AGEC
Applied GeoTech

November 10, 2020

Ed Green Development
2150 North Valley View Drive
Layton, UT 84040

Attention: Ed Green
EMAIL: edgontherun@comcast.net

Subject: Geotechnical Consultation
Proposed Summerset Farms, Phase 2
2375 South 3875 West
Taylor, Utah
Project No. 1190435

Gentlemen:

Applied Geotechnical Engineering Consultants, Inc. (AGEC) was requested to provide geotechnical consultation for Phase 2 of the Summerset Farms residential development located at 2375 South 3875 West in Taylor, Utah.

PREVIOUS STUDIES

We previously conducted a geotechnical investigation for Phase 1 of the proposed development and presented our findings and recommendations in a report dated June 18, 2019 under AGEC Project No. 1190435. Additional geotechnical consultation was provided under the same project number in a letter dated March 5, 2020. We gave subsurface drain recommendations in the letter. Phase 2 is located south of Phase 1 as shown on Figure 1.

PROPOSED CONSTRUCTION

We understand that Phase 2 is planned to be subdivided into 17 single-family residential building lots. We anticipate that residences will consist of two to three-story, wood-frame structures with the potential for basements. We have assumed building loads consist of wall loads up to 3 kips per lineal foot and column loads up to 30 kips based on typical residential construction in the area.

We understand that a land drain system has been installed within the roadways extending through Phase 1 and will likely be extended through Phase 2.

SITE CONDITIONS

The area of Phase 2 consist of a vacant undeveloped land. There are no permanent structures or pavement on the site. The site generally slopes down to the west and southwest. Vegetation at the site consists of weeds and a few trees along the east side of the site.

There is undeveloped farmland to the east and residential developments to the north, south and west.

FIELD STUDY

The field study was conducted on November 4, 2020. Two test pits (TP-4 and TP-5) were excavated in the area of Phase 2 at the approximate locations shown on Figure 1. The test pits were excavated using a rubber-tired backhoe. The test pits were logged and soil samples obtained by an engineer from AGEC. A log of the subsurface conditions encountered in Test Pits TP-4 and TP-5 are graphically shown on Figure 2.

The test pits were backfilled with the excavated material without significant compaction. The backfill in the test pits should be removed and properly compacted where it will support proposed structures, floor slabs, pavements or other settlement-sensitive site improvements.

SUBSURFACE CONDITIONS

Up to approximately 1 foot of topsoil was encountered in Test Pits TP-4 and TP-5. Sand with small to moderate amounts of silt was encountered below the topsoil and extends the maximum depth investigated, approximately 10 feet.

A description of the various soils encountered in the test pits follows:

> Topsoil - The topsoil consists primarily of silty sand. It is slightly moist, brown and contains roots and organics.
>
> Sand - The sand contains a small to moderate amount of silt and some clayey sand. It is medium dense, slightly moist to wet and light to dark brown with some iron oxide staining.
>
> Laboratory tests conducted on a sample of the sand indicate that it has a natural moisture content of 2 percent and a natural dry density of 99 pounds per cubic foot (pcf).

Results of the laboratory tests are summarized on Table I and are included on the logs of exploratory test pits, Figure 2.

SUBSURFACE WATER

Slotted PVC pipe was installed in the test pits to facilitate measurement of the subsurface water level at the site. Water was encountered in Test Pit TP-4 at a depth of approximately 7½ feet below the ground surface when checked 2 days after excavation. No water was encountered in Test Pit TP-5 to the depth investigated. Fluctuations in the water level will occur over time. Water levels are expected to be highest in the spring and summer and lowest in the fall and winter. An evaluation of such fluctuations is beyond the scope of this report.

RECOMMENDATIONS

The subsurface conditions encountered in the test pits excavated in Phase 2 are similar to those described in the above-referenced geotechnical report. The above-referenced geotechnical report and the letter dated March 5, 2020 may be used for Phase 2 with the following additional and updated recommendations.

A. Lateral Earth Pressures

1. Lateral Resistance for Footings
   Lateral resistance for spread footings placed on compacted structural fill is controlled by sliding resistance between the footing and the foundation soil. A friction value of 0.40 may be used in design for ultimate lateral resistance for footings bearing on natural soil or on compacted structural fill.

2. Subsurface Walls and Retaining Structures
   The following equivalent fluid weights are given for design of subgrade walls and retaining structures. The active condition is where the wall moves away from the soil. The passive condition is where the wall moves into the soil and the at-rest condition is where the wall does not move. The values listed below assume a horizontal surface adjacent the top and bottom of the wall.

Soil type	Active	At-Rest	Passive
Clay & Silt	50 pcf	65 pcf	250 pcf
Sand & Gravel	40 pcf	55 pcf	300 pcf

3. Seismic Considerations
   Under seismic conditions, the equivalent fluid weight should be increased by 37 pcf for the active condition and 22 pcf for the at-rest condition, and decreased by 37 pcf for the passive condition. This assumes a peak ground acceleration of 0.62g, which represents a 2 percent probability of exceedance in a 50-year period (ICC, 2017).

4. Safety Factors

The values recommended above assume mobilization of the soil to achieve the assumed soil strength. Conventional safety factors used for structural analysis for such items as overturning and sliding resistance should be used in design.

B. Seismicity, Faulting and Liquefaction

1. Seismicity

Listed below is a summary of the site parameters that may be used with the 2018 International Building Code:

Description	Value[1]
Site Class	D[2]
S_s - MCE_R ground motion (period = 0.2s)	1.17g
S_1 - MCE_R ground motion (period = 1.0s)	0.42g
F_a - Site amplification factor at 0.2_s	1.20
F_v - Site amplification factor at 1.0_s	1.89[3]
PGA - MCE_G peak ground acceleration	0.52g
PGA_M - Site modified peak ground acceleration	0.62g

[1]Values obtained from information provided by the Applied Technology Council at https://hazards.atcouncil.org

[2]Site Class Default D was selected based on the subsurface conditions encountered to the depth investigated. Site Class F may be representative of the soil profile if liquefaction is found to be significant.

[3] F_v was obtained using straight-line interpolation of the information presented in Table 11.4-2 of ASEC/SEI 7-16.

2. Faulting

No active faults are mapped as being located on the property. The nearest mapped active fault is the Wasatch Fault located approximately 6.9 miles northeast of the site (UGS, 2020).

3. Liquefaction

The site is located in an area mapped as having a "high" liquefaction potential (Anderson and others, 1994). The soil type most susceptible to liquefaction during a large magnitude earthquake is loose, clean sand below the water level. Sand was encountered below the water level, but test pits are not deep enough and do not provide sufficient information to evaluate liquefaction potential. Liquefaction may be a potential hazard at this site.

A site-specific liquefaction study that includes investigation to a greater depth would be needed to evaluate the liquefaction potential at the site. Such a study is beyond the scope of this report.

LIMITATIONS

This letter has been prepared in accordance with generally accepted soil and foundation engineering practices in the area for the use of the client. The conclusions and recommendations included in the letter are based on the conditions encountered in the test pits excavated at the site, information presented in the above-referenced geotechnical report and our experience in the area. Variations in the subsurface conditions may not become evident until additional exploration or excavation is conducted. If the subsurface conditions, proposed construction or groundwater level is found to be significantly different from what is described above, we should be notified to reevaluate our recommendations.

If you have any questions or if we can be of further assistance, please call.

Sincerely,

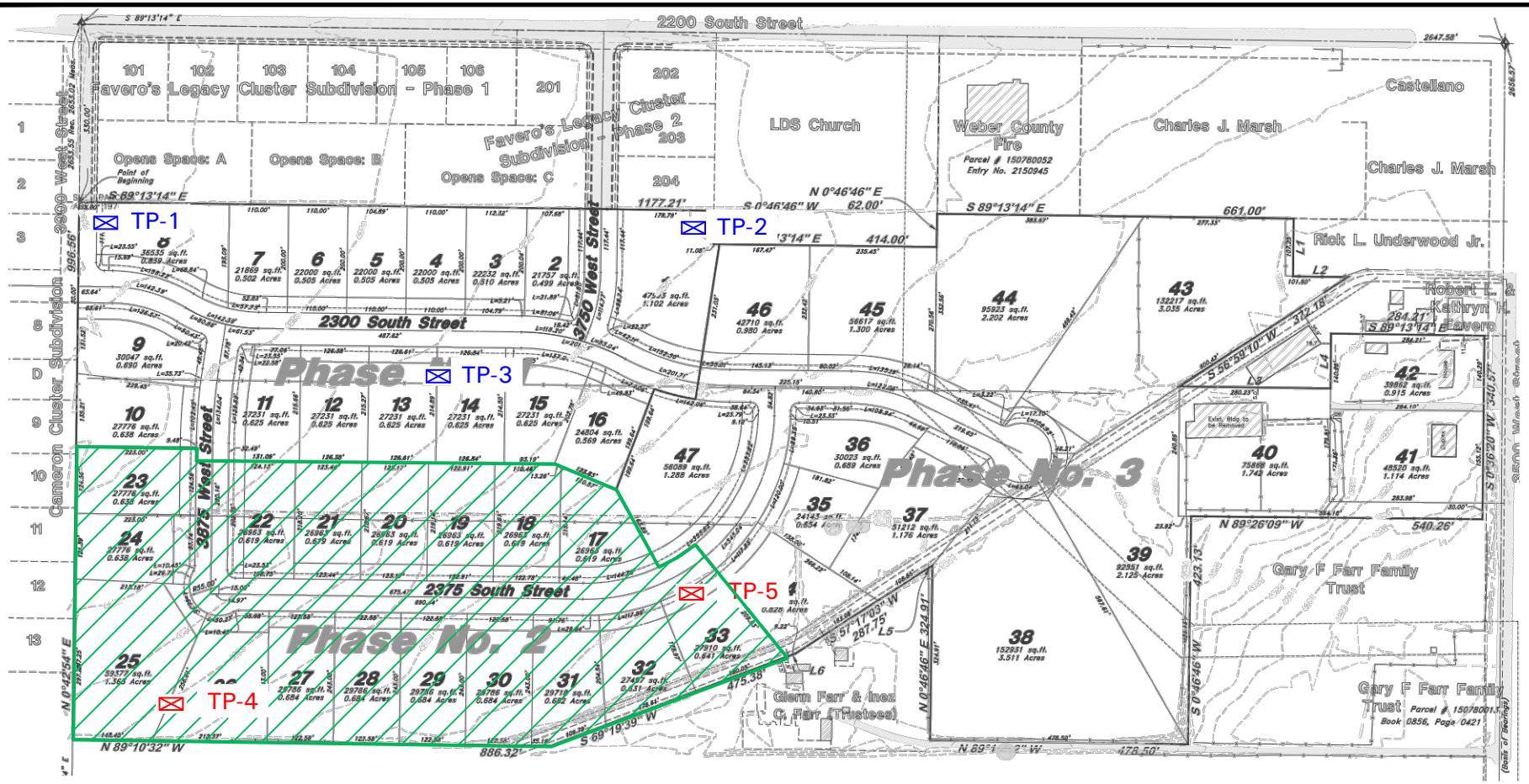
APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.

Christopher J. Beckman, P.E.

Reviewed by DRH, P.E., P.G.

CJB/rs

Enclosures



LEGEND:

TP-3 — Indicates approximate test pit locations for prior AGEC study.

TP-4 — Indicates approximate test pit locations for current study.

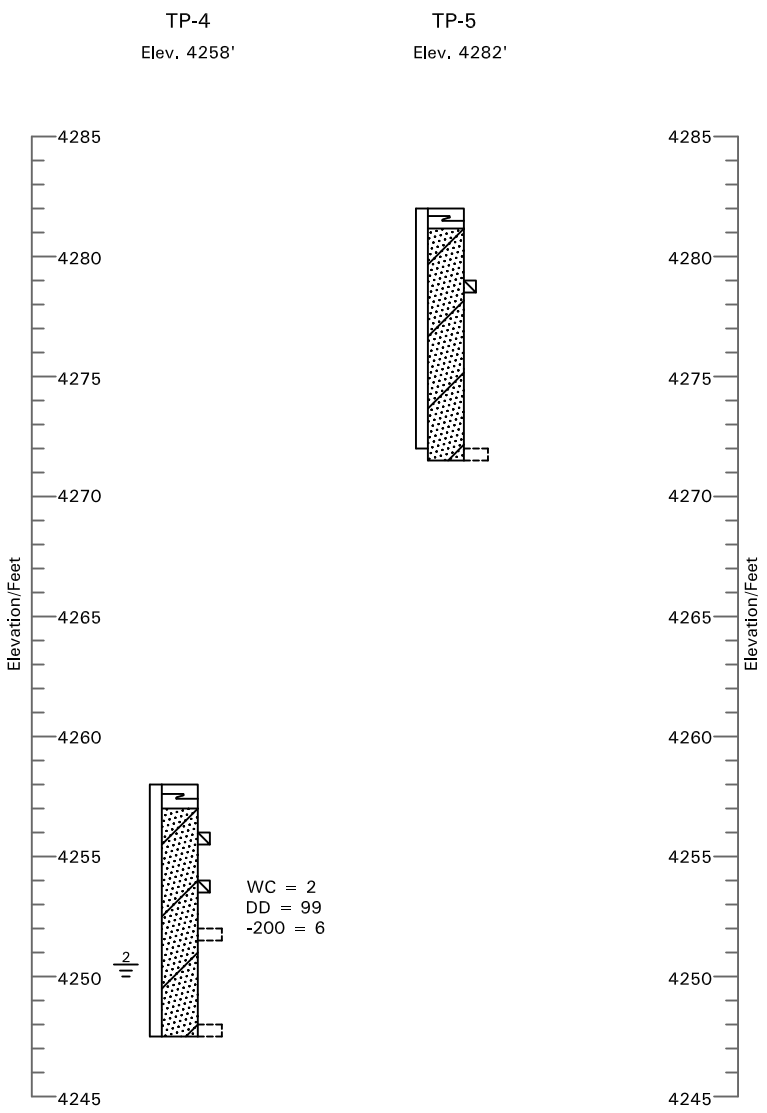
N

0 300 600 feet

Approximate Scale

SUMMERSET FARMS, PHASE 2
2375 SOUTH 3875 WEST
TAYLOR, UTAH

1190435	AGEC	Test Pit Locations	Figure 1



Approximate Vertical Scale 1" = 8'

LEGEND:

- Topsoil; silty sand, slightly moist, brown, roots and organics.
- Poorly-graded Sand with Silt (SP-SM); small to moderate amounts of silt, medium dense, slightly moist to wet, light brown to dark brown.
- Indicates relatively undisturbed hand drive sample taken.
- Indicates disturbed sample taken.
- 2 — Indicates the depth to free water and the number of days after drilling the measurement was taken.
- Indicates slotted 1½-inch PVC pipe installed in the test pit to depth indicated.

NOTES :

1. The test pits were excavated on November 4, 2020 with a mini-excavator.
2. The location of the test pits were measured by pacing from features shown on the site plan provided.
3. The elevations of the test pits were determined by interpolating between contours shown on the site plan provided.
4. The test pit locations and elevations should be considered accurate only to the degree implied by the method used.
5. The lines between materials shown on the test pit logs represent the approximate boundaries between materials and the transitions may be gradual.
6. The water level readings shown on the logs were made at the time and under the conditions indicated. Fluctuations in the water level will occur with time.
7. WC = Water Content (%);
   DD = Dry Density (pcf);
   -200 = Percent Passing the No. 200 Sieve.

APPLIED GEOTECHNICAL ENGINEERING CONSULTANTS, INC.

TABLE I

SUMMARY OF LABORATORY TEST RESULTS

PROJECT NUMBER: 1190435

SAMPLE LOCATION		NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (PCF)	GRADATION			ATTERBERG LIMITS		UNCONFINED COMPRESSIVE STRENGTH (PSF)	WATER SOLUBLE SULFATE (%)	SAMPLE CLASSIFICATION
TEST PIT	DEPTH (FEET)			GRAVEL (%)	SAND (%)	SILT/ CLAY (%)	LIQUID LIMIT (%)	PLASTICITY INDEX			
TP-4	4	2	99			6					Poorly-graded Sand with Silt (SP-SM)