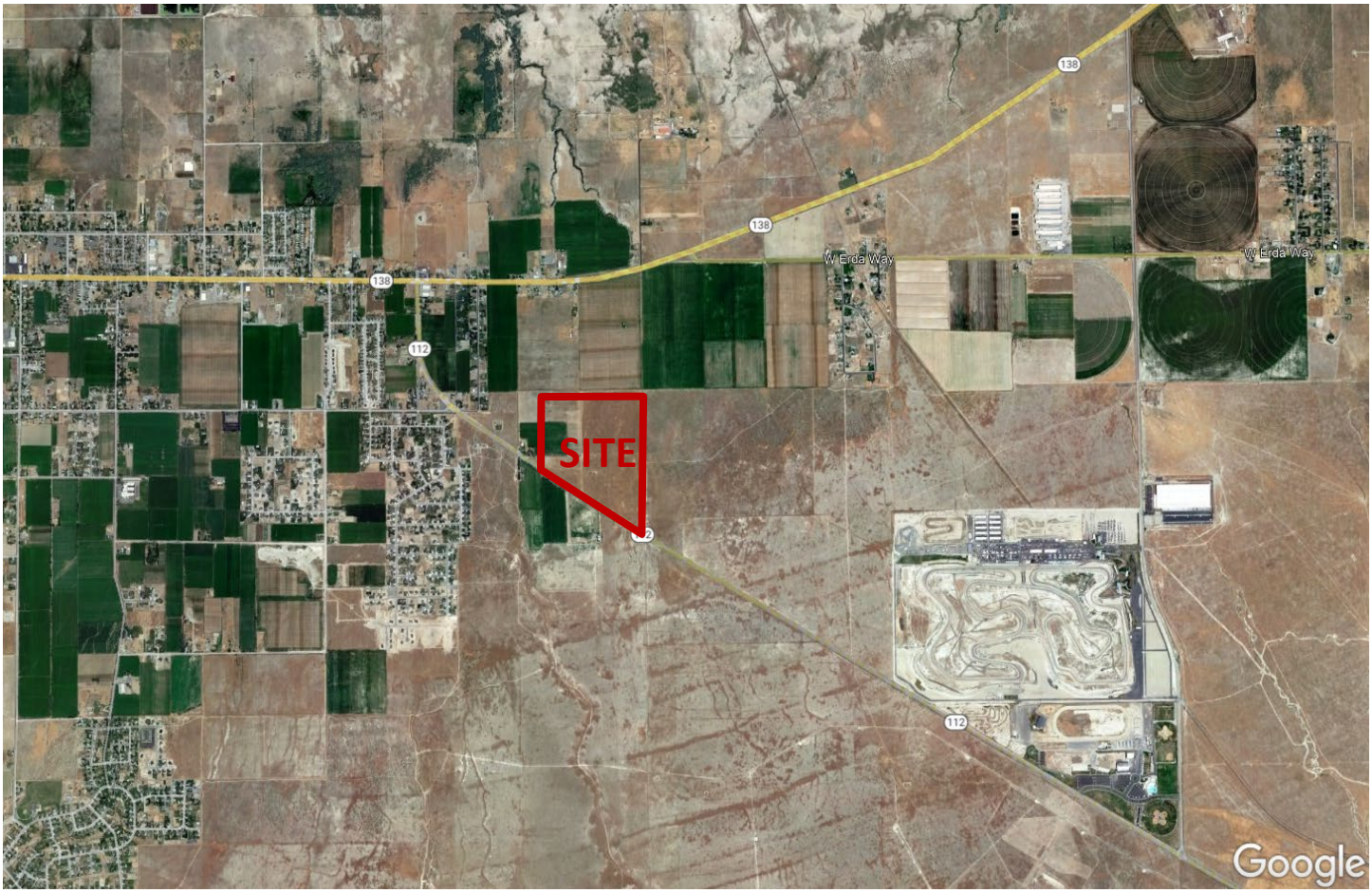
1.0 INTRODUCTION

1.1 General

CMT Technical Services (CMT) was retained to conduct a geotechnical subsurface study for the roughly 120-acre, proposed mixed-use single-family, townhome, apartment, and commercial development. The site is situated on the north side of State Road 112 in Grantsville, Utah, as shown in the **Vicinity Map** below.



VICINITY MAP

1.2 Objectives, Scope and Authorization

The objectives and scope of our study were planned in discussions among Ms. Lisa Albers of Meritage Homes (Client) and Mr. Andrew Harris and Ms. Lindsey Bradshaw of CMT. In general, the objectives of this study were to define and evaluate the subsurface soil and groundwater conditions at the site, and provide appropriate foundation, earthwork, pavement and seismic recommendations to be utilized in the design and construction of the proposed development.

In accomplishing these objectives, our scope of work included performing field exploration, which consisted of the excavating/logging/sampling of 40 test pits, the drilling/logging/sampling of 18 bore holes, performing laboratory testing on representative samples of the subsurface soils collected in the test pits, and conducting an office program, which consisted of correlating available data, performing engineering analyses, and preparing this summary report. This scope of work was authorized by returning a signed copy of our proposal dated March 21, 2022.

1.3 Description of Proposed Construction

We understand that a mixed-use single-family, townhome, apartment, and commercial development is planned for the approximately 119.7-acre site. The structures will likely be 1 to 4 levels above grade, constructed using steel post/beam, reinforced masonry, and/or conventional wood framed construction, founded on spread footings, with slab on grade floors established at or near existing site grades. Sublevels/basements may also be incorporated.

Maximum continuous wall and column loads are anticipated to be 1 to 7 kips per lineal foot and 25 to 200 kips, respectively. Pavements are the site will likely include asphalt paved public roadways and light-duty parking areas.

Site development will require some earthwork in the form of minor cutting and filling. A site grading plan was not available at the time of this report, but we project that maximum cuts and fills may be on the order of 1 to 3 feet. If deeper cuts or fills are planned, CMT should be notified to provide additional recommendations, if needed.

1.4 Executive Summary

The results of our study show that the proposed structures may be supported upon conventional spread and continuous wall foundations placed on suitable, non-collapsible natural soils or structural fill extending to suitable, stable, non-collapsible natural soils utilizing a net bearing pressure of 2,000 pounds per square foot. In order to control settlement, more heavily loaded foundations must be supported over some minimal thickness of select granular structural replacement fill as discussed in Section 7.0 Foundation Recommendations.

The most significant geotechnical aspects regarding site development include the following:

1. At about half or more of the exploration locations, the surface clay soils were poorly consolidated, had low to very low density, and exhibited a slight to moderate pinhole structure with little to no bedding, all of which characteristics are indicative of potentially collapsible soils when wetted under loading. The thickness of this poor soil state generally extended about 2 to 4 feet below the ground surface and occasionally as deep as 5 to 6 feet below the ground surface at the test locations. These soils are unsuitable for foundation construction. The depth and lateral extent of the unsuitable soils must be anticipated to vary across the site property.

2. Natural soils consisted primarily of fined-grained clay soils which were presently overall, low in moisture content and which are inherently more difficult to properly moisture condition and rework structurally.
3. Groundwater was not encountered within the depth penetrated, about 36.5 feet at the time of the field work and is not anticipated to affect planned construction. encountered at relatively shallow depths of 3 to 4.5 feet, which will likely affect excavations and construction.

Potentially collapsible soil must be removed down to and exposing suitable natural soils below new structures and all gravity fed utilities.

Potentially collapsible soils may remain below new pavement areas provided the upper 18 inches are moisture conditioned and recompacted to the requirement outlined in section **6.4 Fill Placement and Compaction** of this report and subsequent overlying site grading fills are less than 3 feet thick.

CMT must assess that topsoil, undocumented fills, debris, disturbed or unsuitable soils have been removed, potentially collapsible soils have been removed or properly prepared as discussed herein and that suitable soils have been encountered prior to placing site grading fills, footings, slabs, and pavements.

In the following sections, detailed discussions pertaining to the site are provided, including subsurface descriptions, geologic/seismic setting, earthwork, foundations, lateral resistance, lateral pressure, floor slabs, and pavements.

2.0 FIELD EXPLORATION

2.1 General

In order to define and evaluate the subsurface soil and groundwater conditions, 40 test pits were excavated with a mini excavator at the site to depths of approximately 7.5 to 8.0 feet below the existing ground surface and 18 bore hole was drilled at the site to a depth of approximately 11.5 to 36.5 feet below the existing ground surface. Locations of the test pits and bore holes are shown on ***Figure 1, Site Plan***, included in the Appendix. The field exploration was performed under the supervision of an experienced member of our geotechnical staff.

Representative soil samples were collected by obtaining disturbed “grab” samples and cuttings relatively undisturbed block samples from within each test pit. The samples were placed in sealed plastic bags and containers prior to transport to laboratories.

Samples of the subsurface soils encountered in the bore holes were collected at varying depths through the hollow stem drill augers. Relatively undisturbed samples of the subsurface soils were obtained by driving a split-spoon sampler with 2.5-inch outside diameter rings/liners into the undisturbed soils below the drill augers. Disturbed samples were collected utilizing a standard split spoon sampler. This standard split spoon sampler was driven 18 inches into the soils below the drill augers using a 140-pound hammer free-falling a distance of 30 inches. The number of hammer blows needed for each 6-inch interval was recorded. The sum

of the hammer blows for the final 12 inches of penetration is known as a standard penetration test and this 'blow count' was recorded on the bore hole logs. The blow count provides a reasonable approximation of the relative density of granular soils, but only a limited indication of the relative consistency of fine-grained soils because the consistency of these soils is significantly influenced by the moisture content.

The subsurface soils encountered in the test pits and bore holes were classified in the field based upon visual and textural examination, logged and described in general accordance with ASTM1 D-2488. These field classifications were supplemented by subsequent examination and testing of select samples in our laboratory. Graphical representations of the subsurface conditions encountered are presented on each individual ***Test Pit Log and Bore Hole Log, Figures 2 through 59***, included in the Appendix. A ***Key to Symbols*** defining the terms and symbols used on the logs, is provided as ***Figure 60*** in the Appendix.

Upon completion of logging and sampling, the test pits were backfilled with the excavated soils. When backfilling, minimal to no effort was made to compact the backfill and no compaction testing was performed. Thus, the test pit backfill is considered undocumented/non-engineered fill and settlement of the backfill in the test pits over time should be anticipated. The bore holes were backfilled with auger cuttings.

3.0 LABORATORY TESTING

3.1 General

Selected samples of the subsurface soils were subjected to various laboratory tests to assess pertinent engineering properties, as follows:

1. Moisture Content, ASTM D-2216, Percent moisture representative of field conditions
2. Dry Density, ASTM D-2937, Dry unit weight representing field conditions
3. Atterberg Limits, ASTM D-4318, Plasticity and workability
4. Gradation Analysis, ASTM D-1140/C-117, Grain Size Analysis
5. One Dimension Consolidation, ASTM D-2435, Consolidation properties
6. Modified Proctor Density, ASTM D1557, Laboratory compaction characteristics of soil
7. California Bearing Ratio (CBR), AASHTO T 193

3.2 Laboratory Testing Summary

Laboratory test results are presented on the bore hole and test pit logs (**Figures 2 through 59**) and in the following Lab Summary Table:

LAB SUMMARY TABLES

Test No.	Depth (feet)	Soil Class	Sample Type	Moisture Content (%)	Dry Denstiy (pcf)	Gradation			Atterberg Limits		
						Grav	Sand	Fines	LL	PL	PI
TP-1	2.5	CL	Bag	11.9				99	41	20	21
	5	CL	Bag	14				99	45	18	27
TP-6	5	CL	Block	16.8	97			99	47	17	30
TP-7	2.5	CL	Bag	11.3				95	36	20	16
TP-9	5	CL	Bag	18.8				98	46	18	28
TP-10	2.5	CL	Bag	12.9				91	35	20	15
TP-12	6	CL	Bag	18.7	98						
TP-13	5	CL	Bag	10.8	88				39	19	20
TP-14	5	CL	Bag	9.6	101						
TP-16	1.5	CL	Bag	9.5	62			99	46	29	17
TP-17	2.5	CL	Block	15.4	50						
TP-18	2.5	CL	Bag	11.1				98			
	6	CL	Bag	10.6					37	21	16
TP-19	2.5	CL	Bag	13.1	74			94			
TP-20	0-1	CL	BULK	5.6				98			
TP-21	6	CL	Bag	10.7					38	21	17
TP-22	2.5	CL	Bag	13.3	64						
TP-24	2.5	CL	Bag	13.8				99	39	21	18
TP-26	6	CL	Bag	11.4					40	19	21
TP-27	4	CL	Bag	8.7	92						
	6.5	CL	Bag	12.4	99						
TP-28	2.5	CL	Bag	11.5				99	40	22	18
	5	CL	Bag	8.5					34	19	15
TP-29	3.5	CL	Bag	9.7	92						
TP-31	6	CL	Block	7.2	86						
TP-32	2.5	CL	Bag	12.5				87			
	6	CL	Bag	8.5	88						
TP-34	2.5	CL	Bag	15	58			96			
	4	CL	Bag	9.6	97						
TP-36	6	CL	Bag	11.5	96						
TP-37	1	CL	BULK	8.6				95			
	5	CL	Bag	7.5	78			99	41	26	15
TP-40	2.5	CL	Bag	10.6				96	38	21	17

Test No.	Depth (feet)	Soil Class	Sample Type	Moisture Content (%)	Dry Denstiy (pcf)	Gradation			Atterberg Limits		
						Grav	Sand	Fines	LL	PL	PI
B-1	5	CL	Rings	24.6	92			98			
	15	CL	Rings	22.5	96				31	19	12
	25	GP-GM	SPT	2.4		45	42	13			
B-2	2.5	CL	SPT	10.7				100	38	22	16
	7.5	CL	Rings	10.5	99						
B-3	2.5	CL	SPT	9.6				99			
B-4	5	CL	Rings	20.2	88				39	17	22
B-5	2.5	CL	Rings	11.7	83						
	7.5	CL	SPT	16.3				100	43	17	26
	15	ML-SM	SPT	9.8				57			
B-6	2.5	CL	Rings	10.9				98	38	18	20
	7.5	CL	Rings	24.9	89						
B-9	2.5	CL	Rings	9.7	85			99			
	10	CL	Rings	19.6	105				42	15	27
B-10	2.5	CL	Rings	16.7	111				36	18	18
	7.5	CL	SPT	30.7				100			
	10	CL	Rings	37.3	80						
B-11	2.5	ML	Rings	3.6				62			NP
	10	SM-ML	SPT	3.5				41			
B-12	2.5	CL	Rings	12.2	92			99			
B-13	7.5	CL	SPT	22.7				100			
	15	SM	SPT	3.7		20	45	35			
B-14	2.5	CL	Rings	11.3	66			97			
B-16	2.5	CL	Rings	10.2	90			99			
B-17	2.5	CL	SPT	8.7				98	32	18	14
	5	CL	SPT	12.6				99			
B-18	2.5	CL	SPT	9.5				87			
	7.5	CL	Rings	19.8				100	47	18	29

3.4 One-Dimensional Consolidation Tests

As discussed previously, the upper 2 to 6 feet of fine-grained soils at many of the test locations exhibit low density, poor consolidation, and some pinhole type structure, which are all indicative of potentially collapsible soils. Due to difficulty in obtaining a proper undisturbed sample, where this upper poor soil would quickly crumble with minor disturbance, collapse testing was not conducive for all samples. However, it is our opinion and experience that when wetted under increased loading conditions these soils, in their current state, are likely to exhibit a collapse potential.

A consolidation test was performed on each of 7 representative sample of the fine-grained soils encountered within the upper about 2 to 8 feet which did not exhibit the poor soil state conditions described above for potentially collapsible soils. Based upon data obtained from the consolidation tests, these fine-grained soils

tested exhibited moderate pre-consolidation, low to moderate strength, and moderate to moderately high compressibility characteristics. Detailed results of the tests are maintained within our files and can be transmitted to you, upon your request.

3.5 Soil Compaction Test (Modified Proctor)

A bulk sample of the near surface fine silty clay soils encountered within test pits TP-20 and TP-37 were taken and a compaction test and subsequent California Bearing Ratio (CBR) test was performed on each bulk, sample. The compaction tests were completed in accordance with the (ASTM D 1557) specifications.

Location	Sample Depth (feet)	Unified Soil Classification	Optimum Moisture Content (percent)	Maximum Dry Density (pcf)
TP-20	About 1 foot	CL	18.2	108.9
TP-37	About 1 foot	CL	17.8	107.4

3.6 California Bearing Ratio (CBR) Test

To determine subgrade characteristics of the sandy CLAY soil, a California Bearing Ratio (CBR) test was performed on the above referenced bulk soil sample. The results of the CBR test are presented in the following table:

Location	Moisture Content at Compaction (%)	Compacted Dry Density (PCF)	Percent Compaction	Percent Swell	Measured CBR
TP-20	18.3	103.8	95.3	2.25	3
TP-37	17.7	100.1	93.2	2.36	3

4.0 GEOLOGIC & SEISMIC CONDITIONS

4.1 Geologic Setting

The subject site is located in the northwest portion of the Tooele Valley in north-central Utah. The site ranges in elevation between approximately 4,310 and 4,360 feet above sea level, with lower elevation towards the northwest and higher elevation towards the southeast. The Tooele Valley is a deep, sediment-filled basin that is part of the Basin and Range Physiographic Province. The valley was formed by extensional tectonic

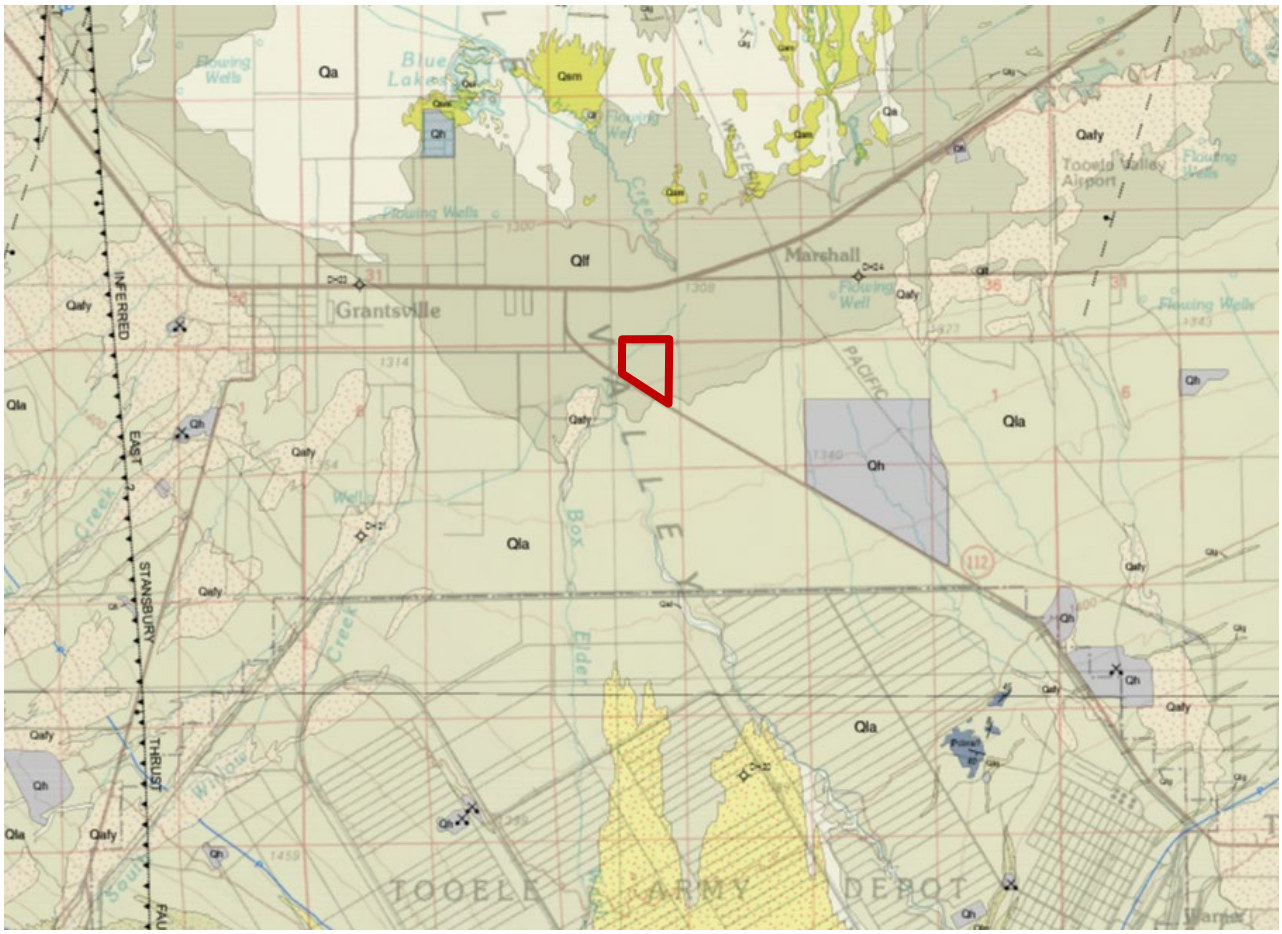
processes during the Tertiary and Quaternary geologic time periods. The valley is bordered by the Oquirrh Mountain Range on the east and the northern Stansbury Range on the west.

Much of northwestern Utah, including the Tooele Valley, was previously covered by the Pleistocene age Lake Bonneville. The Great Salt Lake located at the northern end of the valley is a remnant of this ancient fresh water lake. Lake Bonneville reached a high-stand elevation of between approximately 5,160 and 5,200 feet above sea level at between 18,500 and 17,400 years ago. Approximately 17,400 years ago, the lake breached its basin in southeastern Idaho and dropped relatively fast, by almost 300 feet, as water drained into the Snake River. Following this catastrophic release, the lake level continued to drop slowly over time, primarily driven by drier climatic conditions, until reaching the current level of the Great Salt Lake. Shoreline terraces formed at the high-stand elevation of the lake and several subsequent lower lake levels are visible in places on the mountain slopes surrounding the valley. Much of the sediment within the Tooele Valley was deposited as lacustrine sediments during both the transgressive (rise) and regressive (fall) phases of Lake Bonneville and in older pre-Bonneville lakes that previously occupied the basin.

The geology of UGS Tooele 30 x 60 minute quadrangle, which includes the location of the subject site, has been mapped by Clark and Others[1]. The surficial geology over most of the subject site and adjacent properties is mapped as "Lacustrine fine-grained deposits" (map unit Qlf) dated to be Holocene to upper Pleistocene. Unit Qlf is described in the referenced map as "Sand, silt, marl, and calcareous clay of Great Salt Lake and Lake Bonneville; thin to very thick bedded; may include ostracode- and gastropodrich layers; locally includes the white marl of Gilbert (1890); locally may include small areas of sand and gravel; can include thin eolian sand deposits at surface… thickness 10 to 100 feet (3–30 m) or more."

The surficial geology on the southeast portion of the site is mapped as "Quaternary lacustrine and alluvial deposits, undivided" (map unit Qla) dated to be Holocene to upper Pleistocene. Unit Qla is described in the referenced map as "Sand, gravel, silt, and clay; consists of alluvial deposits reworked by lakes, lacustrine deposits reworked by streams and slope wash, and alluvial and lacustrine deposits that cannot be readily differentiated at map scale; grades into other lacustrine and alluvial deposits… thickness locally exceeds 30 feet (10 m). Refer to the **Geologic Map**., shown below.

[1] Clark, D. L., Oviatt, C. G., and Dinter, D. A., 2020, Geologic map of the Tooele 30' x 60' Quadrangle, Tooele, Salt Lake, and Davis Counties, Utah. Utah Geologic Survey Map 284DM. UGS. Map scale: 1:62,500.



GEOLOGIC MAP

4.2 Faulting

No surface fault traces are shown on the referenced geologic map crossing, adjacent to, or projecting toward the subject site. The nearest mapped active fault to the site is the Qquirrh Fault Zone approximately 8 miles to the east[2]. **Seismic design issues are addressed in Section 4.3 below.**

4.3 Seismicity

4.3.1 Site Class

Utah has adopted the International Building Code (IBC) 2018, which determines the seismic hazard for a site based upon 2014 mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available based on latitude and longitude coordinates (grid points). For site class definitions, IBC 2018 Section

[2]Utah Quaternary Fault and Fold Map, UGS: https://geology.utah.gov/apps/qfaults/

1613.2.2 refers to Chapter 20, Site Classification Procedure for Seismic Design, of ASCE[3] 7-16, which stipulates that the average values of shear wave velocity, blow count and/or shear strength within the upper 100 feet (30 meters) be utilized to determine seismic site class.

Based on the blow counts obtained in bore hole B-1 which extended to the maximum depth explored of 36.5 feet, and considering that similar soils are anticipated to a depth of 100 feet, it is our opinion the site best fits Site Class D – Stiff Soil Profile (with data), which we recommend for seismic structural design.

4.3.2 Ground Motions

The 2014 USGS mapping utilized by the IBC provides values of peak ground, short period and long period spectral accelerations for the Site Class B/C boundary and the Risk-Targeted Maximum Considered Earthquake (MCE_R). This Site Class B/C boundary represents average bedrock values for the Western United States and must be corrected for local soil conditions at site grid coordinates of 40.58982 degrees north latitude and -112.412863 degrees west longitude. The following table and response spectra summarizes the peak ground, short period and long period accelerations for the MCE_R event, and incorporates appropriate soil correction factors for a Site Class D (with data) soil profile:

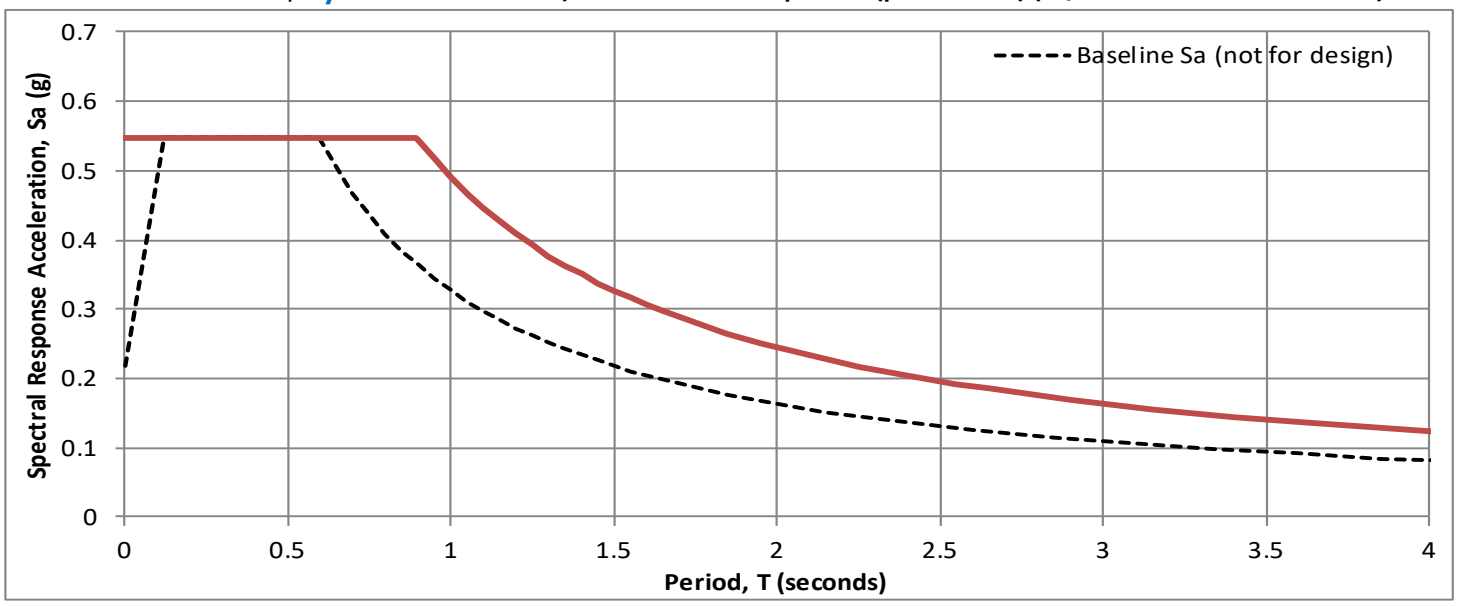
[3]American Society of Civil Engineers

SPECTRAL ACCELERATION PERIOD, T	SITE CLASS B/C BOUNDARY [mapped values] (g)	SITE COEFFICIENT	SITE CLASS D* [adjusted for site class effects] (g)	MULTI-PLIER	DESIGN VALUES (g)
Peak Ground Acceleration	PGA = **0.273**	F_{pga} = 1.327	PGA_M = 0.362	1.000	PGA_M = 0.362
0.2 Seconds (Long Period Acceleration)	S_S = **0.636**	F_a = 1.291	S_{MS} = 0.821	0.667	S_{DS} = 0.547
	(no exceptions needed)	F_a = (N/A)	S_{MS} = (N/A)	0.667	S_{DS} = (N/A)
1.0 Second (Long Period Acceleration)	S_1 = **0.229**	F_v = N/A	S_{M1} = N/A	0.667	S_{D1} = N/A
	(Exception 2:)	F_v = (2.142)	S_{M1} = (0.491)	0.667	S_{D1} = (0.327)

NOTES: 1. TL (seconds): **8** *** Site Class D With Data**

2. Site Class: **D** **4. ASCE 7-16 Requires Site-Specific Ground Motion Hazard Analysis (Since S1≥0.2 sec) - OR Can Use Exception 2 (per §11.4.8) (Sa/Cs Plot Assumes R=Ie=1.0)**

3. Have data to verify? **yes**



As indicated in the above table, S_1 is greater than 0.2 seconds and a site-specific ground motion hazard analysis (GMHA) is required for the site, unless the Exception 2 values shown are used for seismic design. If a site-specific GMHA is desired instead of using the higher exception values for design, please contact CMT for a proposal to perform the GMHA.

4.3.3 Liquefaction

The site is located within an area designated by the Utah Geologic Survey (Tooele Valley) [4] as having "Low" liquefaction potential. Liquefaction is defined as the condition when saturated, loose, sandy soils lose their support capabilities because of excessive pore water pressure which develops during a seismic event. Clayey soils, even if saturated, will generally not liquefy during a major seismic event.

[4] Utah Geological Survey, "Liquefaction Susceptibility Map for Tooele Valley, Tooele County, Utah," Utah Geological Survey Public Information Series 80, August 2003. https://ugspub.nr.utah.gov/publications/public_information/pi-80.pdf

Subsurface soils encountered consisted of clay with plasticity indices greater than 7 percent underlain by unsaturated, relatively dense granular soils extending to the full depth penetrate, about 36.5 feet. Therefore, in our opinion, the soils we encountered support the mapped low liquefaction potential designation.

4.4 Other Geologic Hazards

The site is not located within a known or mapped debris flow, stream flooding, or rock fall hazard area. No landslide deposits or features, including lateral spread deposits, are mapped on or adjacent to the site. The site falls within FEMA[5] Zone D, which is defined as "areas with a potentially moderate to high risk of flooding, but the probability has not yet been determined...Zone D [is used] when analyzing areas landward of levee systems that do not meet FEMA's accreditation standards."

5.0 SITE CONDITIONS

5.1 Surface Conditions

The site is trapezoidal in shape, made up of several parcels and comprised of relatively flat grazing and farm land (see photo 1 below). Based upon aerial photos dating back to 1993 that are readily available on the internet, the site and use does not appear to have changed. The site is bordered on the north by similar vacant property, the east by a dirt road followed by similar property, the south by State Road 112, and the west by similar open fields and a handful of farm buildings (see **Vicinity Map** in **Section 1.1** above).

[5]Federal Emergency Management Agency: https://msc.fema.gov/portal/search?AddressQuery=4900%20South%205900%20West%2C%20Hooper%2C%20UT%20#searchresultsanchor

Photo 1. Looking across the site property currently utilized for grazing.

5.2 Subsurface Soils

Subsurface soil conditions encountered across the site were similar and consisted of a surface topsoil layer ranging from 1 to 10 inches thick underlain by predominately silty CLAY soil with minor silt and fine sand layers extending to depths of about 10 to 19 feet. Below the upper clay soil sequence, we encountered, SANDS and GRAVELS with varying silt and occasional CLAY layers up to 2 feet thick extending to the full depth penetrated, about 36.5 feet.

At about half or more of the exploration locations the surface clay soils were poorly consolidated, had low to very low density, and exhibited a slight to moderate pinhole structure with little to no bedding, all of which characteristics are indicative of potentially collapsible soils when wetted under loading. The thickness of this poor soil state generally extended about 2 to 4 feet below the ground surface and occasionally as deep as 5 to 6 feet below the ground surface at the test locations. The depth and lateral extent of these unsuitable soils must be anticipated to vary across the site property. Quantifying the amount collapse potential through sample testing was very difficult due to very stiff, dry in-situ soil conditions that when attempting to obtain suitable undisturbed samples for testing the soil would readily crumble and/or turn to a powder consistency.

Below this surficial, potentially collapsible soil, the natural clays began to indicate soil bedding and or have a blocky structure with laboratory tests indicating moderate pre-consolidation, moderate strength, and moderate to moderately high compressibility characteristics.

The natural sand and gravel soils encountered were medium dense to dense, dry to slightly moist, and are anticipated to exhibit moderately high strength and low compressibility characteristics.

For a more descriptive interpretation of subsurface conditions, please refer to the test pit logs and bore hole logs, ***Figures 2 through 59***, which graphically represent the subsurface conditions encountered. The lines designating the interface between soil types on the logs generally represent approximate boundaries; in situ, the transition between soil types may be gradual.

5.3 Groundwater

Groundwater was not encountered at the time of our field explorations to the maximum depth explored of about 36.5 feet below the existing ground surface and is not anticipated to affect proposed construction.

Groundwater levels can fluctuate seasonally and more particularly perched water conditions. Numerous other factors such as heavy precipitation, irrigation of neighboring land, and other unforeseen factors, may also influence ground water elevations at the site. The detailed evaluation of these and other factors, which may be responsible for ground water fluctuations, is beyond the scope of this study.

5.4 Site Subsurface Variations

Based on the results of the subsurface explorations and our experience, variations in the continuity and nature of subsurface conditions should be anticipated. Due to the heterogeneous characteristics of natural soils, care should be taken in interpolating or extrapolating subsurface conditions between or beyond the exploratory locations.

Also, after completing the logging and sampling, the test pits were backfilled with the excavated soils but minimal to no effort was made to compact these soils. Thus, the test pit backfill is considered undocumented/non-engineered fill and settlement of the backfill in the test pits over time should be anticipated. Therefore, adequate care must be taken when constructing over these locations.

6.0 SITE PREPARATION AND GRADING

6.1 General

Initial site preparation shall consist of the removal of all vegetation, topsoil, deleterious materials, and non-engineered fills, if/where encountered, extending out 4 feet from the building edge and 2 feet beyond pavements.

Further, potentially collapsible soil must be removed down to and exposing suitable natural soils below new structures and all gravity fed utilities. Potentially collapsible soils may remain below new pavement areas provided the upper 18 inches are moisture conditioned and recompacted to the requirement outlined in section **6.4 Fill Placement and Compaction** of this report and subsequent overlying site grading fills are less than 3 feet thick. Where site grading fills may be greater than 3 feet, CMT shall be notified to provide additional recommendations in relation to potentially collapsible soils.

Where potentially collapsible soils are present across much of the site surface, we recommend the 18 inches of subgrade preparation be completed below all new roadways to provide a uniform subgrade.

When stripping and grubbing, topsoil should be distinguished by the apparent organic content and not solely by color. Following stripping, the exposed subgrade must then be proofrolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If excessively soft or otherwise unsuitable soils are encountered beneath footings, they must be removed. If removal depth required is greater than 2 feet below footings, CMT must be notified to provide further recommendations. In pavement, floor slab, and outside flatwork areas, unsuitable natural soils should be removed to a maximum depth of 2 feet and replaced with compacted granular structural fill.

The site should be observed by a CMT geotechnical engineer or their representative to assess that suitable natural soils have been exposed and/or properly prepared and any deleterious materials, loose and/or disturbed soils have been removed, prior to placing site grading fills, footings, slabs, and pavements.

6.2 Temporary Excavations

Excavations deeper than about 8 feet are not anticipated at the site. Groundwater was not encountered within the depths explored, at the time of our field explorations, and thus is not anticipated to affect excavations.

The natural soils encountered at this site predominantly consisted of CLAY/SILT. In clayey (cohesive) soils, temporary construction excavations not exceeding 4 feet in depth may be constructed with near-vertical side slopes. Temporary excavations up to 8 feet deep, above or below groundwater, may be constructed with side slopes no steeper than one-half horizontal to one vertical (0.5H:1V).

For sandy/gravelly (cohesionless) soils, temporary construction excavations not exceeding 4 feet in depth should be no steeper than one-half horizontal to one vertical (0.5H:1V). For excavations up to 8 feet and above groundwater, side slopes should be no steeper than one horizontal to one vertical (1H:1V). Excavations encountering saturated cohesionless soils will be very difficult to maintain, and will require very flat side slopes and/or shoring, bracing and dewatering.

To reduce disturbance of the natural soils during excavation, we recommend that smooth edge buckets/blades be utilized.

All excavations must be inspected periodically by qualified personnel. If any signs of instability or excessive sloughing are noted, immediate remedial action must be initiated. All excavations should be made following OSHA safety guidelines.

6.3 Fill Material

Structural fill is defined as all fill which will ultimately be subjected to structural loadings, such as imposed by footings, floor slabs, pavements, etc. Structural fill will be required as backfill over foundations and utilities, as site grading fill, and as replacement fill below footings. All structural fill must be free of sod, rubbish, topsoil, frozen soil, and other deleterious materials.

Following are our recommendations for the various fill types we anticipate will be used at this site:

FILL MATERIAL TYPE	DESCRIPTION | RECOMMENDED SPECIFICATION
Select Structural Fill	Placed below structures, flatwork and pavement. Well-graded sand/gravel mixture, with maximum particle size of 4 inches, a minimum 70% passing 3/4-inch sieve, a minimum 10% passing and a maximum 30% passing the No. 200 sieve, and a maximum Plasticity Index of 10.
Site Grading Fill	Placed over larger areas to raise the site grade. Imported soil should consist of a sandy to gravelly soil, with a maximum particle size of 6 inches, a minimum 70% passing 3/4-inch sieve, a maximum 50% passing No. 200 sieve, and a maximum Plasticity Index of 15.
Non-Structural Fill	Placed below non-structural areas, such as landscaping. On-site soils or imported soils, with a maximum particle size of 8 inches, including silt/clay soils not containing excessive amounts of degradable/organic material (see discussion below).
Stabilization Fill	Placed to stabilize soft areas prior to placing structural fill and/or site grading fill. Coarse angular gravels and cobbles 1 inch to 8 inches in size. May also use 1.5- to 2.0-inch gravel placed on stabilization fabric, such as Mirafi RS280i, or equivalent (see **Section 6.6**).

On-site soils, if processed to meet the requirements stated herein, may also be used in site grading fill and non-structural fill situations. However, please note that the fine-grained soils are inherently more difficult to rework, are sensitive to changes in moisture content, and will require very close moisture control during placement and compaction. In addition, smaller lift placement and moderate to high compaction effort will be likely for fine grained soils. This will be very difficult, if not impossible, during wet and cold periods of the year.

All fill material should be approved by a CMT geotechnical engineer prior to placement.

6.4 Fill Placement and Compaction

The various types of compaction equipment available have their limitations as to the maximum lift thickness that can be compacted. For example, hand operated equipment is limited to lifts of about 4 inches and most "trench compactors" have a maximum, consistent compaction depth of about 6 inches. Large rollers, depending on soil and moisture conditions, can achieve compaction at 8 to 12 inches. The full thickness of

each lift should be compacted to at least the following percentages of the maximum dry density as determined by ASTM D-1557 (or AASHTO[6] T-180) in accordance with the following recommendations:

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Beneath an area extending at least 5 feet beyond the perimeter of structures, and below flatwork and pavement (applies to structural fill and site grading fill)	0 to 5 5 to 8	95 98
Site grading fill outside area defined above	0 to 5 5 to 8	92 95
Subgrade preparation below new pavements	18 inches	94
Utility trenches within structural areas	--	96
Roadbase and subbase	-	96
Non-structural fill	0 to 5 5 to 8	90 92

Structural fills greater than 8 feet thick are not anticipated at the site. For best compaction results, we recommend that the moisture content for structural fill/backfill be within 2% of optimum. Field density tests should be performed on each lift as necessary to verify that proper compaction is being achieved.

6.5 Utility Trenches

For the bedding zone around the utility, we recommend utilizing sand bedding fill material that meets current APWA[7] requirements.

All utility trench backfill material below structurally loaded facilities (foundations, floor slabs, flatwork, parking lots/drive areas, etc.) should be placed at the same density requirements established for structural fill in the previous section.

Above the bedding zone, we recommend that utility trench backfill have a minimum 15% fines, to reduce permeability (refer to **Section 6.3** above). In addition, utilities, more particularly gravity fed utilizes should be installed at the bottom of the potentially collapsible soils or on structural fill extending to non-collapsible soil.

Most utility companies and local governments are requiring Type A-1a or A-1b (AASHTO Designation) soils (sand/gravel soils with limited fines) be used as backfill over utilities within public rights of way, and the backfill be compacted over the full depth above the bedding zone to at least 96% of the maximum dry density as determined by AASHTO T-180 (ASTM D-1557).

[6] American Association of State Highway and Transportation Officials
[7] American Public Works Association

Where the utility does not underlie structurally loaded facilities and public rights of way, on-site fill and natural soils may be utilized as trench backfill above the bedding layer, provided they are properly moisture conditioned and compacted to the minimum requirements stated above in **Section 6.4**.

6.6 Stabilization

The natural fine-grained soils at this site will likely be susceptible to rutting and pumping. The likelihood of disturbance or rutting and/or pumping of the existing natural soils is a function of the soil moisture content, the load applied to the surface, as well as the frequency of the load. Consequently, rutting and pumping can be minimized by avoiding concentrated traffic, minimizing the load applied to the surface by using lighter equipment and/or partial loads, by working in drier times of the year, or by providing a working surface for the equipment. Rubber-tired equipment particularly, because of high pressures, promotes instability in moist/wet, soft soils.

If rutting or pumping occurs, traffic should be stopped and the disturbed soils should be removed and replaced with stabilization material. Typically, a minimum of 18 inches of the disturbed soils must be removed to be effective. However, deeper removal is sometimes required.

To stabilize soft subgrade conditions (if encountered), a mixture of coarse, clean, angular gravels and cobbles and/or 1.5- to 2.0-inch clean gravel should be utilized, as indicated above in **Section 6.3**. This coarse material may be placed and worked into the soft soils until firm or the soft soils removed an additional, minimum of 18 inches, and backfilled with the clean stabilizing fill. A test area may be implemented to achieve a proper stabilization strategy. Often the amount of gravelly material can be reduced with the use of a geotextile fabric such as Mirafi RS280i or equivalent. Its use will also help avoid mixing of the subgrade soils with the gravelly material. After excavating the soft/disturbed soils, the fabric should be spread across the bottom of the excavation and up the sides a minimum of 18 inches. Otherwise, it should be placed in accordance with the manufacturer's recommendation, including proper overlaps. The gravel material can then be placed over the fabric in compacted lifts as described above.

7.0 FOUNDATION RECOMMENDATIONS

The following recommendations have been developed on the basis of the previously described project characteristics, including the maximum loads discussed in **Section 1.3**, the subsurface conditions observed in the field and the laboratory test data, and standard geotechnical engineering practice.

7.1 Foundation Recommendations

Based on our geotechnical engineering analyses, the proposed structure(s) may be supported upon conventional spread and continuous wall foundations placed on suitable, non-collapsible natural soils or structural fill extending to suitable natural soils utilizing a net bearing pressure of 2,000 pounds. In order to control total and differential settlements, more heavily loaded footings must be underlain by some minimal thickness of structural fill, as outlined below in **Section 7.3**.

The term "net bearing pressure" refers to the pressure imposed by the portion of the structure located above lowest adjacent final grade, thus the weight of the footing and backfill to lowest adjacent final grade need not be considered. The allowable bearing pressure may be increased by 1/2 for temporary loads such as wind and seismic forces.

We also recommend the following:

1. Exterior footings subject to frost should be placed at least 30 inches below final grade.
2. Interior footings not subject to frost should be placed at least 16 inches below grade.
3. Continuous footing widths should be maintained at a minimum of 18 inches.
4. Spot footings should be a minimum of 24 inches wide.

7.2 Installation

Under no circumstances shall foundations be placed directly on potentially collapsible soils, on undocumented fill, topsoil with organics, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water.

Excavation bottoms should be examined by a CMT geotechnical engineer to confirm that suitable bearing soils have been exposed prior to structural fill placement and foundation construction.

All structural fill should meet the requirements for such, and should be placed and compacted in accordance with **Section 6** above. The width of structural replacement fill below footings should be equal to the width of the footing plus 1 foot for each foot of fill thickness. For instance, if the footing width is 2 feet and the structural fill depth beneath the footing is 2 feet, the fill replacement width should be 4 feet, centered beneath the footing.

The minimum thickness of structural fill below footings should be equivalent to one-third the thickness of structural fill below any other portion of the foundations where fills are 3 feet thick or more.

7.3 Estimated Settlement

Settlements of foundations designed and installed in accordance with the above criteria and recommendations, supporting the loads discussed in Section 3, Description of Proposed Construction, can be controlled to within about 1 inch or less if heavily loaded footings are underlain by some thickness of granular structural fill per the table below.

Approximately 40 percent of the quoted settlement should occur during construction.

FOUNDATION TYPE	BEARING PRESSURE (psf)	LOADING (pounds)	MINIMUM THICKNESS OF SELECT REPLACEMENT STRUCTURAL FILL (feet)
Spread	2,000	Up to 90,000	0.0
Spread	2,000	90,000+ to 140,000	1.0
Spread	2,000	140,000+ to 200,000	1.5
Wall	2,000	Up to 7,000 pounds per lineal foot	0.0

7.4 Lateral Resistance

Lateral loads imposed upon foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footings and the supporting soils. In determining frictional resistance, a coefficient of 0.30 for natural silt/clay soils or 0.40 for select structural fill, may be utilized for design. Passive resistance provided by properly placed and compacted structural fill above the water table may be considered equivalent to a fluid with a density of 250 pcf. A combination of passive earth resistance and friction may be utilized if the passive component of the total is divided by 1.5.

8.0 LATERAL EARTH PRESSURES

The lateral earth pressure values given below are for a backfill material that will consist of drained soils placed and compacted in accordance with the recommendations presented herein.

The lateral pressures imposed upon subgrade facilities will depend upon the relative rigidity and movement of the backfilled structure. Following are the recommended lateral pressure values, which also assume that the soil surface behind the wall is horizontal and that the backfill within 3 feet of the wall will be compacted with hand-operated compacting equipment.

CONDITION	STATIC (psf/ft)*	SEISMIC (psf)*
Active Pressure (wall is allowed to yield, i.e. move away from the soil, with a minimum 0.001H movement/rotation at the top of the wall, where "H" is the total height of the wall)	42	16
At-Rest Pressure (wall is not allowed to yield)	62	N/A
Passive Pressure (wall moves into the soil)	325	85

*Equivalent Fluid Pressure (applied at 1/3 Height of Wall)

*Equivalent Fluid Pressure (added to static and applied at 1/3 Height of Wall)

9.0 FLOOR SLABS

Floor slabs may be established upon suitable, undisturbed, natural soils and/or on structural fill extending to suitable natural soils (same as for foundations). Under no circumstances shall floor slabs be established directly on any topsoil, undocumented fills, loose or disturbed soils, potentially collapsible soil, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water.

In order to facilitate curing of the concrete, we recommend that floor slabs be directly underlain by at least 4 inches of "free-draining" fill, such as "pea" gravel or 3/4-inch quarters to 1-inch minus, clean, gap-graded gravel. To help control normal shrinkage and stress cracking, the floor slabs may include the following features:

1. Adequate reinforcement for the anticipated floor loads with the reinforcement continuous through interior floor joints;
2. Frequent crack control joints; and
3. Non-rigid attachment of the slabs to foundation walls and bearing slabs.

10.0 DRAINAGE RECOMMENDATIONS

Some of the on-site near-surface clayey soils are potentially collapsible when subjected to water, thus it is very important to the long-term performance of foundations and floor slabs that water not be allowed to collect near the foundation walls and infiltrate into the underlying soils. We recommend the following:

1. All areas around the structure should be sloped to provide drainage away from the foundations. We recommend a minimum slope of 6 inches in the first 10 feet away from the structure. This slope should be maintained throughout the lifetime of the structure.

2. All roof drainage should be collected in rain gutters with downspouts designed to discharge at least 10 feet from the foundation walls or well beyond the backfill limits, whichever is greater.

3. Adequate compaction of the foundation backfill should be provided. We suggest a minimum of 90% of the maximum laboratory density as determined by ASTM D-1557. Water consolidation methods should not be used under any circumstances.

4. Landscape sprinklers should be aimed away and maintained a distance of at least 4 feet, from the foundation walls. The sprinkling systems should be designed with proper drainage and be well-maintained. Over watering should be avoided.

5. Other precautions that may become evident during construction.

11.0 PAVEMENTS

We anticipate the natural clay soils will exhibit poor pavement support characteristics when saturated or nearly saturated. Based on our laboratory testing a California Bearing Ratio (CBR) of 3 was utilized for the natural clay soils. Roadway subgrade shall be prepared as outlined in section **6.0 Site Preparation and Grading** above.

Residential streets, site parking areas, and internal drives at the site is anticipated to consist primarily of asphalt paved. The following recommended pavement sections are for projected traffic scenario loading. If the projected loading conditions are significantly different from that presented then CMT must be informed to provide further and more appropriate recommendations.

Residential Streets

We anticipate a moderate volume of light vehicles and light trucks, a light volume of medium weight trucks and potential busses, and occasional heavy weight trucks and fire trucks.

MATERIAL	PAVEMENT SECTION THICKNESS (inches) (up to 9 ESAL'S per day)*	
Asphalt	**3.5**	**3.5**
Road-Base	**13**	**6**
Subbase	**---**	**9**
Total Thickness	**16.5**	**18.5**

Internal Light-Duty Vehicle Parking and Drive Lanes

MATERIAL	PARKING/DRIVE AREAS PAVEMENT SECTION THICKNESS (inches)					
	LIGHT VEHICLE PARKING AREAS (1-2 ESAL per day)			Light Vehicle Internal Drives (UP TO 5 ESAL'S per day)		
Asphalt	**3**	**3**	**---**	**3**	**3**	**---**
Concrete	**---**	**--**	**5**	**---**	**---**	**5.5**
Road-Base	**9**	**4**	**6**	**12**	**6**	**6**
Subbase	**0**	**6**	**0**	**0**	**8**	**0**
Total Thickness	**12**	**13**	**11**	**15**	**17**	**11.5**

Untreated base course (UTBC) should conform to city specifications, or to 1-inch-minus UDOT specifications for A–1-a/NP, and have a minimum CBR value of 70%. Subbases shall consist of a low plastic, granular soil with a minimum CBR of 30 percent. Roadbase and subbase material should be compacted as recommended above in **Section 6.4** Fill Placement and Compaction of this report. Asphalt material generally should conform to APWA requirements, having a ½-inch maximum aggregate size, a 75-gyration Superpave mix containing no more than

15% of recycled asphalt (RAP) and a PG58-28 binder. The asphalt pavement should be compacted to 93% of the maximum density for the asphalt material.

For dumpster pads, we recommend a pavement section consisting of 6.5 inches of Portland cement concrete, 5.0 inches of aggregate base, over properly prepared suitable natural subgrade or site grading structural fills extending to suitable natural soils. Dumpster pads shall not be constructed overlying non-engineered fills unless heavily reinforced.

Exterior Portland cement concrete elements should be designed in accordance with the American Concrete Institute (ACI). The concrete should have a minimum 28-day unconfined compressive strength of 4,000 pounds per square inch and contain 6 percent ±1 percent air-entrainment.

12.0 QUALITY CONTROL

We recommend that CMT be retained as part of a comprehensive quality control testing and observation program. With CMT onsite we can help facilitate implementation of our recommendations and address, in a timely manner, any subsurface conditions encountered which vary from those described in this report. Without such a program CMT cannot be responsible for application of our recommendations to subsurface conditions which may vary from those described herein. This program may include, but not necessarily be limited to, the following:

12.1 Field Observations

Observations should be completed during all phases of construction such as site preparation, foundation excavation, structural fill placement and concrete placement.

12.2 Fill Compaction

Compaction testing by CMT is required for all structural supporting fill materials. Maximum Dry Density (Modified Proctor, ASTM D-1557) tests should be requested by the contractor immediately after delivery of any fill materials. The maximum density information should then be used for field density tests on each lift as necessary to ensure that the required compaction is being achieved.

12.3 Excavations

All excavation procedures and processes should be observed by a geotechnical engineer from CMT or his representative. In addition, for the recommendations in this report to be valid, all backfill and structural fill placed in trenches and all pavements should be density tested by CMT. We recommend that freshly mixed concrete be tested by CMT in accordance with ASTM designations.

13.0 LIMITATIONS

The recommendations provided herein were developed by evaluating the information obtained from the subsurface explorations and soils encountered therein. The exploration logs reflect the subsurface conditions only at the specific location at the particular time designated on the logs. Soil and ground water conditions may differ from conditions encountered at the actual exploration locations. The nature and extent of any variation in the explorations may not become evident until during the course of construction. If variations do appear, it may become necessary to re-evaluate the recommendations of this report after we have observed the variation.

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 590-0394. To schedule materials testing, please call (801) 381-5141.

APPENDIX

SUPPORTING
DOCUMENTATION

LAND USE SUMMARY

PLANNING AREA	LAND USE	ACREAGE	DWELLING UNITS	DU / AC
A	SFD - 55' x 110'	9.7	42	4.3
B	SFD - 50' x 100'	18.8	99	5.9
C	SFD - 45' x 90'	27.1	195	7.2
	SFD - SUBTOTAL	53.6	336	6.3
E	COTTAGE HOME 54' x 95'	20.4	175	8.6
D	TOWNHOME 22' x 70'	11.1	152	13.7
F	APARTMENTS	10.3*	162	15.7
G	COMMERCIAL	6.0		
	PARKS	3.4		
	OPEN SPACE	14.9		
	TOTAL	119.7	825	6.9

* AN ADDITIONAL 4.5 ACRES OF OPEN SPACE IN PLANNING AREA F

CMT TECHNICAL SERVICES

Deseret Peak Grantsville

About 4792 West Highway 112, Grantsville, Utah

TEST PIT SITE PLAN

Date:	10-Jun-2022
CMT No.:	900217

Figure: 1A

LAND USE SUMMARY

PLANNING AREA	LAND USE	ACREAGE	DWELLING UNITS	DU / AC
A	SFD - 85' x 110'	9.7	42	4.3
B	SFD - 50' x 100'	18.8	90	5.0
C	SFD - 45' x 90'	27.1	195	7.2
	SFD - SUBTOTAL	53.6	326	6.3
E	COTTAGE HOME 34' x 85'	20.4	175	8.6
D	TOWNHOME 22' x 70'	11.1	152	13.7
F	APARTMENTS	10.3*	162	15.7
G	COMMERCIAL	6.0		
	PARKS	3.4		
	OPEN SPACE	14.9		
	TOTAL	119.7	625	6.9

* ENLARGEMENT AS ACRES OF OPEN SPACE IN PLANNING AREA F

CMT TECHNICAL SERVICES	**Deseret Peak Grantsville** About 4792 West Highway 112, Grantsville, Utah	**BORINGS SITE PLAN**	Date:	10-Jun-2022	Figure: 1B
			CMT No.:	900217	

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-1

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Light Brown Sandy SILT with organics and roots Dry, Loose										
2		Light Brown, hard, calcified Silty CLAY (CL) some pinholes Dry to Slightly Moist, Very Stiff		1	12				99	41	20	21
4		grades to a grey/green color, trace pinholes										
6				2	14				99	45	18	27
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 2

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-2

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Light Brown Sandy SILT with organics and roots Dry, Loose										
2		White/Grey, hard, calcified Silty CLAY (CL) some pinholes Dry, Very Stiff		3								
4		grades to grey-green color, trace pinholes										
6				4								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 3

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-3

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Light Brown Sandy SILT with organics and roots Dry										
		White/Grey calcified Silty CLAY (CL) Dry, Stiff										
2				5								
4		grades ray/brown hard calcified silty clay with trace pinholes Dry, Very Stiff										
6				6								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Steve Laird

CMT ENGINEERING LABORATORIES

Figure: 4

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-4

Total Depth: 7.5'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil <2", Grey-Brown Clayey SAND — Dry, Loose										
		Light Brown Silty CLAY with Sand (CL) grades pinholes to ~3' — Dry, Medium Stiff										
2				7								
4												
				8								
6												
8		END AT 7.5'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 5

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-5

Total Depth: 7.5'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil ~1", Light Grey Clayey SAND										
		Light Brown layered Clayey SAND/Sandy CLAY (SC-CL)										
		grades pinholes to ~3' Dry, Loose to Medium Stiff										
2				9								
		grades grey										
4				10								
6												
8		END AT 7.5'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 6

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-6

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil ~1"										
		Light Grey-Brown Silty CLAY with layers of Clayey to Silty SAND (CL-SC) some pinholes — Dry, Medium Stiff										
2				11								
4		pinholes grades out, gray, less sand — Moist		12	17	97			99			
6												
8		END AT 8'		13								
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 7

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-7

Total Depth: 8'
Water Depth: (see Remarks)

Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil ~2"										
		Light Brown Silty CLAY (CL) with trace pinholes to 3' Dry, Medium Stiff										
2				14	11				95	36	20	16
4				15								
6				16								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 8

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-8

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Brownish Sandy SILT with organics										
		Light Brown Silty CLAY (CL) with trace pinholes Dry, Stiff										
2				17								
4		grades tan calcified silty clay with some pinholes Dry, Very Stiff										
6				18								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.591877°, -112.41443°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 9

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-9

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Brownish Sandy SILT with organics										
2		Light Brown Silty CLAY (CL) Dry, Stiff		19								
4		grades tan calcified silty clay with trace to some pinholes, trace oxidation Moist, Stiff										
6				20	19				98	46	18	28
8		END AT 8'		21								
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.591741°, -112.416077°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 10

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-10

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brownish Sandy SILT with organics										
		Light Brown Silty CLAY (CL)										
		Dry, Stiff										
2				22	13				91	35	20	15
4		grades tan calcified silty clay										
		Dry, Very Stiff										
6				23								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.591877°, -112.41443°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 11

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-11

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil ~1"										
		Light Gray-Brown Silty CLAY (CL) Dry, Medium Stiff										
2				24								
4		grades gray										
6				25								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 12

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-12

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil <1"										
		Light Gray-Brown Silty CLAY (CL) with fine sand and some pinholes										
		Dry, Loose										
2				26								
		no pinholes										
4				27								
		grades gray with less silt and sand										
6												
				28	19	98						
		Moist										
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 13

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-13

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Light Gray-Brown Silty CLAY (CL)										
		Dry, Loose										
2				29								
4		Medium Stiff										
		blocky										
6				30	11	98				39	19	20
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 14

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-14

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil ~1"										
		Light Brown-Gray Silt to Silty Clay (ML-CL) with fine sand Dry, Loose										
2				31								
4												
6				32	10	101						
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 15

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-15

Total Depth: 7.5'
Water Depth: (see Remarks)
Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil ~1"										
		Light Brown Silt or Silty Clay, blocky (ML/CL) with rootholes Dry, Loose										
2				33								
4				34								
6				35								
8		END AT 7.5'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 16

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-16

Total Depth: 8'
Water Depth: (see Remarks)

Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil <1"										
		Light Brown Silty CLAY (CL) with trace to some pinholes to 3'										
		Dry, Loose										
2				36	9	63			99	46	29	17
4				37								
		Medium Stiff										
6												
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 17

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-17

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil ~1"										
		Light Brown Silty CLAY (CL)										
		Dry, Loose										
2				38								
4				39								
6				40								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 18

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-18

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Sparse organics in Sandy SILT (T)										
		Light Brown Silty CLAY (CL) with trace pinholes										
		Dry, Stiff										
2				41								
4		grades tan calcified silty clay										
		Dry, Very Stiff										
6				42	11				98	37	21	16
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.589699°, -112.413536°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 19

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-19

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brownish Sandy SILT with organics										
		Light Brown Silty CLAY (CL) with trace to some pinholes to 3' Dry to Slightly Moist, Stiff										
2				43	13	74			94			
4		Tan calcified Silty CLAY (CL) Dry, Very Stiff										
				44								
6												
				45								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.591366°, -112.415437°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 20

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-20

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Brownish Sandy SILT with organics										
		Light Brown Sandy SILT (ML) with trace pinholes Dry, Stiff										
2				46	9		0	76	24			
4		Tan calcified Silty CLAY (CL) Dry, Very Stiff										
6				47								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.590769°, -112.41403°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 21

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-21

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brownish Sandy SILT with organics										
		Light Brown Silty CLAY (CL)										
		Dry, Stiff										
2				48								
4		grades tan calcified silty clay										
		Dry, Very Stiff										
6				49	11					38	21	17
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.591719°, -112.416137°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 22

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-22

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brownish Sandy SILT with organics										
		Light Brown Silty CLAY (CL) weathered										
		Slightly Moist to Moist, Stiff										
2				50	13	64						
4		grades tan calcified silty clay										
		Dry, Very Stiff										
6				51								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.590163°, -112.415966°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Page: 1 of 1

Figure: 23

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-23

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Brownish Sandy SILT with organics										
		Light Brown Silty CLAY (CL)										
		Slightly Moist, Stiff										
2				52								
4		grades tan calcified silty clay										
		Dry, Very Stiff		53								
6												
				54								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.590769°, -112.41403°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 24

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-24

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brownish Sandy SILT with organics										
		Light Brown Silty CLAY (CL)										
		Slightly Moist, Stiff										
2				55	14				99			
4		grades tan calcified silty clay										
		Dry, Very Stiff										
6				56	11					39	21	18
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.590163°, -112.415966°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 25

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-25

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Brownish Sandy SILT with organics										
		Light Brown Silty CLAY (CL)										
		Slightly Moist, Stiff										
2				57								
4		grades tan calcified silty clay										
		Dry, Very Stiff										
				58								
6												
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.589788°, -112.41652°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 26

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-26

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brown Sandy SILT with organics										
		Light Brown Sandy SILT (ML) Dry, Stiff										
2				59								
4		Tan calcified Silty CLAY (CL) Slightly Moist, Very Stiff										
6				60	11					40	19	21
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.589782°, -112.41457°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 27

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-27

Total Depth: 7.5'
Water Depth: (see Remarks)
Date: 5/9/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil ~2"										
		Light Brown Silty CLAY (CL) with pinholes to 4'										
		Dry, Loose		61								
2												
4				62	9	92						
		Loose to Medium Stiff										
6				63	12	99						
8		END AT 7.5'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 28

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-28

Total Depth: 7.5'
Water Depth: (see Remarks)
Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil ~2"										
		Light Brown Silty CLAY (CL) Dry to Slightly Moist, Medium Stiff										
2				64	12				99	40	22	18
4												
				65	9					34	19	15
6												
8		END AT 7.5'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 29

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-29

Total Depth: 7.5'
Water Depth: (see Remarks)

Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil <1"										
		Light Brown Silty CLAY (CL)										
		Dry, Loose										
2				66								
		blocky										
4				67	10	92						
6												
		END AT 7.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 30

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-30

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil ~1"										
		Light Gray-Brown Silty CLAY (CL) with pinholes										
		Dry, Loose										
2		grades no pinholes		68								
4		Medium Stiff										
		grades with trace pinholes		69								
6												
				70								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 31

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-31

Total Depth: 7.5'
Water Depth: (see Remarks)
Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil ~1"										
		Light Gray-Brown powdery SILT to Silty CLAY with Sand (ML/CL)										
		Dry, Loose										
2				71								
4		blocky										
6		Medium Stiff		72								
		END AT 7.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 32

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-32

Total Depth: 8'
Water Depth: (see Remarks)

Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil <1"										
		Light Brown Silty CLAY (CL) crumbly										
		Dry to Slightly Moist, Loose										
2				73	12				87			
4		grades with trace pinholes										
		Medium Stiff										
6				74	9	88						
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 33

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-33

Total Depth: 7.5'
Water Depth: (see Remarks)
Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil <2"										
		Light Brown powdery SILT to Silty CLAY with sand (ML/CL)										
		Dry, Loose										
2				75								
4		blocky										
		Medium Stiff										
6				76								
		END AT 7.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 34

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-34

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil <2"										
		Light Brown Silty CLAY (CL) with some pinholes to 4'										
		Moist, Loose										
2				77	15	58			96			
4		Slightly Moist		78								
		Medium Stiff										
6				79	10	97						
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 35

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-35

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brownish Sandy SILT with organics (T)										
		Light Brown Silty CLAY (CL)										
		Slightly Moist, Stiff										
2				80								
4		grades tan calcified silty clay										
		Slightly Moist, Very Stiff										
6				81								
				82								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.588294°, -112.411652°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 36

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-36

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brownish Sandy SILT with organics (T)										
		Light Brown Silty CLAY (CL)										
		Dry to Slightly Moist, Stiff										
2				83								
4		grades tan calcified silty clay										
		Slightly Moist, Stiff to Very Stiff										
6				84	12	96						
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.588244°, -112.41166°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Page: 1 of 1

Figure: 37

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-37

Total Depth: 7.5'
Water Depth: (see Remarks)
Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil <1"										
		Light Gray-Brown Silty CLAY (CL) with pinholes to 6'										
		Dry, Loose										
2				85	9		0	76	24			
4												
				86	8	78			98	41	26	15
6		Medium Stiff										
		END AT 7.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 38

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-38

Total Depth: 7.5'
Water Depth: (see Remarks)

Date: 5/10/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil <1"										
		Light Brown Silty CLAY (CL) with fine sand										
		Dry, Loose										
2				87								
4		grades with some pinholes to 6'		88								
		Medium Stiff										
6		blocky		89								
8		END AT 7.5'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: Olivia Roberts

CMT ENGINEERING LABORATORIES

Figure: 39

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-39

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Brownish Sandy SILT with organics (T)										
		Light Brown Sandy SILT (ML) Dry, Stiff										
2				90								
4		Tan calcified Silty CLAY with sparse oxidization (CL) Dry, Stiff										
6				91								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.588294°, -112.411652°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

Figure: 40

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Test Pit Log TP-40

Total Depth: 8'
Water Depth: (see Remarks)
Date: 5/11/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brownish Sandy SILT with organics (T)										
		Light Brown Silty CLAY (CL)										
		Dry, Stiff										
2				92	11				96	38	21	17
4		grades tan calcified silty clay										
		Dry, Very Stiff										
6				93								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: 40.588294°, -112.411652°
Surface Elev. (approx): Not Given

Equipment: Mini Excavator
Excavated By: CMT Technical Services
Logged By: William Durrant

CMT ENGINEERING LABORATORIES

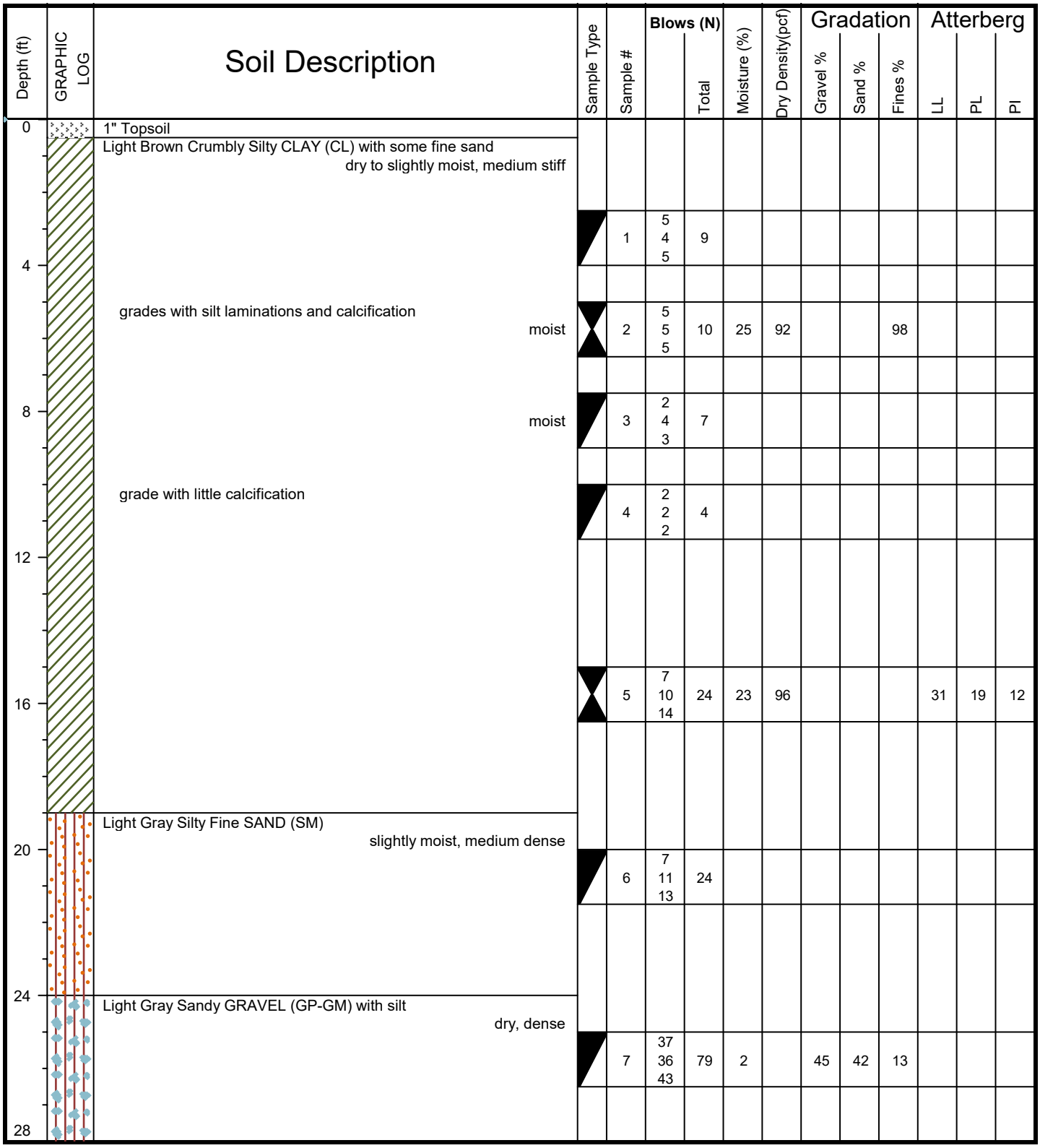
Figure: 41

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-1

Total Depth: 36.5'
Water Depth: (see Remarks)
Date: 5/31/22
Job #: 900217



Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
				Total			Gravel %	Sand %	Fines %	LL	PL	PI
0	1" Topsoil											
	Light Brown Crumbly Silty CLAY (CL) with some fine sand, dry to slightly moist, medium stiff											
			1	5 4 5 / 9								
4												
	grades with silt laminations and calcification, moist		2	5 5 5 / 10	25	92			98			
8	moist		3	2 4 3 / 7								
	grade with little calcification											
			4	2 2 2 / 4								
12												
			5	7 10 14 / 24	23	96				31	19	12
16												
	Light Gray Silty Fine SAND (SM), slightly moist, medium dense											
20			6	7 11 13 / 24								
24	Light Gray Sandy GRAVEL (GP-GM) with silt, dry, dense											
			7	37 36 43 / 79	2		45	42	13			
28												

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

CMT TECHNICAL SERVICES

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

Figure: 42

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-1

Total Depth: 36.5'
Water Depth: (see Remarks)
Date: 5/31/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
28														
				8	11 3 3	6								
32		Dark Gray Silty CLAY (CL) with some sand and occational gravel moist, medium stiff												
		Gray Clayey GRAVEL (GC) slightly moist, medium to very dense												
36				9	17 19 15	34								
		REFUSAL AT 36.5'												
40														
44														
48														
52														
56														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 42

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-2

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 5/31/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		1" Topsoil												
		Light Gray Silty CLAY (CL) dry, medium stiff												
		grades with calcification		10	4 4 4	8	11				100	38	22	16
4														
		grades light brown		11	3 3 1	4								
		slightly moist		12	4 8 8	16	11	99						
				13	1 1 1	2								
12														
		grades with sand laminations		14	2 2 6	8								
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 43

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-3

Total Depth: 11.5'
Water Depth: (see Remarks)
Date: 5/31/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Light Gray Crumbly Silty CLAY (CL) dry to slightly moist, stiff												
			15	4 6 8	14	10				99			
4													
	grades light brown with some calcification slightly moist		16	7 5 5	10								
8	Light Brown Silty CLAY (CL) with laminations		17	3 3 4	7								
	moist												
			18	2 2 2	4								
12	END AT 11.5'												
16													
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 44

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-4

Total Depth: 11.5'
Water Depth: (see Remarks)
Date: 5/31/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Light Gray Silty to Sandy CLAY (CL)												
	medium stiff												
			19	6 5 6	11								
4													
	grades with some pinholes												
	slightly moist		20	6 10 12	22	20	88				39	17	22
8	grades gray with fine sand		21	3 4 5	9								
			22	3 3 2	5								
12	END AT 11.5'												
16													
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 45

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-5

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 5/31/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Light Gray-Brown Crumbly Silty CLAY (CL) with roots dry, medium stiff												
	grades with calcification , trace rootholes/pinholes		23	4 5 5	10	12	83						
4													
			24	2 3 3	6								
	grades more silt		25	1 0 1	1	16				99	43	17	26
8													
	slightly moist		26	4 4 8	12								
12													
	Light Brown Silty Sand/Sandy Silt (SM-ML) dry, medium dense/stiff												
16	slightly moist		27	4 5 6	11	10				57			
	END AT 16.5'												
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 46

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-6

Total Depth: 25'
Water Depth: (see Remarks)
Date: 5/31/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		1" Topsoil												
		Light Gray Silty CLAY (CL) dry, medium stiff												
				28	8 7 7	14	11				98	38	18	20
4														
		grades gray		29	4 5 4	9								
8		very moist		30	5 8 10	18	25	89						
				31	3 3 2	5								
12														
		Light Brown Silty SAND (SM) dry, medium dense												
				32	7 10 6	16								
16														
		Gray Sandy GRAVEL (GP) dry, dense to very dense												
				33	24 24 50/3"									
20														
				34	18 26 30	56								
24		REFUSAL AT 25.0'												
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 47

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-7

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 5/31/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Light Gray Crumbly Sandy to Silty CLAY (CL)												
	grades light brown		35	5 6 5	11								
4													
	slightly moist												
	grades with calcification pockets		36	6 7 7	14								
8	moist		37	1 0 1	1								
			38	1 1 2	3								
12													
	Brown Laminated Silty SAND (SM) slightly moist, medium dense		39	6 8 9	17								
16	END AT 16.5'												
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 48

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-8

Total Depth: 11.5'
Water Depth: (see Remarks)
Date: 5/31/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Light Gray Silty CLAY (CL) with trace to some sand dry, loose												
	medium stiff		40	4 4 4	8								
4													
	slightly moist		41	5 5 6	11								
	grades gray-brown												
8			42	4 4 6	10								
	moist		43	2 2 2	4								
12	END AT 11.5'												
16													
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 49

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-9

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Light Gray Silty CLAY (CL) dry,very stiff												
	grades crumbly, some pinholes												
			44	9 12 17	29	7	85			99			
4													
	Light Gray Silty CLAY (CL) with trace pinholes		45	9 8 9	17								
	grades with more silt, no calcification slightly moist		46	4 5 5	10								
8													
			47	11 19 22	41	20	105				42	15	27
12													
	Brown Silty SAND (SM) dry, dense												
			48	27 28 16	44								
16	grades with gravel												
	END AT 16.5'												
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 50

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-10

Total Depth: 11.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
				Total			Gravel %	Sand %	Fines %	LL	PL	PI
0	1" Topsoil											
	Light Gray Silty CLAY (CL) dry, loose											
	grades silty clay with calcification moist, medium stiff		49	5 8 7	15	17	112				36	18	18
4												
	grades brown, no calcification moist		50	2 2 2	4							
8	grades with sand laminations very moist		51	2 2 2	4	31			99			
			52	3 5 7	12	37	80					
12	END AT 11.5'											
16												
20												
24												
28												

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts
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CMT TECHNICAL SERVICES

Figure: 51

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-11

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil											
	Light Gray Sandy to Silty CLAY (CL) with roots, dry											
	Light Borwn Clayey SAND (SC)											
	Light Brown Fine Sandy SILT (ML), dry, medium stiff		53	2 2 3 (5)	4				62		NP	NP
4			54	2 2 2 (4)								
8	medium dense		55	3 3 4 (7)								
	Light Brown Silty Fine Sand/Fine Sandy Silt (SM-ML), loose		56	2 3 3 (6)	4				41			
12	medium dense											
16	Gray Sandy GRAVEL (GP), dry, medium dense		57	6 8 13 (21)								
	END AT 16.5'											
20												
24												
28												

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 52

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-12

Total Depth: 11.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		1" Topsoil												
		Light Brown Silty CLAY (CL) with roots to 2.5'												
		slightly moist, medium stiff		58	5 8 12	20	12	91			99			
4														
				59	6 6 5	11								
8				60	4 3 4	7								
				61	3 3 5	8								
		END AT 11.5'												
12														
16														
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 53

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-13

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Gray Silty CLAY (CL) dry, loose												
	medium stiff		62	4 7 7	14								
4													
			63	3 3 3	6								
	grades brown moist												
8			64	2 3 4	7	23				100			
			65	34 3									
12													
	Brown Silty Sand (SM) with gravel dry, dense to very dense		66	7 20 40	60	4		20	45	35			
16	END AT 16.5'												
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts

CMT TECHNICAL SERVICES

Figure: 54

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-14

Total Depth: 11.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Light Gray-Brown Silty CLAY (CL) with trace sand and roots, dry, loose												
	grades with some fine roots, rootholes/pinholes, medium stiff		67	5 7 7	14	11	66			97			
4													
	grades laminated, no roots, slightly moist		68	3 3 3	6								
8			69	3 2 3	5								
	moist		70	2 2 3	5								
12	END AT 11.5'												
16													
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts
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CMT TECHNICAL SERVICES

Figure: 55

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-15

Total Depth: 11.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Light Gray Silty CLAY (CL) with sand, dry, loose												
	medium stiff		71	5 6 8	14								
4													
			72	4 6 6	12								
	slightly moist												
8			73	4 4 6	10								
			74	3 2 2	4								
12	END AT 11.5'												
16													
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 56

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-16

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		1" Topsoil												
		Light Gray Silty CLAY (CL)												
		dry												
		medium stiff		75	7 8 10	18	10	99						
4														
				76	6 7 7	14								
		slightly moist		77	6 4 4	8								
8														
				78	4 5 7	12								
12														
				79	6 7 7	14								
16		END AT 16.5'												
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts
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CMT TECHNICAL SERVICES

Figure: 57

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-17

Total Depth: 11.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		1" Topsoil												
		Light Gray to Brown Silty CLAY (CL) dry, medium stiff												
				80	4 6 5	11	9				98	32	18	14
4														
				81	6 8 8	16	13				99			
8				82	7 7 8	15								
		grades with laminations of sand slightly moist		83	6 7 8	15								
12		END AT 11.5'												
16														
20														
24														
28														

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts
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CMT TECHNICAL SERVICES

Figure: 58

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Bore Hole Log B-18

Total Depth: 16.5'
Water Depth: (see Remarks)
Date: 6/1/22
Job #: 900217

Depth (ft)	Soil Description	Sample Type	Sample #	Blows (N)	Total	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0	1" Topsoil												
	Light Gray to Brown Silty CLAY (CL) with some fine sand, some rootholes/pinholes to 4'												
	slightly moist		84	3 6 8	14	9				87			
4			85	8 6 8	14								
8	moist		86	8 10 14	24	20	95			99	47	18	29
			87	4 6 6	12								
12	Gray Sandy GRAVEL (GP) dry, medium dense to dense		88	24 26 27	53								
16	END AT 16.5'												
20													
24													
28													

Remarks: Groundwater not encountered during drilling.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Hollow-Stem Auger
Automatic Hammer, Wt=140 lbs, Drop=30"
Excavated By: Direct Push
Logged By: Olivia Roberts
Page: 1 of 1

CMT TECHNICAL SERVICES

Figure: 59

Deseret Peak Grantsville

~4792 West Highway 112, Grantsville, Utah

Key to Symbols

Date: 5/31/22

Job #: 900217

① Depth (ft)	② GRAPHIC LOG	③ Soil Description	④ Sample Type	⑤ Sample #	⑥⑦ Blows(N) Total	⑧ Moisture (%)	⑨ Dry Density(pcf)	⑩ Gradation Gravel %	Sand %	Fines %	Atterberg LL	PL	PI

COLUMN DESCRIPTIONS

Depth (ft.): Depth (feet) below the ground surface (including groundwater depth - see water symbol below).

Graphic Log: Graphic depicting type of soil encountered (see below).

Soil Description: Description of soils encountered, including Unified Soil Classification Symbol (see below).

Sample Type: Type of soil sample collected at depth interval shown; sampler symbols are explained below-right.

Sample #: Consecutive numbering of soil samples collected during field exploration.

Blows: Number of blows to advance sampler in 6" increments, using a 140-lb hammer with 30" drop.

Total Blows: Number of blows to advance sampler the 2nd and 3rd 6" increments.

Moisture (%): Water content of soil sample measured in laboratory (percentage of dry weight of sample).

Dry Density (pcf): The dry density of a soil measured in laboratory (pounds per cubic foot).

Gradation: Percentages of Gravel, Sand and Fines (Silt/Clay), obtained from lab test results of soil passing the No. 4 and No. 200 sieves.

Atterberg: Individual descriptions of Atterberg Tests are as follows:

LL = Liquid Limit (%): Water content at which a soil changes from plastic to liquid behavior.

PL = Plastic Limit (%): Water content at which a soil changes from liquid to plastic behavior.

PI = Plasticity Index (%): Range of water content at which a soil exhibits plastic properties (= Liquid Limit - Plastic Limit).

STRATIFICATION	
Description	**Thickness**
Seam	Up to ½ inch
Lense	Up to 12 inches
Layer	Greater than 12 in.
Occasional	1 or less per foot
Frequent	More than 1 per foot

MODIFIERS
Trace
<5%
Some
5-12%
With
> 12%

MOISTURE CONTENT
Dry: Absence of moisture, dusty, dry to the touch.
Moist: Damp / moist to the touch, but no visible water.
Saturated: Visible water, usually soil below groundwater.

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS SYMBOLS		TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS More than 50% of material is larger than No. 200 sieve size.	GRAVELS The coarse fraction retained on No. 4 sieve.	CLEAN GRAVELS (< 5% fines)	GW		Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
			GP		Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
		GRAVELS WITH FINES (≥ 12% fines)	GM		Silty Gravels, Gravel-Sand-Silt Mixtures
			GC		Clayey Gravels, Gravel-Sand-Clay Mixtures
	SANDS The coarse fraction passing through No. 4 sieve.	CLEAN SANDS (< 5% fines)	SW		Well-Graded Sands, Gravelly Sands, Little or No Fines
			SP		Poorly-Graded Sands, Gravelly Sands, Little or No Fines
		SANDS WITH FINES (≥ 12% fines)	SM		Silty Sands, Sand-Silt Mixtures
			SC		Clayey Sands, Sand-Clay Mixtures
FINE-GRAINED SOILS More than 50% of material is smaller than No. 200 sieve size.	SILTS AND CLAYS Liquid Limit less than 50%		ML		Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands or Clayey Silts with Slight
			CL		Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
			OL		Organic Silts and Organic Silty Clays o f Low Plasticity
	SILTS AND CLAYS Liquid Limit greater than 50%		MH		Inorganic Silts, Micacious or Diatomacious Fine Sand or Silty Soils with Plasticity (Elastic Silts)
			CH		Inorganic Clays of High Plasticity, Fat Clays
			OH		Organic Silts and Organic Clays of Medium to High Plasticity
HIGHLY ORGANIC SOILS			PT		Peat, Humus, Swamp Soils with High Organic Contents

Note: Dual Symbols are used to indicate borderline soil classifications (i.e. GP-GM, SC-SM, etc.).

SAMPLER SYMBOLS

- Block Sample
- Bulk/Bag Sample
- Modified California Sampler 3.5" OD, 2.42" ID
- D&M Sampler
- Rock Core
- Standard Penetration Split Spoon Sampler
- Thin Wall (Shelby Tube)

WATER SYMBOL

- Encountered Water Level
- Measured Water Level

(see Remarks on Logs)

1. The results of laboratory tests on the samples collected are shown on the logs at the respective sample depths.
2. The subsurface conditions represented on the logs are for the locations specified. Caution should be exercised if interpolating between or extrapolating beyond the exploration locations.
3. The information presented on each log is subject to the limitations, conclusions, and recommendations presented in this report.

Figure: 60