GA Paulding Uninco CHP

4070 Charles Hardy Parkway
Dallas, Georgia

Highlands Residential

Marietta, Georgia

Terracon Project No. GR225030

January 19, 2022

Your Stage1 Representative:

Allie M. Fletch
Assistant Project Manager
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GEOTECHNICAL SITE RATING

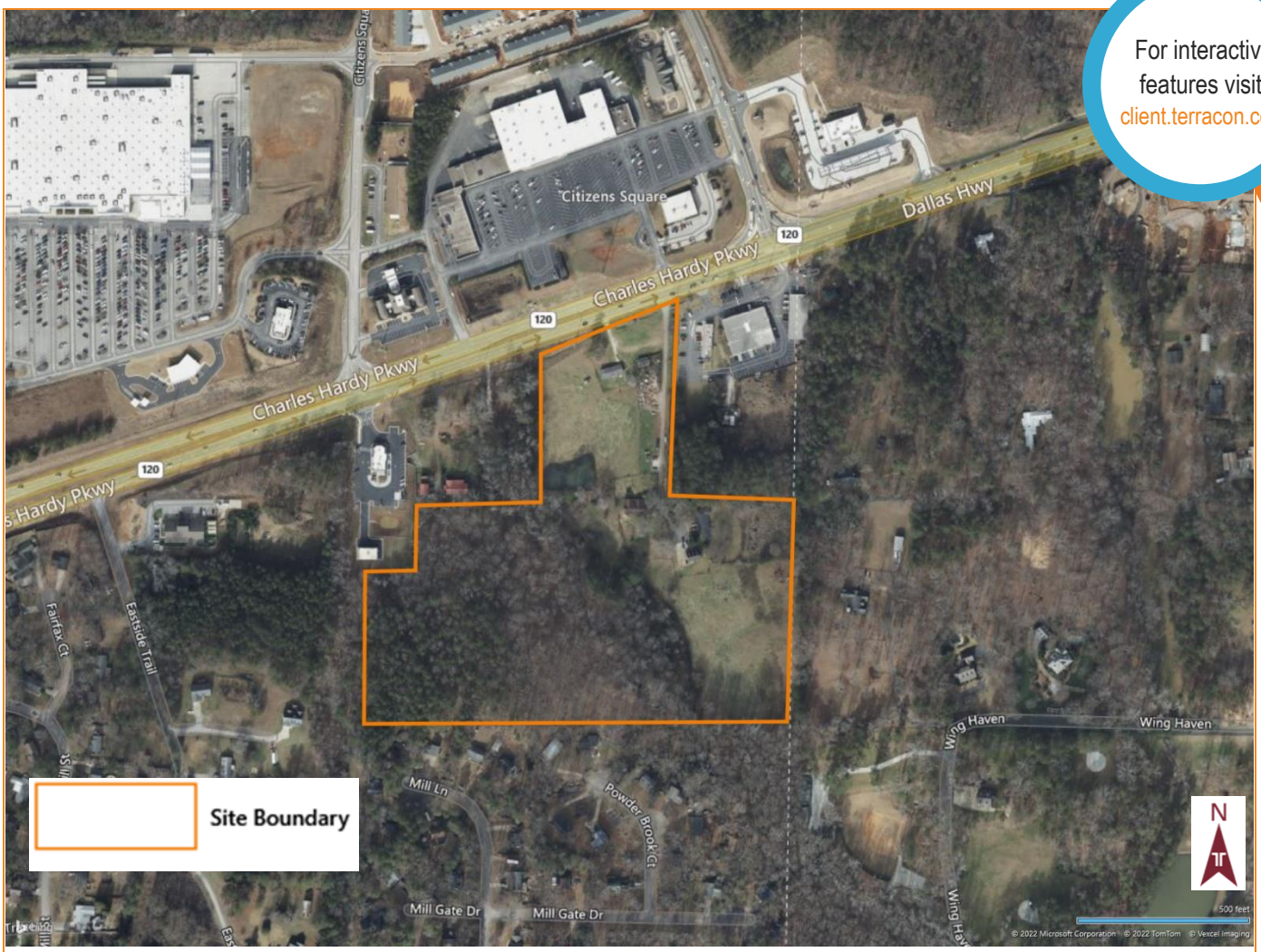
Site rating is based on expected subsurface conditions and the project, or in the event the project is not known, general constructability.

Conventional construction methods likely suitable. No obvious geotechnical and/or geologic constraints.

YOUR SITE

DEVELOPMENT DESCRIPTION

- The site covers approximately 22 acres and is planned to be developed as single-story senior cottages. Plans have not been provided.



See INFORMATION SOURCES for a detailed list of sources used to generate this figure.

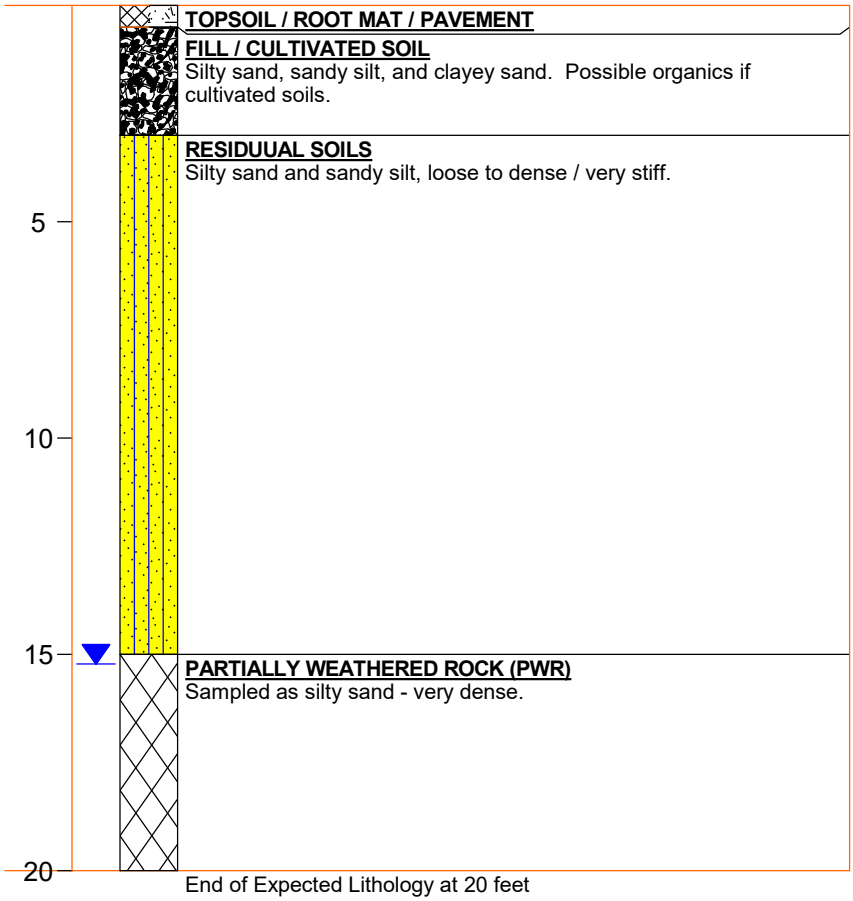
HISTORICAL AERIAL IMAGES SUMMARY

LOCATION	DESCRIPTION
Site	1993 – 2020: The north-northeastern portion of the site appears to be graded and developed with multiple residential structures, two driveways, and fields that appear to have been used for agricultural purposes in the past. A metal scrapyard and a pond were apparent on the northern portion of the site. The remaining portions of the site were apparent undeveloped wooded land.

EXPECTED LITHOLOGY

The EXPECTED LITHOLOGY noted below is subject to the CONFIDENCE ESTIMATE noted in the Stage1. The opinions of subsurface conditions are very preliminary in nature. These opinions must be validated with site-specific exploration and testing. See METHODOLOGY AND LIMITATIONS for additional clarification regarding the limitations to the following opinions and methods used to derive these opinions.

Area Represented: Entire site



COMMENTS ON POTENTIAL VARIABILITY

- Existing fill is anticipated on the project site in the areas of the existing structures.
- NRCS mapping indicates on-site soils have a low shrink-swell potential. Based on our experience, we do not anticipate shrink-swell soils to be a concern at this site.
- Shallow groundwater is anticipated in the vicinity of the pond and immediately adjacent to the creek. Nearby projects suggest the depth to groundwater is highly variable and could be encountered as shallow as 15 feet in other portions of the site away from the pond and creek.
- The subsurface bedrock in this region has undergone differing rates of weathering, producing a layer of soil over the bedrock. The typical residual soil profile consists of clayey soils near the surface, where soil weathering is more advanced, underlain by sandy silts and silty sands, which often consist of saprolites (native soils which maintain the original fabric of the parent rock). Generally, the soil becomes harder with depth to the top of parent crystalline rock or "massive bedrock" which occurs at depth.
- A considerable variation in depth to partially weathered rock and competent rock over short horizontal distances is common and was indicated in nearby projects. It is also not unusual for lenses and boulders of hard rock and zones of partially weathered rock to be present within the soil mantle above the general bedrock level.
- Loose and/or unstable soils, such as cultivated soils, may be encountered.
- PWR is defined, for engineering purposes, as residual material exhibiting Standard Penetration Resistances in excess of 100 blows per foot. Weathering is often uneven. Consequently, the profile of the PWR and bedrock is often quite irregular and erratic, even over short horizontal distances.

The EXPECTED LITHOLOGY was prepared as a part of this Stage1 report. It should not be utilized or distributed outside of this report. COMMENTS include, but are not limited to, potential variability of geology, lithology, and groundwater as noted.

GEOTECHNICAL CONSIDERATIONS

CONFIDENCE ESTIMATE

We have used a weighted average approach, please refer to METHODOLOGY AND LIMITATIONS.

AVERAGE CONFIDENCE	We examined 5 historical projects within a 2-mile radius.
AVERAGE CONFIDENCE	Available public data is consistent with our understanding of the area.
INCREASED CONFIDENCE	Practitioner has local experience in excess of 30 years.

SITE RATING

The site was evaluated for the presence or potential presence of the following geotechnical challenges: Shallow bedrock, soft soils, expansive soils, variable topography, previous site usage, seismicity, and underlying geologic conditions such as karst or the presence of loess. Based on this evaluation we have assigned the site a Site Rating as shown below. Please refer to our METHODOLOGY AND LIMITATIONS for more information about SITE RATING determination.

Based on the proposed development and the subsurface conditions encountered on nearby projects, shallow foundation support appears feasible. Shallow PWR and rock may be encountered during mass grading and utility installation depending upon selected final grades that may require difficult excavation techniques for removal. Shallow groundwater may also be encountered in the close vicinity of the pond and creek; however, given that this development can be somewhat adjusted to existing site grades, we consider this site to have less than average constructability concerns and have assigned a Site Rating of 1.

FOUNDATION DESIGN

CONSIDERATIONS	
Shallow foundation support is likely acceptable for anticipated loads:	Yes
Deep foundation support is likely required for anticipated loads:	No
Anticipated Seismic Site Class:	D, likely possibility of C.

SITE AND CONSTRUCTION CONSIDERATIONS

CONSIDERATIONS	
Anticipated excavation equipment:	Upper soils will be excavatable with convention earth moving equipment; however, materials such as PWR and rock may be encountered that require larger equipment and possible blasting for excavation.
Frost embedment depth:	18 inches
Concern for karst:	No
NRCS mapped potential for concrete corrosion due to on-site soils:	Moderate
NRCS mapped potential for steel corrosion due to on-site soils:	Moderate
Mapped Faults on Site:	No
Mapped Faults within 0.5-mile of Site:	No
Mapped mines on Site:	No
Mapped loess on Site:	No

SITE AND CONSTRUCTION CONSIDERATIONS NOTES

- Based on publicly available topography maps published by the USGS, the site topography ranges from approximately elevation 1,120 feet to 1,060 feet msl.
- A cursory review of the (publicly available) historical images indicates that portions of the site were previously developed. In our experience, there is an increased risk of encountering deleterious or unsuitable materials on a previously developed site, particularly in the area of the existing scrapyard.
- Due to the variability in the depth at which partially weathered rock and rock were encountered at nearby projects, materials requiring difficult excavation techniques for removal may be encountered.
- The fine-grained soils anticipated on-site will be sensitive to disturbance from construction activity and water seepage. If precipitation occurs just prior to, or during construction, the near-surface soils could increase in moisture content and become more susceptible to disturbance.

GEOTECHNICAL CONSIDERATIONS and corresponding NEXT STEPS prepared by:

William J. Sheffield, P.E.
Senior Geotechnical Engineer
Bill.Sheffield@terracon.com

NEXT STEPS

GEOTECHNICAL

- Based on our experience within proximity to the project site, we recommend that the geotechnical explorations include SPT borings and potentially rock coring at select locations. The quantity and depths of explorations will be determined when a site plan is available.
- A series to test pits spaced across the site with a large-tracked excavator can provide information regarding excavation conditions.
- Seismic Refraction can provide additional information regarding excavation conditions between boring locations.
- Laboratory testing consisting of classification tests and Standard Proctor tests should be performed to evaluate suitability of soils for fill placement.
- We recommend completing a Phase I ESA for the site if one has not already been performed.
- If requested by the client, a preliminary exploration scope can be developed.

To complete the corresponding Next Steps for Geotechnical Services, please contact Bill Sheffield, Bill.Sheffield@terracon.com.

INFORMATION SOURCES

NRCS Soil Survey Geographic U.S. Database

Bing maps

Pro

USGS science for a changing world

TERRACON DATA	Terracon has 8 historical geotechnical projects within 2-miles of the site. Of those, the local practitioner reviewed select exploration projects to gain a better understanding of potential subsurface conditions. The geotechnical project locations are illustrated on the Client Portal.
PUBLICLY AVAILABLE GIS DATA	Georgia Hazards Georgia Hydrography
AERIAL IMAGERY	Terracon reviewed the following readily available historical aerial images and street view images available on January 17, 2022, to develop a limited history of previous site usage: Aerial Images Google Earth Pro™ Street View Images Google Maps, Google Earth Pro™ The use of available aerial imagery resources is intended to help understand previous site usage. These images are widely spaced in time. They should not be considered appropriate for identifying site activities which may have impacted subsurface conditions. A more comprehensive review of aerial imagery and/or site interviews would be required to further evaluate previous site usage.

METHODOLOGY AND LIMITATIONS

LIMITATIONS

This report provides very preliminary opinions of siting and construction challenges that may be associated with the stated project plans for the stated property. Confirmation of opinions stated in this document is essential. Absence of a mapped resource does not mean that it is not present. Confirmation should include performing a site-specific evaluation consistent with the guidelines set forth in NEXT STEPS.

All parties are advised that any decisions or actions taken by any party based on the information contained herein, including decisions with financial implications are done solely at the risk of that party. By providing this information in this preliminary form, Terracon expressly disclaims any duties or obligations associated with the usage of this information for decision-making or design purposes.

In the event that changes to the nature, design, or location of the project, as outlined in this report, are planned, the preliminary conclusions and recommendations contained in this report shall not be used unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing. As the project moves into the design phase, Terracon should be retained to develop and complete a scope of work that includes site-specific explorations as noted in NEXT STEPS.

Terracon and Highlands Residential recognize we have entered into an agreement that may contain certain confidential or non-disclosure obligations relating to our services. Highlands Residential recognizes, however, that although such confidentiality obligations may be in place, those obligations do not create an exclusive relationship between the parties nor do those obligations create an exclusive ownership right to Highlands Residential relating to the data in question. Terracon has the unfettered ability to provide similar services to any other party and use any public or previously available data for the service of others, even if included as part of this report, but Terracon will refrain from disclosing confidential information of Highlands Residential which is provided by Highlands Residential to the extent required by any applicable non-disclosure agreement.

Terracon does not represent the imagery reviewed to be a complete historical record of previous site usage, nor does Terracon validate the accuracy and sufficiency of the public domain sources that have been utilized.

METHODOLOGY

CONFIDENCE ESTIMATE OF EXPECTED LITHOLOGY

Terracon has assigned confidence estimates for the datasets based on upon the engineer's local practice in the vicinity of the site. The engineer assigned a subjective confidence opinion of decreased, average, or increased for each of the following categories:

- Historical Project Data
- Local Experience
- Public Data

Using a weighted averaging approach, we derived an overall confidence interval in which historical project data was weighted more heavily than local experience which was weighted more heavily than public data. Decreased confidence implies that the level of available data and/or consistency is such that little confidence can be placed in the Geotechnical Considerations. Conversely, an increased confidence ranking implies that sufficient data and consistency exists to derive a high confidence in the statement of expected lithology.

Regardless of the confidence ranking, actual conditions may vary significantly from the predicted conditions, and the expected conditions must be confirmed with site-specific exploration data, and significant variations from the expected conditions are possible.

GEOTECHNICAL SITE RATING

The site was evaluated for the presence or potential presence of the following geotechnical challenges: Shallow Rock, Soft Soil, Expansive Soil, Variable Topography, Previous Site Usage, Seismicity, and Underlying Geologic conditions such as Karst or the presence of Loess.

Conventional construction methods likely suitable. No obvious geotechnical and/or geologic constraints.

Project contains average constructability concerns. Typical construction for this project type is expected with some contingency for variation as described within this report.

Project contains above average constructability concerns. Geotechnical and or geologic constraints likely present that warrant further studies and/or mitigation beyond what is typical.

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