March 5, 2021

La Plata Communities
1755 Telstar Drive, Suite 211
Colorado Springs, Colorado

Attention: Steve Rossoll, P.E.

Subject: Preliminary Geologic Hazards Evaluation
The Ranch, Phase 2
Northeast of Link Road and Squirrel Creek Road
El Paso County, Colorado
Project No. CS19053.001-115 L2

The Ranch, Phase 2 is located southeast of the intersection of Link Road and Squirrel Creek Road in Fountain, Colorado. Phase 2 is more specifically located east of Phase 1 of the Ranch development and encompasses 310 acres of vacant land. This phase of the ranch does not contain buildings and is generally covered with irrigated grass and/or alfalfa.

We conducted a geological hazards evaluation and preliminary geotechnical investigation in April 2019 (Project No. CS19053.001-115) that included drilling eleven widely spaced exploratory borings across the site. A second preliminary geotechnical investigation and geological hazards evaluation was completed for the overall Ranch property and included drilling an additional thirty-two, more closely spaced exploratory borings. This letter is considered supplemental to the previous preliminary geotechnical investigations and geological hazard evaluations prepared for the site under CTL|T Project No. CS19053.001, and CS19053.002.

This geological hazards letter was prepared at the request of La Plata Communities and is based on our prior preliminary geotechnical investigations, geological hazards evaluations, and our experience with the Ranch property. We believe the work was completed in accordance with the scope outlined in our service agreement dated February 14, 2020 (Proposal No. CS-19-0014_CM1, CM2 and CM3).

PREVIOUS INVESTIGATIONS

We completed a Geological Hazards Evaluation and Preliminary Geotechnical Investigations for the Ranch development, CTL Thompson Project No. CS19053.001-115, dated April 1, 2019. The report was prepared 400 acres of vacant land and based on eleven very widely spaced exploratory borings. The second investigation included drilling thirty-two borings. A total of ten borings are located within Phase 2 of the proposed development. The reports have been previously submitted and are attached in Appendix A of this letter.

The subsurface investigations and the soil samples were used to evaluate of the subsurface conditions of the site such as subsurface soils, groundwater, and bedrock conditions present at the site and the potential impact to future site grading and development of the property. Furthermore, our investigations evaluated the properties of the subsurface soils and bedrock and their impact to future construction. Detailed descriptions of subsurface soils, bedrock, and groundwater can be found in our previously published reports.

SUBSURFACE CONDITIONS

Subsurface conditions were previously investigated by drilling a total of forty-three (43) widely spaced borings across the overall Ranch site. A total of 10 borings are located in Phase 2 of the Ranch development, generally in the western half of the phase. Locations of the previous borings are presented in Fig. 1. Our interpretation of mapping of geological and engineering conditions by Charles S. Robinson and Associates, Inc are presented on Figs. 2 and 3, respectively. Exploratory boring logs from our previous investigations and laboratory test results can be found in Appendix A.

Generally, the near-surface soils encountered in our exploratory borings located within Phase 2 of the Ranch generally consisted of sand and clay materials underlain by bedrock. The borings were drilled to the maximum depths of up to 45 feet. Claystone and shale bedrock were encountered at depths of between 16 and 37 feet in three of the ten borings drilled in this phase. Bedrock was not encountered in the remaining borings in Phase 2. Groundwater was encountered at depths between 18 to 38 feet in five of the ten borings located in Phase 2.

GEOLOGIC HAZARDS AND ENGINEERING CONSTRAINTS

We did not identify geologic hazards that we believe preclude development of the project for the planned purpose. Conditions we identified at the site that may pose hazards or constraints to development include expansive soil and bedrock, the presence of steep, unstable and potentially unstable slopes adjacent to drainages, and erosion potential. Slopes outside of the drainages appear to be stable. Regional geologic conditions that impact the site include seismicity and radioactivity. We believe each of these conditions can be mitigated with engineering design and construction methods commonly employed in this area. These conditions are discussed in greater detail in the sections that follow.

The Engineering Geology classification developed by Charles Robinson (1977) was considered for evaluation of the parcel of Silver Cross Ranch currently named The Ranch and is mapped as described below. Portions with steep, unstable and potentially unstable slopes are shown in Fig. 3, map unit 5C. These areas are typically adjacent to physiographic flood plains that are undergoing active bank

erosion. The civil engineer should determine the flood potential and inundation areas for site design. The other issues are site-wide concerns and are not depicted in Fig. 3.

Map Unit “3B” depicts expansive and potentially expansive alluvium, colluvium and bedrock on flat to moderate slopes (0-12%).

Map Unit “5C” depicts unstable or potentially unstable colluvium or bedrock on steep slopes (12-30%).

Expansive Soils

Laboratory testing of samples obtained from the site showed the alluvium-colluvium soils (Qac) and claystone bedrock (Kp) are expansive when wetted. Issues associated with the expansive soil and bedrock can be mitigated through engineered foundations and floor systems, possibly in conjunction with ground modification such as sub-excavation and reworking the soil to create a layer of low-swelling, moisture conditioned fill, as discussed in the previously published reports.

Unstable Slopes

Areas with unstable or potentially unstable slopes were observed in and adjacent to Jimmy Camp Creek. Down-cutting erosion has over-steepened slopes. Over-steepened slopes are subject to creep and slump failure. A method to reduce risk is to avoid the slopes. A reasonable rule of thumb is to limit development to areas outside of a 3:1 (horizontal to vertical) line from the base of the steep slope. Grading to flatten slopes is an alternative, along with erosion protection.

Flooding

Information presented in the “Flood Insurance Rate Map” (FIRM), Map Numbers 08041C0958G, effective date December 7, 2018, indicates the areas of lower elevation directly adjacent to Jimmy Camp Creek physiographic floodplain has a 0.2% annual chance flood hazard. The majority of proposed development within the overall 400 acre Ranch site and the 310 acre, Phase 2 portion of the Ranch development is outside areas mapped as prone to surface flooding. The project Civil Engineer should determine the flood potential and design surface drainage.

Erosion

The subject parcel contains moderate to steep slopes in areas adjacent to Jimmy Camp Creek. Site soils are dry clays and sands and are susceptible to the effects of water erosion. Maintaining vegetative cover and providing engineered surface drainage will reduce the potential for erosion.

Seismicity

This area, like most of central Colorado, is subject to a degree of seismic activity. Geologic evidence indicates that movement along some Front Range faults has occurred during the last two million years (Quaternary). We believe the soils on the property classify as Site Class D (stiff soil) according to the 2015 International Building Code (2015 IBC).

Economic Minerals and Underground Mines

We doubt the material we encountered in our borings could be economically mined or permitted given its small extent and surrounding land uses. Energy fuels such as uranium, oil, and gas may or may not be present. The bedrock formation found historically does not contain mineable lenses of coal.

Radon and Radioactivity

We believe no unusual hazard exists from naturally occurring sources of radioactivity on this site. The cited study indicates the materials found in our borings are not likely associated with the production of radon gas and concentrations in excess of EPA guidelines. Radon tends to collect in below-grade, residential areas due to limited outside air exchange and interior ventilation. Passive and active mitigation procedures are commonly employed in this region to effectively reduce the buildup of radon gas. Measures that can be taken after a structure is enclosed during construction include installing a blower connected to the foundation drain (if present) and sealing the joints and cracks in concrete floors and foundation walls. If the occurrence of radon is a concern, we recommend the structures be tested after they are enclosed, and mitigation systems installed to reduce the risk.

LIMITATIONS

This letter was prepared as a supplemental letter to the previously prepared report. The recommendations and conclusions presented in this letter were prepared based on conditions disclosed by our exploratory borings, geologic reconnaissance, engineering analysis, and our experience. Variations in the subsurface conditions not indicated by the borings are possible and should be expected.

We believe this level of investigation was conducted with that level of skill and care normally used by geotechnical engineers practicing under similar conditions. No warranty, express or implied, is made.

If we can be of further service in discussing the contents of this letter or in the analysis of the influence of the subsurface conditions on the design of the project, please call.

Very truly yours,

CTL | THOMPSON, INC.

Patrick Foley, EIT
Staff Engineer

Reviewed by:

William C. Hoffmann, Jr., P.E
Senior Engineering Consultant

PF:WCH:cw
Via email: SRossoll@laplatallc.com

REFERENCES

1. Colorado Geological Survey. (1991). Results of the 1987-88 EPA Supported Radon Study in Colorado, with a Discussion on Geology, Colorado Geological Survey Open File Report 91-4.

2. Federal Emergency Management Agency, Flood Insurance Rate Map, Map Number 08041C0958G, effective date December 7, 2018.

3. International Building Code (2015 IBC).

4. Kirkham, R.M. & Rogers, W.P. (1981). Earthquake Potential in Colorado. Colorado Geological Survey, Bulletin 43.

5. Scott, G.R., Taylor, R.B., Epis, R.C., and Wobus, R.A. (1976). Geologic Map of Pueblo 1 degree x 2 degrees quadrangle, south-central, Colorado, Colorado Geological Survey.

6. Robinson and Associates, Inc. (1977). El Paso County, Colorado Potential Geologic Hazards and Surficial Deposits, Environmental and Engineering Geologic Maps and Tables for Land Use.

COLORADO SPRINGS
OLYMPIC CITY USA

Geologic Hazard Study Report

Applicant:	La Plata Communities, LLC	Telephone:	719-867-2256
Address:	9540 Federal Drive	Email:	chumphrey@laplatallc.com
City/State:	Colorado Springs, Colorado 80921	Fax:	
Zip Code:	80921		

The following documents have been included and considered as part of this report (checked off by individual(s) preparing the geologic report):

- [x] Development Plan
- [ ] Landscape Plan (if applicable)
- [ ] Grading Plan
- [ ] Drainage Report (necessary if debris and/or mud flow hazard is present)

ENGINEER'S STATEMENT

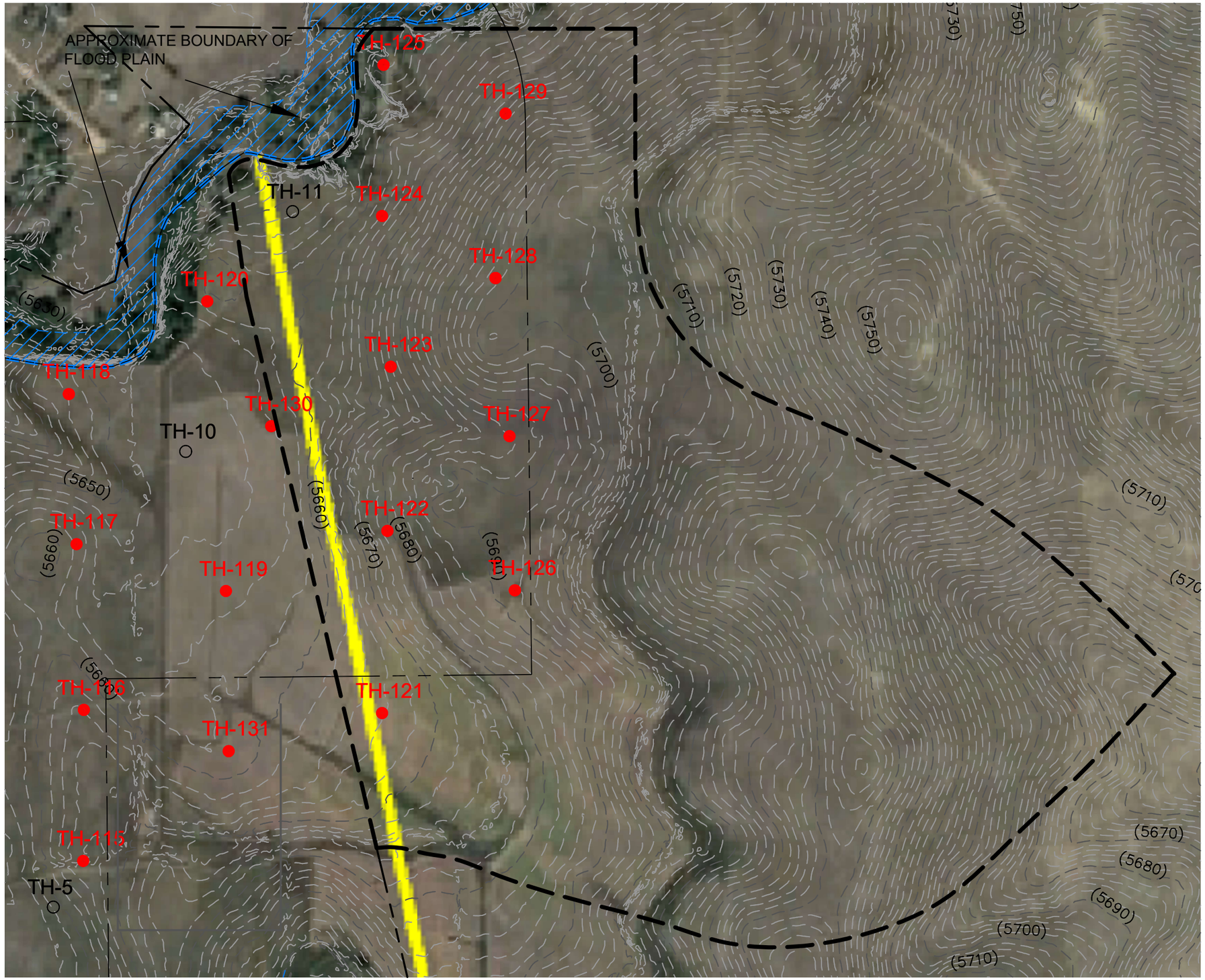
I hereby attest that I am qualified to prepare a Geologic Hazard Study in accordance with the provisions of Section 504 of the Geologic Hazards Ordinance of Colorado Springs. I am qualified as:

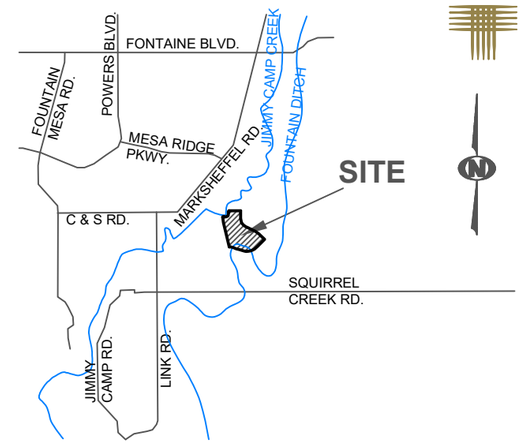
- [ ] A Professional Geologist as defined by CRS 34-1-201(3); or,
- [x] A Professional Engineer as defined by Board Policy Statement 50.2 - "Engineers in Natural Hazard Areas" of the Colorado State Board of Registration for Professional Engineers and Professional Land Surveyors. Board authority as defined by CRS 12-25-107(1).

Submitted by: CTL|Thompson, Inc. (Willaim C. Hoffmann, Jr.) Date: May 11, 2022

This Geologic Hazard Study is filed in accordance with the Zoning Code of Colorado Springs, 2001, as amended.

City Engineer **Date** **Planning & Development Manager** **Date**



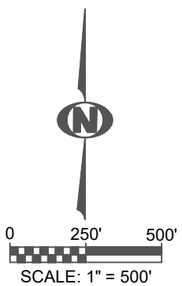


VICINITY MAP

(NOT TO SCALE)

LEGEND:

TH-4 ●	APPROXIMATE LOCATION OF EXPLORATORY BORING DRILLED UNDER CTL|T PROJECT NO. CS19053.001-115, DATED APRIL 1, 2019.
TH-110 ○	APPROXIMATE LOCATION OF EXPLORATORY BORING DRILLED UNDER CTL|T PROJECT NO. CS19053.001-115, DATED NOVEMBER 18, 2020.
	EXISTING TOPOGRAPHY
	PROJECT BOUNDARY (PHASE 2)
(5700)	CONTOUR ELEVATION



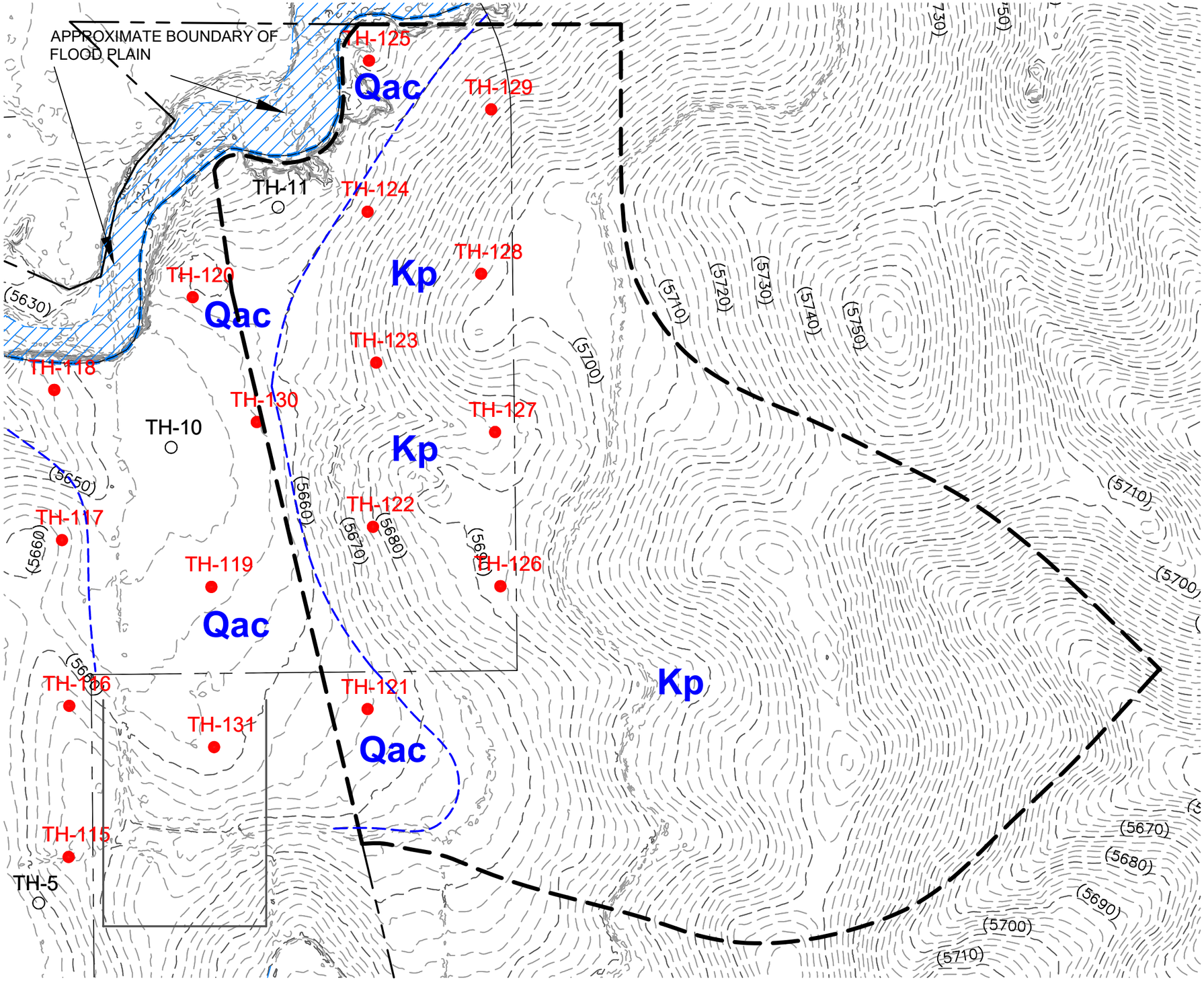
SCALE: 1" = 500'

NOTE:
BASE DRAWING WAS PROVIDED BY CLASSIC CONSULTING (PROJECT NO. 2550.00, DATED FEBRUARY 19, 2019). AERIAL PHOTOGRAPH PROVIDED BY GOOGLE EARTH.

Location of Exploratory Borings

LA PLATA COMMUNITIES
THE RANCH, PHASE 2
CTL|T PROJECT NO. CS19053.001-115 L2

FIG. 1



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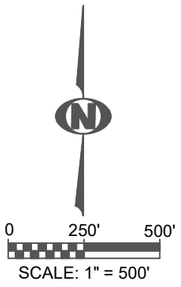
	PROJECT BOUNDARY
	EXISTING TOPOGRAPHY

GEOLOGIC UNITS AND (MODIFIERS)

	SURFICIAL GEOLOGIC CONTACTS
Qac	ALLUVIUM (CLAYEY AND SILTY SAND, AND SANDY CLAY) DEPOSITED IN PRESENT STREAM VALLEY'S AND SLOPE WASH COLLUVIUM. HOLOCENE AGE.
Kp	PIERRE SHALE. GRAY, BLACK AND OLIVE COLORED, SILICEOUS CLAYSTONE OVER FISSILE SHALE. LATE CRETACEOUS.

NOTES:
1. BASE DRAWING WAS PROVIDED BY CLASSIC CONSULTING (PROJECT NO. 2550.00, DATED FEBRUARY 19, 2019).
2. ALL BOUNDARIES SHOWN SHOULD BE CONSIDERED APPROXIMATE. THEY ARE BASED UPON A SUBJECTIVE INTERPRETATION OF PUBLISHED MAPS, AERIAL PHOTOGRAPHS AND A BRIEF FIELD RECONNAISSANCE. CHANGES IN THE MAPPED BOUNDARIES SHOWN ARE POSSIBLE AND SHOULD BE EXPECTED WITH MORE DETAILED WORK AND FURTHER INFORMATION. ALL INTERPRETATIONS AND CONDITIONS SHOWN ARE PRELIMINARY AND FOR LAND-USE PLANNING ONLY.

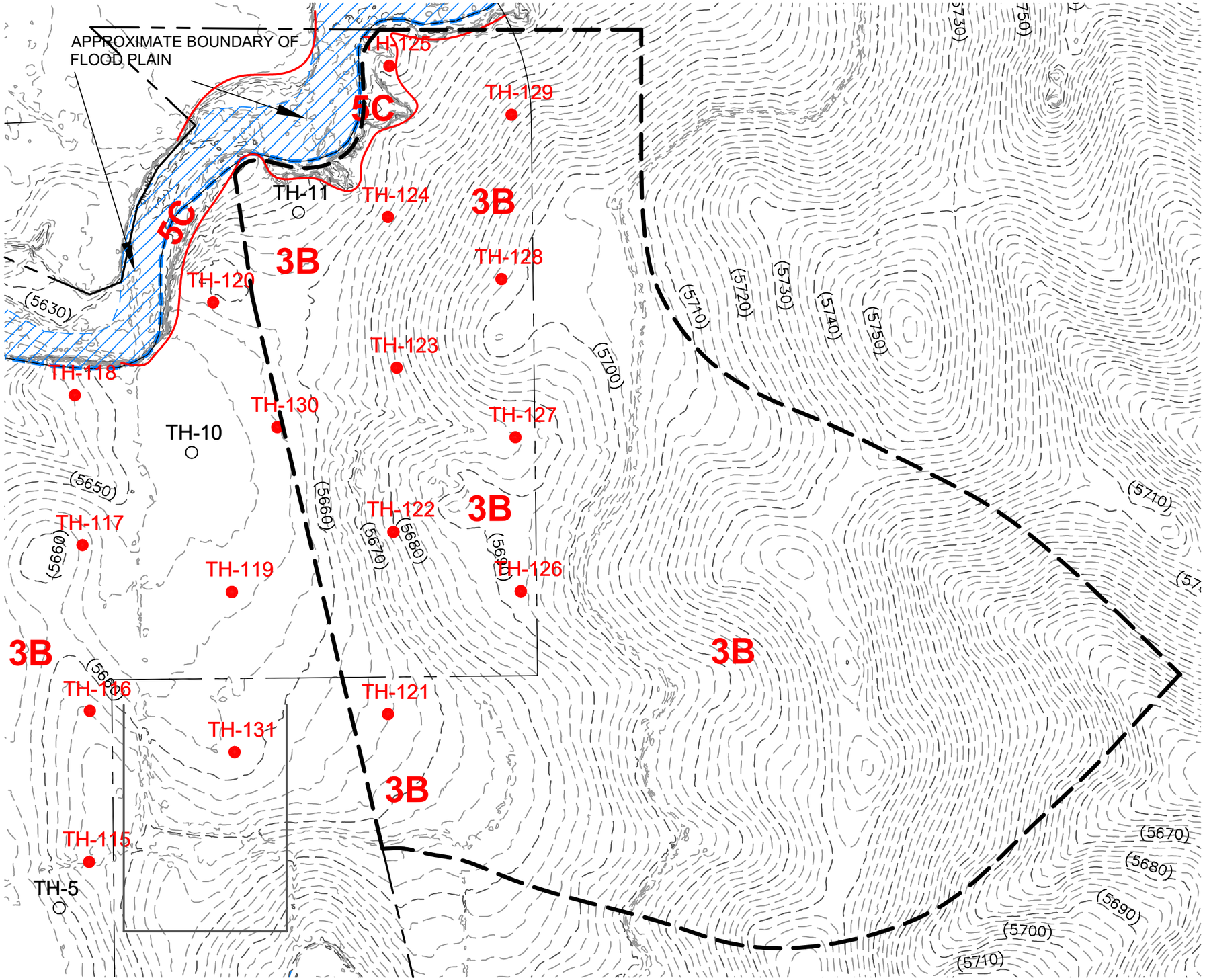


SCALE: 1" = 500'

Surficial Geologic Conditions

FIG. 2

LA PLATA COMMUNITIES
THE RANCH, PHASE 2
CTL|T PROJECT NO. CS19053.001-115 L2



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----	PROJECT BOUNDARY
	EXISTING TOPOGRAPHY

ENGINEERING UNITS AND (MODIFIERS)

	ENGINEERING CONTACTS
3B	EXPANSIVE AND POTENTIALL EXPANSIVE SOIL AND BEDROCK ON FLAT TO MODERATE SLOPES (0 - 12%).
5C	UNSTABLE OR POTENTIALLY UNSTABLE COLLUVIUM OR BEDROCK ON STEEP SLOPES. EMPHASIS ON SLOPE STABILITY, CONTROL OF CUTS AND SURFACE DRAINAGE.

NOTES:

1. BASE DRAWING WAS PROVIDED BY CLASSIC CONSULTING (PROJECT NO. 2550.00, DATED FEBRUARY 19, 2019).
2. ALL BOUNDARIES SHOWN SHOULD BE CONSIDERED APPROXIMATE. THEY ARE BASED UPON A SUBJECTIVE INTERPRETATION OF PUBLISHED MAPS, AERIAL PHOTOGRAPHS AND AN INITIAL FIELD RECONNAISSANCE. CHANGES IN THE MAPPED BOUNDARIES SHOWN ARE POSSIBLE AND SHOULD BE EXPECTED WITH MORE DETAILED WORK AND FURTHER INFORMATION. ALL INTERPRETATIONS AND CONDITIONS SHOWN ARE PRELIMINARY AND FOR INITIAL LAND-USE PLANNING ONLY.
3. MAP LEGEND IS MODIFIED FROM CHARLES S. ROBINSON & ASSOCIATES, INC., GOLDEN, COLORADO, DATED 1977.

N

0 250' 500'

SCALE: 1" = 500'

Engineering Conditions

LA PLATA COMMUNITIES
THE RANCH, PHASE 2
CTL|T PROJECT NO. CS19053.001-115 L2

FIG. 3