

Architectural
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Materials Testing
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SOIL AND GEOLOGY STUDY

Center Ice View
Driftwood Estates, Filing No. 1
El Paso County, Colorado

PREPARED FOR:

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JOB NO. 194552

January 11, 2024

Respectfully Submitted,

RMG – Rocky Mountain Group

A handwritten signature in blue ink that reads 'Kelli Zigler'.

Kelli Zigler
Project Geologist

Reviewed by,

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1.0 GENERAL SITE AND PROJECT DESCRIPTION

1.1 Project Location

The project lies in the NE¼ of Section 33, Township 11 South, Range 67 West of the 6th Principal Meridian in El Paso County, Colorado. The site is generally located west of the intersection of Baptist Road and Hay Creek. The approximate location of the site is shown on the Site Vicinity Map, Figure 1.

1.2 Existing and Proposed Land Use

The site currently consists of one parcel (per the El Paso County Assessor's website):

- Schedule No. 7133007024, currently addressed as 3275 Center Ice View, zoned RR-5, consists of approximately 10.54 acres of vacant land.

The site currently does not have an access road to the proposed build sites. Access to the property was through a shared gravel roadway extending from Hay Creek Road, south of the property. The gravel driveway transitions into a two-track trail near the southern property boundary. The two-track trail advances north through the drainageway and connects to an easement along the northern property boundary. Dellacroce gravel pit is located to the east of the property and is considered an active gravel pit.

1.3 Project Description

It is our understanding the parcel is to be subdivided into two lots. According to the land survey, provided by our Client from LWA Land Surveying, Inc., Lot 1 is to consist of 7.71 acres and Lot 2 is to consist of 5.01 acres. Each lot is to eventually contain a single-family residence, a well, and an OWTS - On-site Wastewater Treatment System. It is anticipated, the newly proposed Lot 1 is to retain the 3275 Center Ice View address and Lot 2 is to be provided a new address. The approximate location of the site is presented in Figure 2, Proposed Lot Layout Plan.

1.4 Previous Investigations

A Wastewater Study was performed prior to this study and is listed below:

1. *Wastewater Study, Driftwood Estates, Filing No. 1, Center Ice View, Schedule NO. 7133007024, El Paso County, Colorado*, RMG – Rocky Mountain Group, Job No. 194552, dated October 12, 2023.

Additionally, a geotechnical investigation completed by others was reviewed and is listed below:

1. *Soils Report, 3275 Center Ice View*, prepared by A Better Soil Solution, Job #23-022, last dated June 21, 2023.

The findings, conclusions and recommendations contained in this reports were considered during the preparation of this report.

2.0 QUALIFICATIONS OF PREPARERS

This Soil and Geology Study was prepared by a professional geologist as defined by Colorado Revised Statutes section 34-1-201(3) and by a qualified geotechnical engineer as defined by policy statement 15, "Engineering in Designated Natural Hazards Areas" of the Colorado State Board of Registration for Professional Engineers and Professional Land Surveyors. (Ord. 96-74; Ord. 01-42)

The principle investigators for this study are Kelli Zigler P.G., and Tony Munger, P.E. Ms. Zigler is a Professional Geologist as defined by State Statute (C.R.S 34-1-201) with over 23 years of experience in the geological and geotechnical engineering field. Ms. Kelli Zigler holds a B.S. in Geology from the University of Tulsa. Ms. Zigler has supervised and performed numerous geological and geotechnical field investigations throughout Colorado.

Tony Munger, P.E. is a licensed professional engineer with over 23 years of experience in the construction engineering (residential) field. Mr. Munger holds a B.S. in Architectural Engineering from the University of Wyoming

3.0 STUDY OVERVIEW

The purpose of this investigation is to characterize the general geotechnical, geologic site conditions and present our opinions of the potential effect of these conditions on the proposed development within the town of Peyton, El Paso County, Colorado. As such, our services exclude evaluation of the environmental and/or human, health related work products or recommendations previously prepared, by others, for this project.

Revisions to the conclusions presented in this report may be issued based upon submission of the Development Plan. This study has been prepared in accordance with the requirements outlined in the El Paso County Land Development Code (LDC) specifically Chapter 8, last updated August 27, 2019. Applicable sections include 8.4.8 and 8.4.9, and the El Paso County Engineering Criteria Manual (ECM), specifically Appendix C last updated July 9, 2019.

3.1 Scope and Objective

The scope of this study is to include a review of pertinent, publically available documents including, but not limited to, previous geologic and geotechnical reports, overhead and remote sensing imagery, published geology and/or hazard maps, design documents, etc.

The objectives of our study are to:

- Identify geologic conditions present on the site
- Analyze potential negative impacts of these conditions on the proposed site development
- Analyze potential negative impacts to surrounding properties and/or public services resulting from the proposed site development as it relates to existing geologic conditions
- Provide our opinion of suitable techniques that may be utilized to mitigate any potential negative impacts identified herein

This report presents the findings of the study performed by RMG-Rocky Mountain Group relating to the geologic conditions of the above-referenced site. Revisions and modifications to this report may be issued subsequently by RMG, based upon:

- Additional observations made during grading and construction which may indicate conditions that require re-evaluation of some of the criteria presented in this report
- Review of pertinent documents (development plans, plat maps, drainage reports/plans, etc.) not available at the time of this study

- Comments received from the governing jurisdiction and/or their consultants subsequent to submission of this document

3.2 Site Evaluation Techniques

The information included in this report has been compiled from several sources, including:

- Geologic and topographic maps
- Review of selected publicly available, pertinent engineering reports
- Exploratory test borings and test pits
- Available aerial photographs
- Geologic research and analysis

Geophysical investigations were not considered necessary for characterization of the site geology. Monitoring programs, which typically include instrumentation and/or observations for changes in groundwater, surface water flows, slope stability, subsidence, and similar conditions, are not known to exist and were not considered applicable for the scope of this report.

3.3 Additional Documents

Additional documents reviewed during the performance of this study are included in Appendix A.

4.0 SITE CONDITIONS

4.1 Existing Site Conditions

The site is vacant land, bound to the north by open space associated with the property to the north, to the east by Dellacroce gravel pit, to the west by Forest Lakes Metro District, and to the south by undeveloped parcels. The site is located primarily within the Beaver Creek Drainage. Beaver Creek is located north of the property and trends down from the mountains west of the site to Monument Creek, east of the site. An unnamed drainageway transverses the southern portion of the site.

4.2 Topography and Vegetation

The site surface characteristics were observed to consist of rolling hills with low lying grasses and weeds across the entire site. Deciduous trees are scattered across the northern portion of the property and denser along the creek banks on the southern portion of the property. The creek bed was dry at the time of our site visit September 21, 2023.

4.3 Aerial Photographs and Remote-Sensing Imagery

Personnel of RMG reviewed aerial photos available through Google Earth Pro dating back to 1947, Colorado Geological Survey (CGS) surficial geologic mapping, and historical photos by historicaerials.com dating back to 1947. Prior to 1969, the area was open rolling hills with relatively little development. In imagery dated in 1983, the Dellacroce pit and Bristlecone Lake were visible. Since 1983, Bristlecone Lake has been partially or completely filled with water, Dellacroce has continued to expand east and west, and the subject site has remained relatively unchanged.

5.0 FIELD INVESTIGATION AND LABORATORY TESTING

The subsurface conditions below proposed Lot 1, were reportedly investigated by A Better Soil Solution, Inc. on June 12, 2023 as part of the lot-specific *Soils Report*, reference above. According our Client, the property owner, the test borings were performed within the location of the proposed single-family residence. Additionally, two test pits were observed by RMG (one on each new proposed lot) for the preliminary wastewater study. The *Soils Report* is discussed more below and included in Appendix B.

5.1 Drilling (by others)

Two test borings were reportedly performed by A Better Soil Solution to explore the subsurface soil conditions and provide recommendations for design and construction of the proposed foundation on Lot 1. The test borings were extended to depths of approximately 15 feet below the existing ground surface. The results of their investigations are presented in the referenced reports, attached and included in Appendix B. The approximate locations of the A Better Soil Solution test borings are presented on the Engineering and Geology Map, Figure 5.

5.2 Test Pits (RMG) - OWTS Visual and Tactile Evaluation

One test pit was observed by RMG on each new lot to explore the subsurface soils anticipated in the general vicinity of proposed on-site wastewater treatment systems. The number of test pits is in accordance with Regulations of the El Paso County Board of Health, Chapter 8, On-site Wastewater Treatment Systems (OWTS) as required by 8.5.D.3.a.

The test pits were located by RMG, based on the ALM Exclusion provided by the Client, obtained from Classic Consulting, showing the proposed home locations on each lot. The two test pits were excavated to approximately 8 feet below the ground surface by Munson Landscaping and observed by RMG at the time of excavation. The approximate locations of the test pits are presented on the Engineering and Geology Map, Figure 5.

5.3 OWTS Visual and Tactile Evaluation

The visual and tactile information obtained by RMG for the Wastewater Study was considered in the preparation of this investigation. Bedrock was not encountered in the 8-foot deep test pits. Neither restrictive layers nor seasonal high groundwater were encountered in the test pits.

Soil and groundwater conditions at the site are suitable for individual treatment systems. However, due to the soil having greater than 35% rock, the LTAR of the on-site material is greater than 0.8 which will require the use of an "engineered system". It should be noted that the LTAR values stated here are for the test pit locations performed for the *Wastewater Study* only. The LTAR values may change throughout the site. If an LTAR value of less than 0.35 (soil types 3A to 5) or greater than 0.80 (soil type 0) is encountered at the time of the site specific OWTS evaluation, an "engineered system" will be required.

5.4 Groundwater

Groundwater was not encountered in the tests pits observed by RMG or reported in the test hole logs by A Better Soils Solution, Inc. No indications of redoximorphic conditions were observed in the RMG test pits.

It should be noted that in granular soils and bedrock, some perched water conditions might be encountered due to the variability of the soil profile. Isolated sand and gravel layers within the soil, even those of limited thickness and width, can carry water in the subsurface. Groundwater may also flow atop the underlying bedrock. Builders and planners should be cognizant of the potential for the occurrence of subsurface water conditions during on-site construction, in order to evaluate and mitigate each individual problem as necessary.

Fluctuations in groundwater and subsurface moisture conditions may occur due to variations in rainfall, irrigation, changes in surface drainage patterns, and other factors not readily apparent at this time. Development of the property and adjacent properties may also affect groundwater levels. In the absence of irrigation, we anticipate a 4 to 6-foot fluctuation in groundwater levels, perched or within the fractured bedrock, should be expected.

6.0 SOIL, GEOLOGY, AND ENGINEERING GEOLOGY

The site is located within the central portion of the Great Plains Physiographic Province. The site exists within the southern portion of a large structural feature known as the Denver Basin. In general, the geology at the site consists of alluvium and eolian composed of sand, silt, clay, gravel, and occasional boulders that overlie the Dawson Arkose sandstone.

6.1 Subsurface Soil Conditions

The subsurface materials, as reported by A Better Soil Solution, Inc., on their Solid Stem Auger (STA) Logs for test hole TH-1 and TH-2, were identified as poorly graded silty sand (SM) and clayey sand (SC), extending to 15 feet.

Additional descriptions and the interpreted distribution (approximate depths) of the subsurface materials are presented in their *Soils Report* included in Appendix B.

6.2 Bedrock Conditions

In general, the bedrock (as mapped by Colorado Geologic Survey - CGS) beneath the site is considered to be part of the Dawson Formation. The bedrock was reportedly not encountered in the test holes by A Better Soil Solution, Inc. or the test pits by RMG. The Dawson formation is partially cemented and interbedded with seams of claystone. Claystone was not observed in the RMG test pits or reported on the test hole logs by A Better Soil Solution, Inc. However, the Dawson Formation is known to contain a high degree of variation both vertically and laterally. Excavations may encounter either sandstone or claystone, even if not indicated in the referenced *Soils Report* and *Wastewater Study*. The approximate boundary between subsurface materials, as noted on the test holes or test pit logs, may transition gradually and vary across the site. If bedrock were encountered, the Dawson can readily be excavated with standard construction equipment such as a front-end loader, skid loader, and/or (mini) excavator.

6.3 U.S. Soil Conservation Service

The United States Department of Agriculture (USDS) and the Natural Resources Conservation Services (NRCS) soil survey identified the following soil types on the property. The soil conditions as indicated by the USDS data are anticipated to consist of:

- 38 – Jarre-Tecolote complex with 8 to 65 percent slopes. The Jarre-Tecolote complex was mapped by the USDA to encompass the majority of the site. Properties of the Jarre-Tecolote complex include well drained soils, depth of the water table is anticipated to be greater than 80 inches, runoff is anticipated to be medium, frequency of flooding and/or ponding is none, and landforms include alluvial fans;
- 65 – Perrypark gravelly sandy loam, 3 to 9 percent slopes. The Perrypark gravelly sandy loam was mapped to encompass a band through the southern end of Lot 1 and the very northern portion of Lot 2. Properties of the Perrypark gravelly sandy loam include well drained soils, depth of the water table is anticipated to be greater than 80 inches, runoff is anticipated to be medium, frequency of flooding and/or ponding is none, and landforms include alluvial fans;
- 69 – Peyton-Pring complex, 8 to 15 percent slopes. This soil condition is located outside of the proposed residence and OWTS locations, and has been eliminated from this study.

The USDA Soil Survey Map is presented in Figure 4.

6.4 General Geologic Conditions

Based on review of relevant geologic maps, we identified the geologic conditions (listed below) affecting the development, as shown on the Engineering and Geology Map, Figure 5.

The site generally consists of alluvium deposits of the Holocene and Pleistocene overlying the Dawson Formation at depth. The following general geologic units were mapped/observed at the site:

- *Qg₂*: Gravelly deposit two (early middle Pleistocene) – light brown to tan, thin gravelly deposits on terraces, poorly sorted with low clay contents. Thickness is estimated to be approximately 70 feet above streams on the plains.
- *Qcs*: Colluvium and sheet wash alluvium deposits, undivided (Holocene and late Pleistocene) - silty to gravelly hummus-rich alluvium along all valleys, poorly sorted with low clay contents. Estimated thickness was not noted on the geologic map.
- *TKda₃* – Dawson Formation, facies three (Pleistocene) – sandstone bedrock, interbedded with sandy claystone seams.
- *ss* – steep slopes – areas with slopes greater than 20 percent. These areas are to be considered a No Build Zone until further investigation is completed to determine feasibility of future development.
- *sw* – seasonally wet – drainageway anticipated to contain surface water during heavy precipitation events.

6.5 Engineering Geology

One engineering geology unit and one additional unit were mapped at the site and are shown on the Engineering and Geology Map, Figure 5.

- *2D* – Eolian deposits generally on flat to gentle slopes of upland areas.

6.6 Structural Features

Structural features such as schistosity, folds, zones of contortion or crushing, joints, shear zones or faults were not observed by RMG on the site or in the surrounding area.

6.7 Surficial (Unconsolidated) Deposits

Lake and pond sediments, swamp accumulations, sand dunes, marine terrace deposits, talus accumulations, and creep was not observed on the site. Slump and slide debris were also not observed on the site.

6.8 Features of Special Significance

Features of special significance such as accelerated erosion, (advancing gully head, badlands, or cliff reentrants) were not observed on the property. Features indicating settlement or subsidence such as fissures, scarplets, and offset reference features were not observed on the study site or surrounding areas.

Features indicating creep, slump, or slide masses in bedrock and surficial deposits were not observed on the property.

6.9 Groundwater and Drainage of Surface Water

The overall topography of the site slopes down to the south and east. Groundwater was reportedly not encountered in the 15-foot deep borings by others. Indications of redox was not observed in the two 8-foot deep test pits. Redox (redoximorphic) refers to the features indicating the fluctuation of groundwater.

It should be noted that in granular soils, some subsurface water conditions might be encountered due to the variability of the soil profile. Isolated sand and gravel layers within the soil, even those of limited thickness and width, can convey subsurface water. Subsurface water may also flow atop the interface between the upper soils and the underlying bedrock. While not indicative of a "groundwater" condition, these occurrences of subsurface water migration can (especially in times of heavy rainfall or snowmelt) result in water migration into the excavation or (once construction is complete) the building envelope. Builders and planners should be cognizant of the potential for the occurrence of subsurface water conditions during on-site construction, and be prepared to evaluate and mitigate each individual occurrence as necessary.

Fluctuations in groundwater and subsurface moisture conditions may occur due to variations in rainfall and other factors not readily apparent at this time. Development of the property and adjacent properties may also affect groundwater levels.

6.10 Flooding and Surface Drainage

Based on our review of the Federal Emergency Management Agency (FEMA) Community Panel No. 08041C0267G and the online ArcGIS El Paso County Risk Map, the entire site lies outside of a 100-year floodplain.

Zone X is defined by FEMA as an area of minimal flood hazard that is determined to be outside the Special Flood Hazard Area and higher than the elevation of the 0.2-percent-annual-chance (or 500-year) flood. The entire site lies within Zone X. The FEMA Map is presented in Figure 6.

7.0 ECONOMIC MINERAL RESOURCES

Under the provision of House Bill 1529, it was made a policy by the State of Colorado to preserve for extraction commercial mineral resources located in a populous county. Review of the *El Paso Aggregate Resource Evaluation Map, Master Plan for Mineral Extraction, Map 2* indicates the site is identified as Mesa Gravel deposits. The deposits are composed of sand, gravel, silt, and clay deposited by older streams and slope wash on upland mesas which slope gently from the mountains. The entire site is underlain primarily by a sedimentary formation of Tertiary age related to uplift and erosion of the Front Range.

According to the *Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands*, the site is not mapped within the Denver Basin Coal Region. The area may be underlain by strata that contains coal. Coal was not observed in the RMG test pits or reported in the *Soils Report* by others. This area is not prospective for metallic mineral resources. No oil and gas wells are drilled in the area. Alluvial deposits are commonly mined in the region for sand and gravel. There is an active gravel pit directly east of the site.

8.0 IDENTIFICATION AND MITIGATION OF POTENTIAL GEOLOGIC CONDITIONS

The El Paso County Engineering Criteria Manual recognizes and delineates the difference between geologic hazards and constraints. A *geologic hazard* is one of several types of adverse geologic conditions capable of causing significant damage or loss of property and life. Geologic hazards are defined in Section C.2.2 Sub-section E.1 of the ECM. A *geologic constraint* is one of several types of adverse geologic conditions capable of limiting or restricting construction on a particular site. Geologic constraints are defined in Section C.2.2 Sub-section E.2 of the ECM (1.15 Definitions of Specific Terms and Phrases). The following geologic hazards and constraints were considered in the preparation of this report and are not anticipated to pose a significant risk to the proposed development:

- Avalanches
- Debris Flow-Fans/Mudslides
- Ground Subsidence and Abandoned Mining Activity
- Landslides
- Rockfall
- Steeply Dipping Bedrock
- History of Landfill
- Valley Fill
- Downhill/Down-slope Creep
- Corrosive Minerals

The following sections present the geologic conditions that have been identified on (or anticipated to be on) the property:

8.1 Compressible Soils - *constraint*

Based on the test pits observed at the time of the *Wastewater Study* and review of the test hole logs by others, sand with varying amounts of silt and clay underlies the entire site. It is anticipated that the on-site sand soils will be encountered within each building excavation. In some cases, the sands encountered in the excavations may be loose.

Mitigation

If loose soils are encountered beneath the proposed foundations, mitigation will be required. Mitigations are anticipated to consist of additional compaction to achieve suitable allowable bearing pressures. Fluctuations in material density may occur. In some cases, removal and recompaction of up to 2 to 3 feet of soil may be required. The removal and recompaction shall extend a minimum of the same distance beyond the building perimeter, and at least that same distance beyond the perimeter of counterfort and "T" wall footings. The use of track-mounted excavation equipment, or other low ground pressure equipment, is recommended on loose soils to reduce the likelihood of loss of stability during excavation.

The potential for settlement is directly related to saturation of the soils below the foundation areas. Therefore, good surface and subsurface drainage is critical in these areas in order to reduce the potential for saturation of the soils. Provided appropriate mitigations and/or foundation design adjustments are implemented as recommended in lot-specific soil reports, the presence of compressible soil is not considered to pose a risk to the proposed structures.

8.2 Potentially Expansive Soils and Bedrock – *constraint*

Based on our experience with the soils and bedrock in the vicinity, the upper alluvial soils generally possess low swell potential. However, seams of sandy clay may be present even where non are indicated on the test hole logs by others. The sandy clay generally possess low to moderate swell potential. Expansive bedrock was not reported in the 15-foot deep test holes. It is anticipated if lenses or seams of expansive soils are encountered at the time of the site-specific excavation observation, additional mitigations will be required at the time of the open excavation observation. These materials are readily mitigated with typical construction practices common to this region of El Paso County, Colorado.

Mitigation

Sporadic areas of expansive soils are anticipated within the overlying alluvial soils and underlying Dawson Formation. If expansive soils or bedrock are encountered beneath the foundations, mitigation will be required. Overexcavation and replacement with non-expansive (on-site or imported) soils is a suitable mitigation. Floor slabs bearing directly on expansive material should be expected to experience movement. Overexcavation and replacement has also been successful in reducing slab movement.

Provided the appropriate mitigations and/or foundation design adjustments are implemented as recommended in a lot-specific soil report, the presence of expansive soils or bedrock is not considered to pose a risk to the proposed structures.

8.3 Unstable or Potentially Unstable Slopes - *hazard*

Slopes greater than 25% are present within the northwest corner of Lot 1, within the southern portions of Lot 2, and along the banks of the drainageway. The banks along the drainageway show some limited weathering, as would be expected, but the erosional cuts appear to be stable in their current condition. The drainageway slopes down to the east.

Mitigation

Areas steeper than 25% are typically considered "No Build" zones. It is our opinion that the site slopes in excess of 25% shall be designated as "No Build" zones. These proposed "No Build" zones are shown on the Engineering and Geology Map, Figure 5. It is our understanding that no construction is currently proposed in these areas. However, if future construction is proposed in the "No Build" zone, slope stability analysis should be considered to determine the slopes have adequate factors of safety.

We believe the surficial soils will classify as Type C materials as defined by OSHA in 29CFR Part 1926, date January 2, 1990. OSHA requires temporary slopes made in Type C materials be laid back at ratios no steeper than 1.5:1 (horizontal to vertical) unless the excavation is shored or braced. Cut or fill along the eastern slope as part of the proposed construction is not anticipated and should be avoided, unless adequately benched into the bedrock. Long term cut slopes in the upper soil should be limited to no steeper than 3:1, horizontal to vertical.

8.4 Seasonally Fluctuating Surface Water and Groundwater – *constraint*

Based on the site observations, review of USGS topographic maps dating back to 1947, and review of Google Earth images dating back to 1999, springs do not appear to originate on the subject site. Groundwater was not encountered in the 8-foot deep test pits or reported in the 15-foot test holes by others. Isolated areas of seasonal shallow groundwater may exist. Fluctuating surface water within the drainageway should be anticipated during heavy rain storms and precipitation events.

Drilling reportedly occurred in June 2023, when seasonal groundwater levels are generally anticipated to be higher. Groundwater measurements are limited to the time of year measured and are considered snapshots only. Fluctuations in groundwater and subsurface moisture conditions may occur due to variations in rainfall and other factors not readily apparent at this time. Groundwater information obtained at the time of the preliminary investigations performed prior to any future land development may or may not be representative of the conditions present at the time of construction. Furthermore, the development processes (reshaping of the ground surface, installation of buried utilities, etc.) can significantly alter the depth and flow paths of the subsurface water. The construction of surrounding lots can also alter the amount and depth of subsurface groundwater below a given lot.

Mitigation

The proposed development is to consist of one single-family residential structure, a well, and OWTS on each lot. Construction is anticipated to consist of wood-framed structures atop a full or partial basement/crawlspace foundations. Based on the absence of groundwater at the time of drilling and the surrounding topography, shallow foundations are anticipated to have more than 6 feet separation from the underlying seasonally fluctuating groundwater. As noted in, Section 5.4, above, in the absence of irrigation, a 4 to 6-foot fluctuation in groundwater levels (perched on or contained within the underlying bedrock) is anticipated.

Foundations must have a minimum 30-inch depth for frost protection. Perimeter drains are recommended around portions of the structures which will have habitable or storage space located below the finished ground surface. Perimeter drains help reduce the risk of the intrusion of water into areas below grade.

Additional surface and subsurface recommendations should be followed as presented in the *Soils Report*, presented in Appendix B.

8.5 Scour, Erosion, Accelerated Erosion - *constraint*

Scour generally refers to a localized loss of soil, often around/near foundation elements, while erosion generally refers to lowering the ground surface over a wide area.

Visible evidence of ongoing accelerated erosion along the banks of the unnamed drainageway was not observed. Signs of significant and ongoing surface erosion were not observed across the site.

The entire site is susceptible to the effects of water erosion. Water flowing across the surface of the site, in an uncontrolled manner, can result in rills and gullies. Disturbance of the natural vegetation cover and long-term exposure of the surface materials increases the potential for significant erosion.

Mitigation

A drainage plan was not reviewed in conjunction with this study. The proposed single-family residences should be located sufficiently away from the top of the drainageway banks such that slope stability is not impacted by construction.

If construction is to occur on Lot 2, the home location should be located outside the No Build area, as indicated on the Engineering and Geology Map. Silt fencing should be installed (as needed) along the top of the drainageway to reduce the potential for erosion (during construction). It is also recommended that vegetative cover be maintained during and after construction.

Significant care should be taken (both during construction and in the final grading of the lots) to divert surface drainage and downspout discharge water around the structures to locations that will not significantly alter the overall drainage of the development. Any landscaping in the immediate vicinity of the proposed structures should utilize xeriscape techniques in order to minimize needed irrigation to maintain landscaping.

8.6 Faults and Seismicity - *hazard*

Based on review of the Earthquake and Late Cenozoic Fault and Fold Map Server provided by CGS located at <http://dnrwebmapgdev.state.co.us/CGSOnline/> and the recorded information dating back to November of 1900, Colorado Springs has not experienced a recorded earthquake with a magnitude greater than 1.6 during that period. The nearest recorded earthquakes over 1.6 occurred in December of 1995 in Manitou Springs, which experienced magnitudes ranging between 2.8 to 3.5. Additional earthquakes over 1.6 occurred between 1926 and 2001 in Woodland Park, which experienced magnitudes ranging from 2.7 to 3.3. Both of these locations are located near the Ute Pass Fault, which is greater than 10 miles from the subject site. Earthquakes felt at this site will most likely result from minor shifting of the granite mass within the Pikes Peak Batholith, which includes pull from minor movements along faults found in the Denver basin. It is our opinion that ground motions resulting from minor earthquakes may affect structures (and the surrounding area) at this site if minor shifting were to occur.

Mitigation

The Pikes Peak Regional Building Code, 2017 Edition, indicates maximum considered earthquake spectral response accelerations of 0.218g for a short period (S_s) and 0.059g for a 1-second period (S_1). Based on the results of our experience with similar subsurface conditions, we recommend the site be classified as Site Class B, with average shear wave velocities ranging from 2,500 to 5,000 feet per second for the materials in the upper 100 feet.

8.7 Radon – constraint

Radon is a gas that can move freely within the soil and air but can become trapped in structures constructed on the soil. Radon is a byproduct of the natural decay of uranium and radium. Trace amounts of radioactive nuclides are common in the soils and bedrock that underlie this region and site.

"Radon Act 51 passed by Congress set the natural outdoor level of radon gas (0.4 pCi/L) as the target radon level for indoor radon levels".

Northern El Paso County, in which the site is located, has an EPA assigned Radon Zone of 1. A radon Zone of 1 predicts an average indoor radon screening level greater than 0.4 pCi/L (picocuries per liter), which is above the recommended levels assigned by the EPA. *The EPA recommends corrective measures to reduce exposure to radon gas.*

All of the State of Colorado is considered EPA Zone 1 based on the information provided at https://county-radon.info/CO/El_Paso.html. Elevated hazardous levels of radon from naturally occurring sources are not anticipated at this site.

Mitigation

Radon hazards are best mitigated at the building design and construction phases. Providing increased ventilation of basements, crawlspaces, creating slightly positive pressures within structures, and sealing of joints and cracks in the foundations and below-grade walls can help mitigate radon hazards. Passive radon mitigation systems are also available.

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 the residence is enclosed during construction include installing a blower connected to the foundation drain and sealing the joints and cracks in concrete floors and foundation walls. If the occurrence of radon is a concern, it is recommended that the residence be tested after they are enclosed and commonly utilized techniques are in place to minimize the risk.

9.0 ON-SITE WASTEWATER TREATMENT SYSTEMS

It is our understanding that On-site Wastewater Treatment Systems (OWTS) are proposed for each lot. The site was evaluated in general accordance with the El Paso Land Development Code, specifically sections 8.4.8. Two 8-foot deep test pits were performed across the site to obtain a general understanding of the soil and bedrock conditions. The Test Pit Logs are presented in the *Wastewater Study*, Appendix C.

The United States Department of Agriculture (USDA) soil types encountered in our test pits consisted of sandy clay loam and sand. Limiting layers were not encountered in the test pits. The long term acceptance rates (LTAR) associated with the soils observed in the test pits of the on-site material is greater than 0.8. Signs of seasonal groundwater were not observed in the test pits.

Contamination of surface and subsurface water resources should not occur provided the OWTS sites are evaluated and installed according to the El Paso County Board of Health Guidelines and property maintained.

Treatment areas, at a minimum, must achieve the following:

- The treatment areas must be 4 feet above groundwater or bedrock as defined by the Definitions 8.3.4 of the Regulations of the El Paso County Board of Health, Chapter 8, *OWTS Regulations*, effective July 7, 2018;
- Prior to construction of an OWTS, an OWTS design prepared per *the Regulations of the El Paso County Board of Health, Chapter 8, OWTS Regulations* will need to be completed. A scaled site plan and engineered design will also be required prior to obtaining a building permit;
- Comply with any physical setback requirements of Table 7-1 of the El Paso County Department of Health and Environment (EPCDHE);
- Treatment areas are to be located a minimum 100 feet from any well (existing or proposed), including those located on adjacent properties per Table 7-2 per the EPCDHE;
- Treatment areas must also be located a minimum 50 feet from any spring, lake, water course, irrigation ditch, stream or wetland, and 25 feet from dry gulches;
- Other setbacks include the treatment area to be located a minimum 10 feet from property lines, cut banks and fill areas (from the crest);
- The new lots shall be laid out to ensure that the proposed OWTS does not fall within any restricted areas, (e.g. utility easements, right of ways, No Build Zones). Based on the test pit observations, the parcel has a minimum of two locations for the OWTS.

Soil and groundwater conditions at the site are suitable for individual treatment systems. However, due to the soil having greater than 35% rock, the LTAR of the on-site material is greater than 0.8, which will require the use of an "engineered system". It should be noted that the LTAR values stated herein are for the test pit locations performed for this report only. The LTAR values may change throughout the site. If an LTAR value of less than 0.35 (soil types 3A to 5) or greater than 0.80 (soil type 0) is encountered at the time of the site specific OWTS evaluation, an "engineered system" will be required.

It is our opinion that if the EPCHDE physical setback requirements are met for each lot, there are no restrictions on the placement of the individual On-site Wastewater Systems.

10.0 BEARING OF GEOLOGIC CONDITIONS UPON PROPOSED DEVELOPMENT

Geologic hazards (as described in section 8 of this report) found to be present at this site include faults and seismicity. Geologic conditions (as described in section 8 of this report) found to be present at this site include potentially compressible and expansive soils, and potentially unstable steep slopes. It is our opinion that the existing geologic and engineering conditions can be satisfactorily mitigated through proper engineering, design, and construction practices.

11.0 CONCLUSIONS

Based upon our evaluation of the geologic conditions, it is our opinion any proposed future development is feasible. The geologic conditions identified are considered typical for the Front Range region of Colorado.

Mitigation of geologic conditions is most effectively accomplished by avoidance. However, where avoidance is not a practical or acceptable alternative, geologic conditions should be mitigated by implementing appropriate planning, engineering, and suitable construction practices.

In addition to the previously identified mitigation alternatives, surface and subsurface drainage systems should be considered for any future structures. Exterior, perimeter foundation drains should be installed around below-grade habitable or storage spaces. Surface water should be efficiently removed from the building area to prevent ponding and infiltration into the subsurface soil.

We believe the sand with varying amounts of silt and clay will classify as Type B material as defined by OSHA. OSHA requires that temporary excavations made in Type B materials be laid back at ratios no steeper than 1:1 (horizontal to vertical), unless the excavation is shored and braced. Excavations deeper than 20 feet, or when water is present, should always be braced or the slope designed by a professional engineer.

Long term cut slopes in the upper soil should be limited to no steeper than 3:1 (horizontal to vertical). Flatter slopes will likely be necessary should groundwater conditions occur. It is recommended that long term fill slopes be no steeper than 3:1 (horizontal to vertical).

Revisions and modifications to the conclusions and recommendations presented in this report may be issued subsequently by RMG based upon additional observations made during grading and construction, which may indicate conditions that require re-evaluation of some of the criteria presented in this report.

It is important for the Owner(s) of each lot read and understand this report, and to carefully familiarize themselves with the geologic hazards associated with construction in this area. This report only addresses the geologic constraints contained within the boundaries of the site referenced above.

12.0 CLOSING

This report is for the exclusive purpose of providing geologic hazards information and preliminary geotechnical engineering recommendations. The scope of services did not include, either specifically or by implication, evaluation of wild fire hazards, environmental assessment of the site, or identification of contaminated or hazardous materials or conditions. Development of recommendations for the mitigation of environmentally related conditions, including but not limited to, biological or toxicological issues, are beyond the scope of this report. If the owner is concerned about the potential for such contamination or conditions, other studies should be undertaken.

This report has been prepared for **Andy Alm** in accordance with generally accepted geotechnical engineering and engineering geology practices. The conclusions and recommendations in this report are based in part upon data obtained from review of available topographic and geologic maps, review of available reports of previous studies conducted in the site vicinity, a site reconnaissance, and research of available published information, soil test borings, soil laboratory testing, and engineering analyses. The nature and extent of variations may not become evident until construction activities begin. If variations then become evident, RMG should be retained to re-evaluate the recommendations of this report, if necessary.

Our professional services were performed using that degree of care and skill ordinarily exercised, under similar circumstances, by geotechnical engineers and engineering geologists practicing in this or similar

localities. RMG does not warrant the work of regulatory agencies or other third parties supplying information which may have been used during the preparation of this report. No warranty, express or implied, is made by the preparation of this report. Third parties reviewing this report should draw their own conclusions regarding site conditions and specific construction techniques to be used on this project.

FIGURES



NOT TO SCALE

Architecture
Structural
Geotechnical



Engineers / Architects

SOUTHERN COLORADO OFFICE

5085 LIST DRIVE, SUITE 200,

COLORADO SPRINGS, CO 80919

(719) 548-0600 ~ WWW.RMGENGINEERS.COM

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

Materials Testing
Forensics
Civil / Planning

SITE VICINITY MAP

DRIFTWOOD ESATES, FILING NO. 1

CENTER ICE VIEW

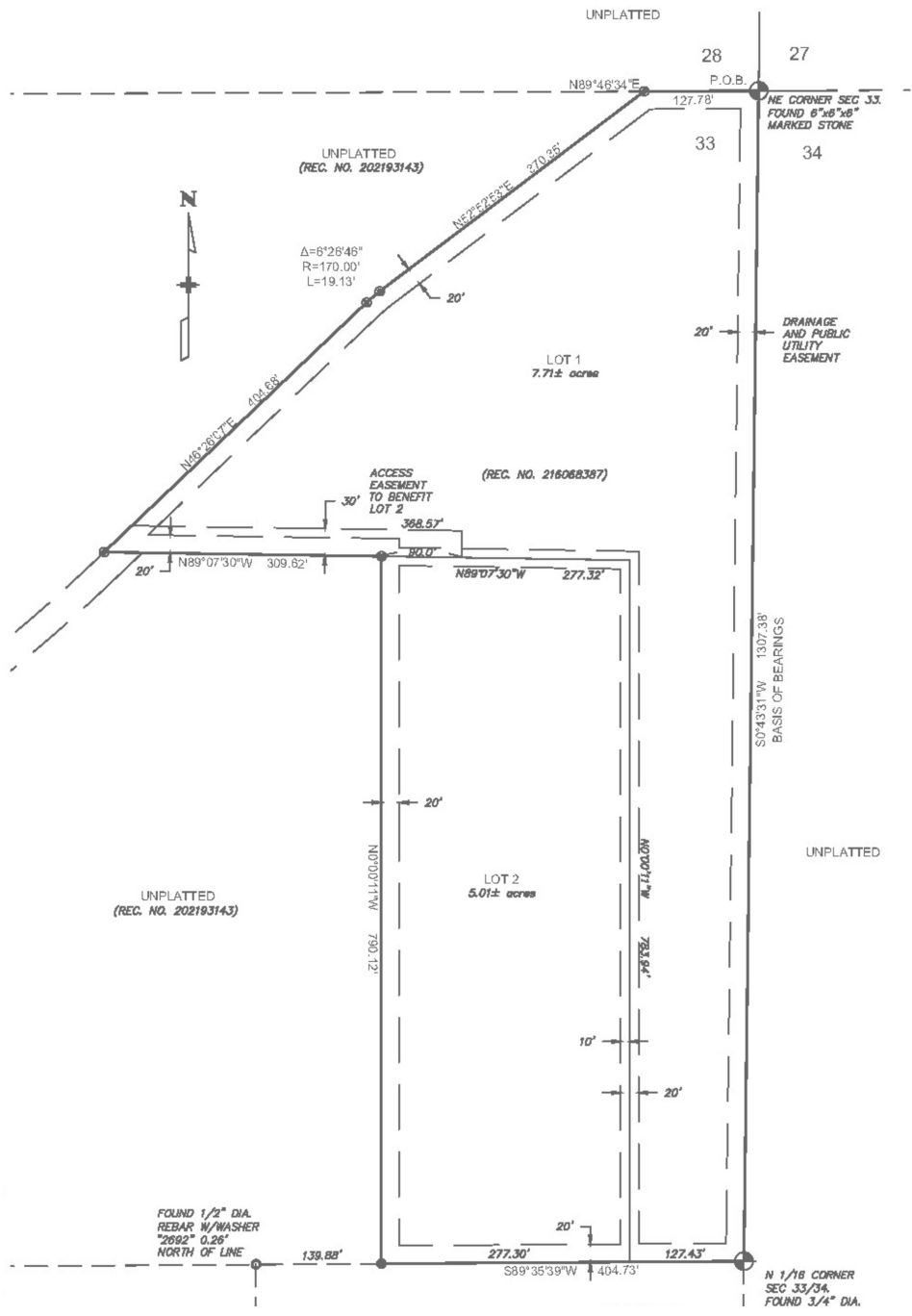
EL PASO COUNTY, COLORADO

ANDY ALM

JOB No. 194552

FIG No. 1

DATE 1-11-2024



NOT TO SCALE

BASE MAP PROVIDED BY LWA LAND SURVEYING

Architecture
Structural
Geotechnical



Materials Testing
Forensics
Civil / Planning

Engineers / Architects

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COLORADO SPRINGS, CO 80919

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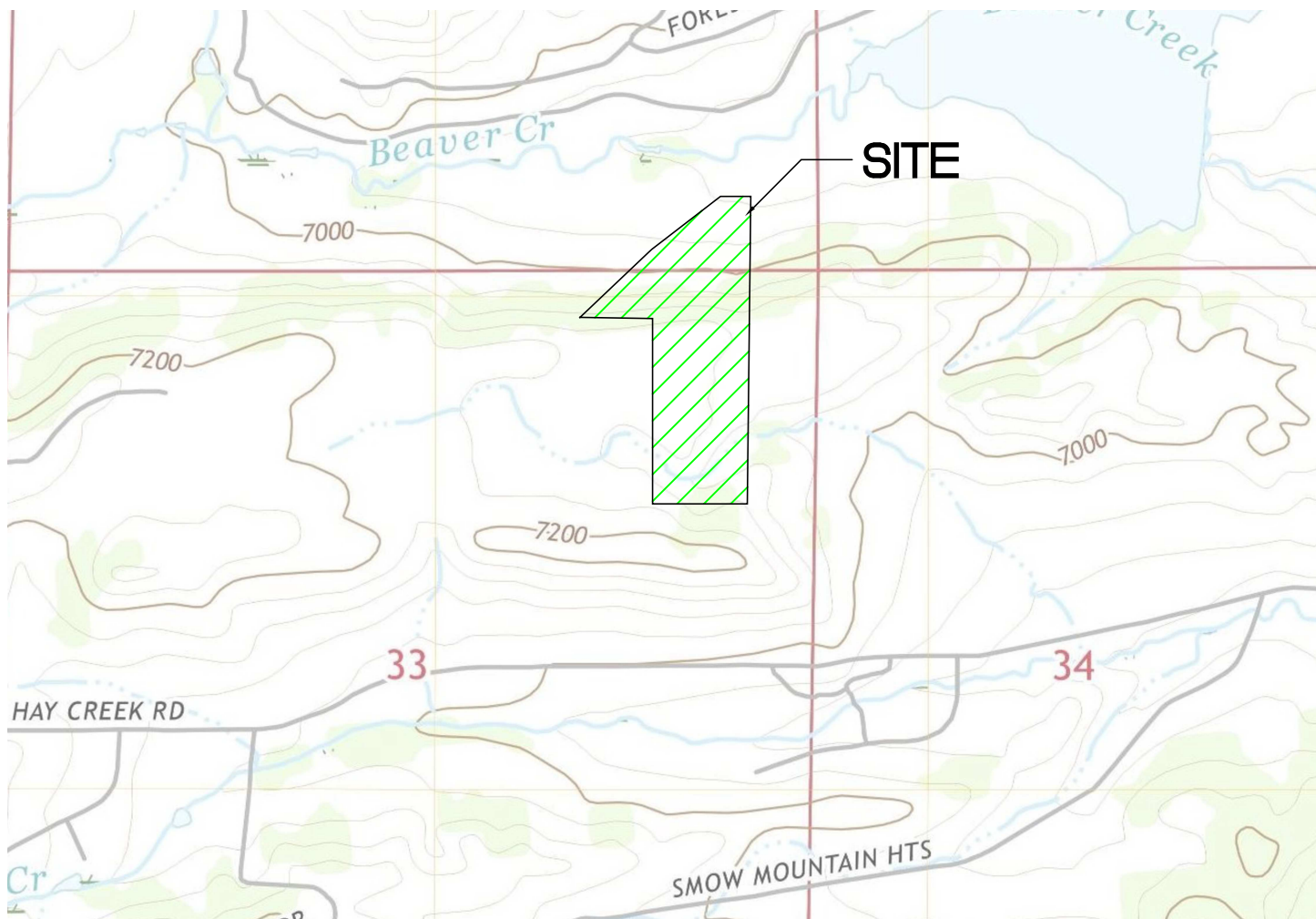
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

**PROPOSED LOT
LAYOUT PLAN**
DRIFTWOOD ESATES, FILING NO. 1
CENTER ICE VIEW
EL PASO COUNTY, COLORADO
ANDY ALM

JOB No. 194552

FIG No. 2

DATE 1-11-2024



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Materials Testing
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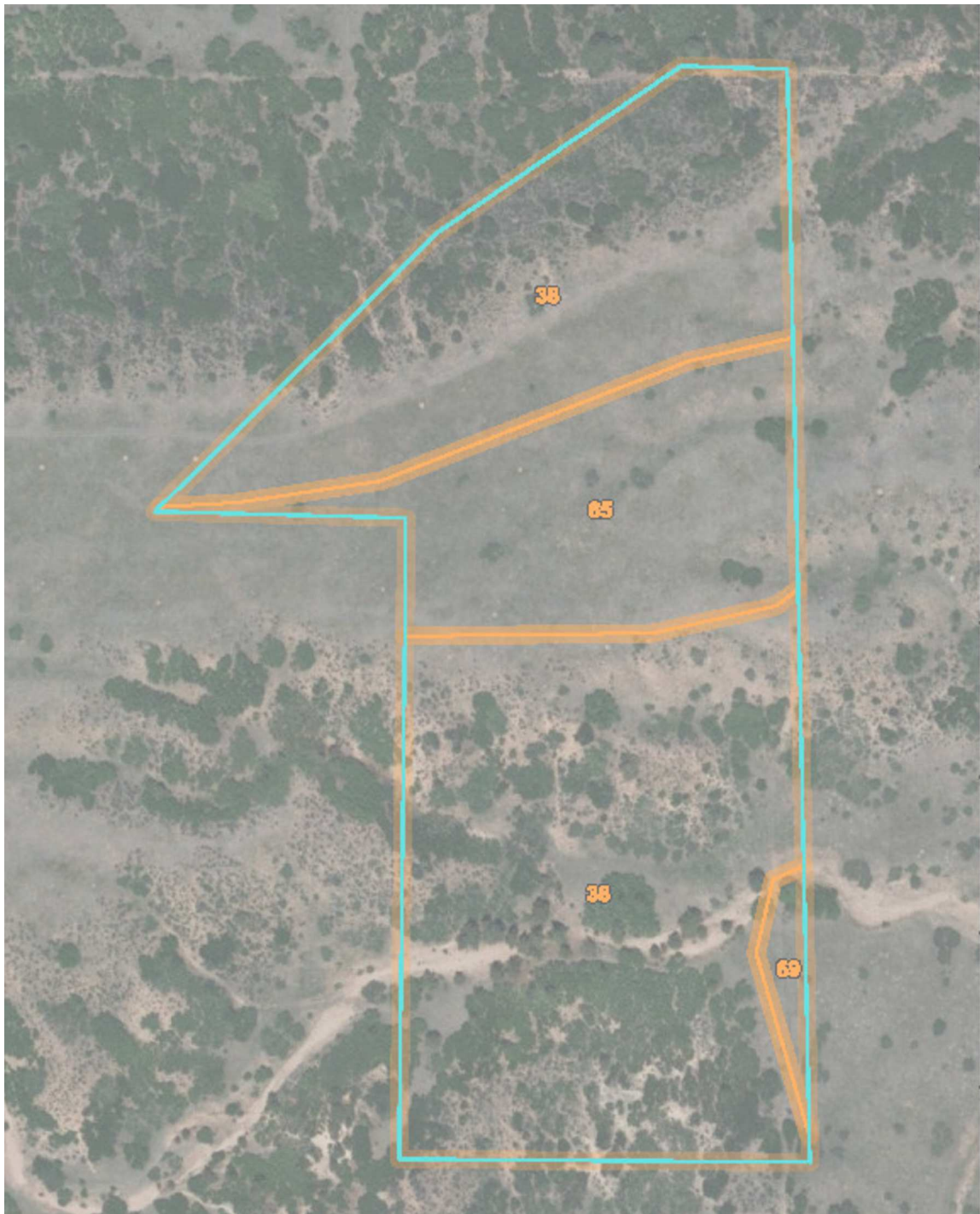
USGS TOPO MAP

DRIFTWOOD ESATES, FILING NO. 1
CENTER ICE VIEW
EL PASO COUNTY, COLORADO
ANDY ALM

JOB No. 194552

FIG No. 3

DATE 1-11-2024



38 - Jarre - Tecolote complex with 8 to 65 percent slopes

65 - Perrypark gravelly sandy loam, 3 to 9 percent slopes

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



NOT TO SCALE

Architecture
Structural
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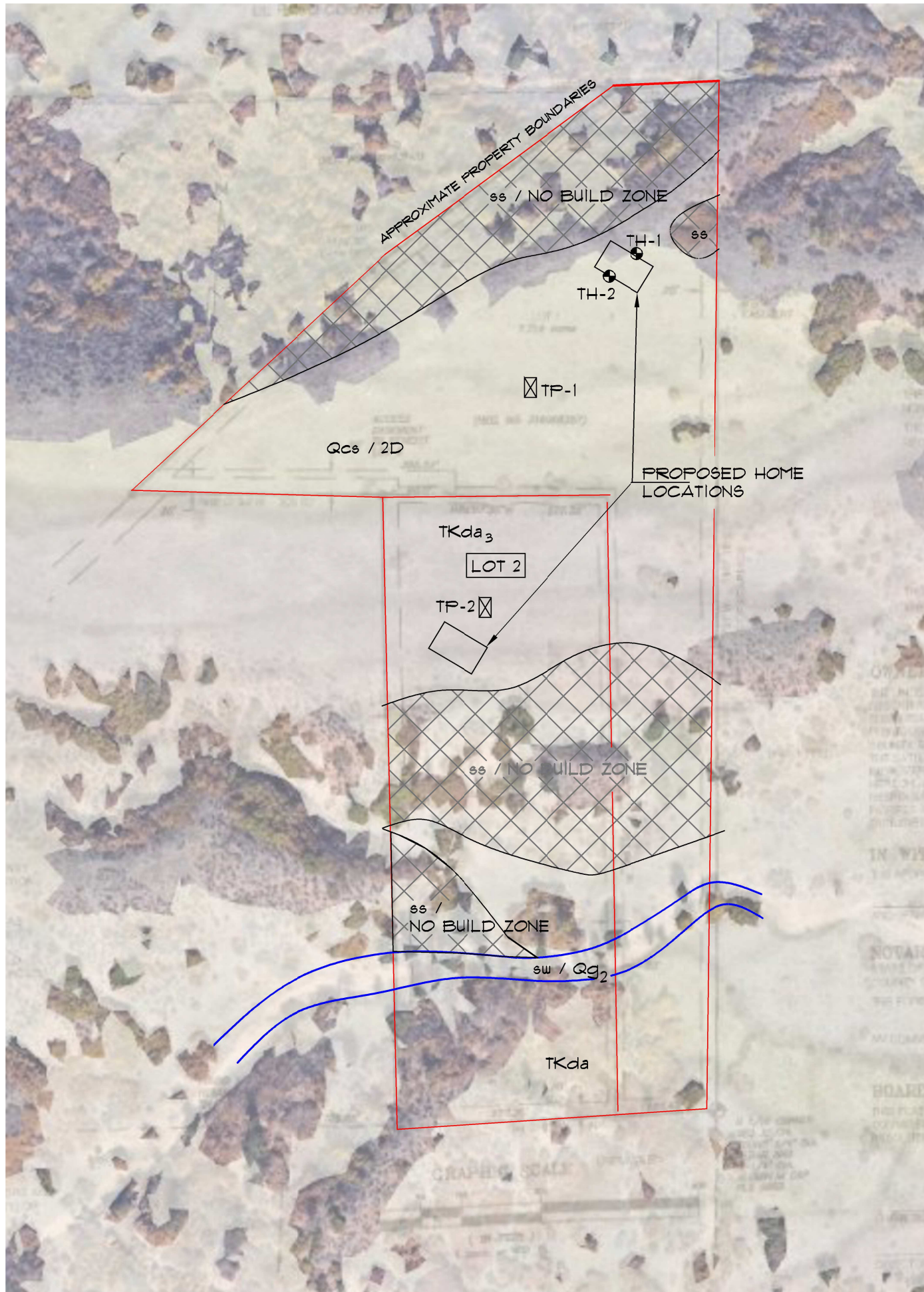
USDA SOIL SURVEY MAP

DRIFTWOOD ESATES, FILING NO. 1
CENTER ICE VIEW
EL PASO COUNTY, COLORADO
ANDY ALM

JOB No. 194552

FIG No. 4

DATE 1-11-2024







General Geology

- *Qg₂*: Gravelly deposit two (early middle Pleistocene) - light brown to tan, thin gravelly deposits on terraces, poorly sorted with low clay contents. Thickness is estimated to be approximately 70 feet above streams on the plains.
- *Qcs*: Colluvium and sheet wash alluvium deposits, undivided (Holocene and late Pleistocene) - silty to gravelly hummus-rich alluvium along all valleys, poorly sorted with low clay contents. Estimated thickness was not noted on the geologic map.
- *TKda₃* - Dawson Formation, facies three (Pleistocene) - sandstone bedrock, interbedded with sandy claystone seams.
- *ss* - steep slopes - areas with slopes greater than 20 percent. These areas are to be considered a "No Build Zone" until further investigation is completed to determine feasibility of future development.
- *sw* - seasonally wet - drainageway anticipated to contain surface water during heavy precipitation events.

Engineering Geology

- *2D* - Eolian deposits generally on flat to gentle slopes of upland areas.

-  APPROXIMATE LOCATION OF HOUSE
-  DENOTES APPROXIMATE LOCATIONS OF TEST PITS PERFORMED FOR THE WASTEWATER STUDY
-  DENOTES APPROXIMATE LOCATION OF TEST HOLES BY OTHERS
-  NO BUILD ZONE



NOT TO SCALE

BASE MAP PROVIDED BY: LWA LAND SURVEYING AND GOOGLE EARTH

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

DRIFTWOOD ESTATES, FILING NO. 1
CENTER ICE VIEW
EL PASO COUNTY, COLORADO
ANDY ALM

ENGINEER:	TM
DRAWN BY:	KZ
CHECKED BY:	TM
ISSUED:	1-11-2024

ENGINEERING AND GEOLOGY MAP

SHEET No.
FIG-5



REFERENCE
NOT TO SCALE

Architecture
Structural
Geotechnical



Engineers / Architects

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Materials Testing
Forensics
Civil / Planning

FEMA MAP

DRIFTWOOD ESATES, FILING NO. 1
CENTER ICE VIEW
EL PASO COUNTY, COLORADO
ANDY ALM

JOB No. 194552

FIG No. 6

DATE 1-11-2024

APPENDIX A

Additional Reference Documents

1. *Driftwood Estates, Filing No. 1*, LWA Land Surveying, Inc., Project 23054, dated October 3, 2023.
2. *Master Plan Level Geologic Hazards Evaluation and Preliminary Geotechnical Investigation, Forest Lakes Master Development Plan, El Paso County, Colorado*, CTL Thompson, Job No. CGS-10,585, August 15, 2001.
3. *ALM Exclusion, Classic Consulting, Job No. 1175.00-35, March 16, 2020*
4. *Flood Insurance Rate Map, El Paso County, Colorado and Unincorporated Areas, Community Panel No. 08041C0810G*, Federal Emergency Management Agency (FEMA), effective December 7, 2018.
5. *Notes on the Denver Basin Geologic Maps: Bedrock Geology, Structure, and Isopach Maps of the Upper Cretaceous to Paleogene Strata between Greeley and Colorado Springs, Colorado*, Colorado Geological Survey. Compiled by Dechesne, Raynolds, Barkmann and Johnson, 2011.
6. *Environmental and Engineering Geologic Map for Land Use*, compiled by Dale M. Cochran, Charles S. Robinson & Associates, Inc., Golden, Colorado, 1977.
7. *Pikes Peak Regional Building Department*: <https://www.pprbd.org/>.
8. El Paso County Assessor Website
<https://property.spatalest.com/co/elpaso/#/property/7133007023>
9. *Colorado Geological Survey, USGS Geologic Map Viewer*:
<http://coloradogeologicalsurvey.org/geologic-mapping/6347-2/>.
10. *Historical Aerials*: <https://www.historicaerials.com/viewer>, Images dated 1947, 1952, 1953, 1955, 1960, 1969, 1983, 1984, 1999, 2005, 2009, 2011, 2013, 2015, 2017, 2019, and 2021.
11. *Google Earth Pro*, Imagery dated 1999, 2003, 2004, 2005, 2006, 2011, 2013, 2015, 2017, 2019 and 2020.
12. *Coal resources of the Denver and Cheyenne basins*, Colorado Geological Survey, Kirkham, R.M., and Ladwig, L.R., 1979, Resource Series 5, 70 p., 5 plates
13. *Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands*
The El Paso Aggregate Resource Evaluation Map, Master Plan for Mineral Extraction, Map 2.

APPENDIX B

Soils Report – A Better Soil Solution, Inc.



SOILS REPORT
FOR
ACORDIA HOMES
JOB #23-022

3275 Center Ice View,
El Paso County,
Colorado

Sincerely,


Charles E. Milligan, P.E.

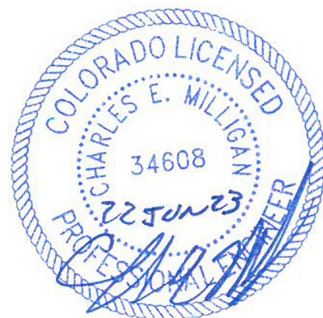


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INTRODUCTION

The owners must be made aware of the contents of this report. If there are any questions or concerns regarding the information in this report, please contact A Better Soil Solution, Inc. It is the responsibility of the contractor on this project to make subsequent owners aware of the contents of this report. This is to ensure that the recommendations and requirements of the report, especially regarding the surface drainage, are acknowledged and followed. This report is prepared for **Acordia Homes, builder, on 3275 Center Ice View, El Paso County, Colorado.** This report is prepared with the understanding that a new home is planned for this site. The site does not have existing structures.

CONCLUSIONS

A satisfactory foundation for this structure is a properly designed shallow foundation system consisting of foundation components resting directly on undisturbed materials. Foundation components resting directly on undisturbed native materials shall be designed for a loading of not greater than **3,000 pounds per square foot. Any design by any engineer is subject to revision based on the results of the open hole observation.** The compressibility of this material is low. This bearing capacity is calculated with a safety factor of three. The type of foundation configuration used depends on the building loads applied. The depth of foundation elements shall be determined by the foundation engineer but should be at least as deep as the minimum depth required by the governing building authority. **The laboratory testing revealed that the on-site soil is Poorly Graded Silty Sand, Silty Sand, and Clayey Sand (U.S.C.S. Classification Symbol SP-SM, SM, SC). The unit weight of equivalent fluid soil pressure of this material is 35 (SP-SM), 45 (SM), and 85 (SC) pounds per cubic foot.** The actual equivalent fluid soil pressure was not determined. The expected values are from ASCE 7-10, Table 3.2-1. **Foundation components should bear on soils of similar bearing capacity. Foundation components bearing on dissimilar soils should be avoided. The owners shall be made aware that movement will occur if surface or subsurface water is allowed to collect around the foundation wall.**

GENERAL

The investigation was made to reveal important characteristics of the soils and of the site influencing the foundation design. Also evaluated during the investigation were subsurface conditions that affect the depth of the foundation and subsequent loading design, such as ground water levels, soil types, and other factors which affect the bearing capacity of the soils. Design loadings are based on soils characteristics and represent the maximum permissible loads for these conditions. The bearing capacity is calculated with a safety factor of three.

FIELD AND LABORATORY INVESTIGATION

Two exploratory holes were drilled on June 12, 2023, at the locations shown on the enclosed site map. The location of these test holes was determined by Acordia Homes. The test holes were drilled with a 4-inch diameter auger. At intervals anticipated to be the foundation depths, and as determined by the soils conditions, the drill tools were removed, and samples were taken by the use of a 2-inch split barrel sampler connected to a 140-pound drop-hammer. This hammer is dropped 30 inches to drive the penetration sampler into the soil (**ASTM D-1586**). The depths and descriptions of the materials encountered in each test boring at which the samples were taken are shown on the enclosed log sheets. All samples were classified both in the field and in the laboratory to evaluate the physical and mechanical properties of the materials encountered.

TOPOGRAPHY

The topography of this site is that of an incline sloping down towards the northeast at 2%.

WEATHER

The weather at the time of the soil examination consisted of cloudy skies with cool temperatures.

DESIGN AND CONSTRUCTION CONSIDERATIONS

Slabs-on-grade may move and crack. Vertical slab movement of up to one and a half inches should be expected for native soils with low expansion potential. In some cases, vertical movement may exceed this range. If movement and associated damage to basement floors and finishes cannot be tolerated, a structural floor system should be installed. If compaction is not performed, settlement may occur causing cracking of foundation walls and floors. Soil located beneath concrete walls shall be compacted to at least 95% Modified Proctor density (**ASTM D-1557**). Soil located beneath concrete slabs shall be compacted to at least 85% Modified Proctor density. Special care is to be taken to re-compact the material above utility lines to a minimum of 85% Modified Proctor density. During construction, conditions that could cause settlement shall be eliminated. Interior non-bearing partition walls shall be constructed such that they do not transmit floor slab movement to the roof or overlying floor. The gap or void (1.5 inch min.) installed in these non-bearing partitions may require re-construction over the life of the structure to re-establish the gap or void to allow for vertical slab movement. Stairwells, doorways, and sheeted walls should be designed for this movement.

The following are general recommendations of on-grade slabs:

1. Slabs shall be placed on well-compacted, non-expansive materials, and all soft spots shall be thoroughly excavated and replaced with non-expansive fill materials as stated above.
2. Slabs shall be separated from all foundation walls, load bearing members, and utility lines.
3. At intervals not to exceed 12 feet in each direction, provide control joints to reduce problems with shrinkage and curling as recommended by the American Concrete Institute (**ACI 360R-10**). Moisten the ground beneath the slab prior to the placement of concrete.
4. All concrete placed must be cured properly as recommended by the American Concrete Institute (**ACI 360R-10**). Separate load bearing members from slabs, as discussed above. Care must be exercised to prevent excess moisture from entering the soil under the structure, both during and after construction.
5. Due to the exposure of exterior concrete to variations in moisture fluctuations, heaving and cracking of exterior slabs-on-grade should be expected. Placement of at least 3 feet of non-expansive fill beneath the slabs can help to reduce the impact of differential movement and cracking but may not eliminate movement. Exterior concrete shall slope away from the structure a minimum of 2% grade.
6. **The SC has been tested for its expansion and/or consolidation potential. This material has a 0.16% expansion potential with a dead load of 1,400 pounds per square foot.** Basement slabs, garage slabs, and all concrete floor slabs, exert a very low dead-load pressure on the soil. Since this soil contains at least a small amount of swell/consolidation potential, slabs may crack and heave or settle if excess water is allowed to penetrate the subgrade. For example, column openings to pads below the placed slab, if exposed to precipitation during construction, will conduct water to the subgrade, possibly causing it to expand/consolidate. Also, if the slab is placed with concrete too wet, expansion/consolidation may occur. We recommend 3,000 psi concrete placed at a maximum slump of 4 inches.

RECOMMENDATION REMARKS

The recommendations provided in this report are based upon the observed soil parameters, anticipated foundation loads, and accepted engineering procedures. The recommendations are intended to minimize differential movement resulting from the heaving of expansive soil or from the settlement induced by the application of loads. **It must be recognized that the foundation will undergo some movement on all soil types.** In addition, concrete floor slabs will move vertically, therefore, adherence to those recommendations which isolate floor slabs from columns, walls, partitions or other structural components is extremely important if damage to the superstructure is to be minimized.

Any subsequent owners should be apprised of the soil conditions and advised to maintain good practice in the future with regard to surface and subsurface drainage and partition framing, drywall and finish work above floor slabs.

A Better Soil Solution, Inc. does not assure that the contractor and/or homeowner will comply with the recommendations provided in this report. A Better Soil Solution, Inc. provides recommendations only and does not supervise, direct or control the implementation of the recommendations.

Failure to follow the recommendation provided by A Better Soil Solution, Inc. and follow observation requirements may jeopardize the construction project and A Better Soil Solution, Inc. shall be absolved from any and all responsibility for any damages arising from the failure to obtain proper site observation and follow recommendations.

COLD TEMPERATURE CONSIDERATIONS

1. Concrete shall not be placed upon wet or frozen soil.
2. Concrete shall be protected from freezing until it has been allowed to cure for at least 7 days after placement in forms.
3. Snow or other frozen water shall not be allowed in the forms during placement of concrete.
4. Concrete shall be cured in forms for at least 72 hours.
5. Concrete shall be vibrated or rodded in forms to avoid segregation and cold joints.
6. The site shall be kept well drained at all times. Ponding of water should be avoided in the excavation area.

SURFACE DRAINAGE

After construction of foundation walls, the backfill material shall be well compacted to 80% Modified Proctor density, to reduce future settlement. Any areas that settle after construction shall be filled to eliminate ponding of water adjacent to the foundation walls. **The finished grade shall have a positive slope away from the structure with an initial slope of 6 inch in the first 10 feet.** If a 10 foot zone is not possible on the upslope side of the structure, then a well-defined swale should be created a minimum of 5 feet from the foundation and sloped parallel with the wall at a 2% grade to intercept the surface water and carry it around and away from the structure. Homeowners shall maintain the surface grading and drainage installed by the builder to prevent water from being directed in the wrong direction. All downspouts shall have extensions that will remove runoff to the outside of the backfilled areas. Shrubs and plants requiring minimal watering shall be established in this area. Irrigated grass shall not be located within 5 feet of the foundation. Sprinklers shall not discharge water within 5 feet of the foundation. Irrigation should be limited to the minimum amount sufficient to maintain vegetation. Application of more water will increase the likelihood of floor slab and foundation movement.

All exterior grading and location of downspouts and their performance shall be inspected by A Better Soil Solution, Inc. If on-site soils are not suitable for the backfill, the backfill material shall consist of clean non-cohesive granular soils or road base material as described previously. Imported material is to be approved by A Better Soil Solution, Inc. prior to placement. **We recommend imported granular backfill with a maximum unit weight of 45 pounds per cubic foot.** It is the responsibility of the contractor to schedule all inspections.

SUBSURFACE DRAINAGE

Perimeter drains are required around all walls of the habitable or usable area portion of the structure that are below finished grade including all common wall(s) adjacent to the basement. Crawlspace, slab on grade, and walkout areas need not be drained unless specified at the time of the Open Hole Observation. Perimeter drains may be required during the open hole due to high moisture or grade that slopes toward the excavation. The final determination of the necessity for perimeter drains will be made at the time of the Open Hole Observation. An Exterior Drain Detail is provided in this report. Drains should daylight away from the structure or discharge to a sump pump. Even if drains are not required, areas below grade may experience moisture problems if unusual conditions are present in the future.

REINFORCING

The concrete foundation walls shall be properly reinforced as per the specific design for this foundation by a **Colorado Registered Professional Engineer. Exact requirements are a function of the design of the structure. Questions concerning the specific design requirements shall be referred to the design engineer.**

FOOTING DESIGN

The design for footings, pads, and/or piers for this structure is determined by applying the dead load and full live load to the foundation walls.

CONSTRUCTION DETAILS

It is necessary with any soils investigation to assume that the materials from the test holes are representative of the materials in the area. On occasion variations in the subsurface materials do occur, therefore, should such variations become apparent during construction, the owner is advised to contact this office for a determination as to whether these variations will affect the design of the structure's foundation. If anomalies are observed during the excavation for the structure, this office should be contacted to determine whether the layers will adversely affect the design.

MINIMUM MATERIALS SPECIFICATIONS

1. Minimum materials specifications of the concrete, reinforcing, etc., shall be determined by the Professional Foundation Design Engineer.
2. Compact beneath foundation walls a minimum of 95% Modified Proctor density to prevent settlement.
3. Compact all backfill material located around the perimeter of the foundation to a minimum of 80% Modified Proctor density.
4. Concrete shall be vibrated or rodded in forms to avoid segregation and cold joints.
5. The site shall be kept well drained at all times.

OPEN HOLE OBSERVATION (added cost)

If anyone other than A Better Soil Solution, Inc. performs the Open Hole Observation, that person/company assumes liability for the soils, and any possible changes to the foundation design.

The owner, or a representative of the construction company shall contact **A Better Soil Solution, Inc.** a minimum of **24 hours** prior to excavating for the foundation. An Open Hole Observation must be performed on each individual structure prior to the placement of concrete, and preferably prior to the placement of forms in the excavated area. **The failure to request or obtain an Open Hole Observation prior to the placement of foundation components may result in this Soils Report being declared null and void.** This is to ensure that soft areas, anomalies, etc., are not present in the foundation region. At the time of the open hole observation the **foundation type recommendations, maximum allowable bearing capacity may be revised** according to soil conditions found at that time. If revisions are made to the Soils Report due to the soil conditions of the excavation, **the Foundation Design Engineer must be notified of all revisions.**

COMPACTION TESTING (added cost)

A Better Soil Solution, Inc. shall perform compaction testing on any replaced material. Soil shall be compacted in maximum 6-inch lifts. Testing shall be performed at intervals not to exceed 24 inches (or as required by the design engineer). Modified Proctor Density must be provided to A Better Soil Solution, Inc. prior to compaction testing, see below.

The owner, or a representative of the construction, shall contact A Better Soil Solution, Inc. a **minimum of 24 hours prior to the time the compaction test is requested. The failure to properly compact and/or obtain proper compaction testing may result in this Soils Report being declared null and void.**

MODIFIED PROCTOR DENSITY TESTING (added cost)

Modified Proctor Density test must be provided to A Better Soil Solution, Inc. prior to compaction testing. If a Proctor cannot be provided, a Modified Proctor Density test must be completed prior to compaction testing. Two 5-gallon valid samples of the soil to be used, must be provided for testing, at least 2 weeks prior to the placement and compaction of the material.

The failure to provide this data may result in this Soils Report being declared null and void.

FINAL OBSERVATIONS (added cost)

The owner, or a representative of the construction company, shall contact A Better Soil Solution, Inc. at the time final grading and landscaping procedures are completed. This is to ensure that sprinkler systems are not installed adjacent to the structure and that only shrubs or plants that require minimal watering are established in this area. All exterior grading as well as the location of downspouts and their performance shall be inspected by A Better Soil Solution, Inc. Any additional landscaping or grading changes performed by subsequent contractors and/or owners shall be inspected and approved. It is the responsible of the contractor and/or owner to schedule all these inspections at the appropriate times. **The failure to obtain this inspection may result in this Soils Report being declared null and void.**

LIMITATIONS

This report is issued based on the understanding that the owner or his representative will bring the information, data, and recommendations contained in this report to the attention of the project engineer and architect, in order that they may be incorporated into the plans for the structure. It is also the owner's responsibility to ensure that all contractors and sub-contractors carry out these recommendations during the construction phase.

This report was prepared in accordance with generally accepted professional geotechnical/engineering methods. However, A Better Soil Solution, Inc. makes no other warranty, express or implied, as to the findings, data, specifications, or professional advice rendered hereunder. **Due to circumstances outside of A Better Soil Solution, Inc.'s control, including improper construction, failure to follow recommendations, and unforeseen events, the Limits of Liability extend only to fees rendered for the professional services provided.**

This report is considered valid as of the present date. The owner acknowledges, however, that changes in the conditions of the property might occur with the passage of time, such as those caused by natural effects or man-made changes, both on this land and on abutting properties. Further, changes in acceptable tolerances or standards might arise as the result of new legislative actions, new engineering advances, or the broadening of geotechnical knowledge. Thus, certain developments beyond our control may invalidate this report, in whole or in part.

This report and its recommendations do not apply to any other site than the one described herein and are predicated on the assumption that the soil conditions do not deviate from those described. In the event that any variations or undesirable conditions should be detected during the construction phase or if the proposed construction varies from that planned as of this report date, the owner shall immediately notify A Better Soil Solution, Inc. in order that supplemental recommendations can be provided, if so required.

This report excludes possible environmental issues, geologic hazards, flooding, or any other natural or man-made hazards that affect this site. These are outside the scope of work, for this report.

APPENDIX

Solid Stem Auger (STA) Log TH-1

Project Info. Project :3275 Center Ice Vw Client :Acordia Homes Location :Monument, CO Job No.:23-0292	Borehole Info. Depth:15 (ft) GWL:- (ft) Drill Date:6/12/23 Logged By:NB+TD	Elevation: Latitude:39.055751 Longitude:-104.887556 Method:Solid Stem Auger	<h2 style="margin: 0;">A Better Soil Solution</h2>
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Depth (ft)	GWL (ft)	Sample Type	Field Tests	USCS / AASHTO	Symbol	Lithology Description	Depth (ft)	w (%)	Particle Analysis Test				Atterberg Limits			Remarks & Comments
									Gravel (%)	Sand (%)	Silt (%)	Clay (%)	LL (%)	PL (%)	PI (%)	
									10	20	30	40	50			
0						Topsoil										
0						Poorly Graded Silty Sand <i>Fine-Coarse Grained Moderate-High Density Low-Moderate Moisture Content Low Clay Content Non Plastic Light Reddish Brown in Color</i>										
4		U	* 38	SP-SM A-1-b(0)	█		5.3	17.3	71	11.8	NLL	-	NPI			
5						Clayey Sand <i>Fine-Coarse Grained Moderate-High Density Low-Moderate Moisture Content Low-Moderate Clay Content Low Plasticity Light Reddish Brown in Color</i>										
9		U	* 35	SC A-2-4(0)	▨		6.3	6.6	65.4	28	20.7	13.1	7.6			
14		●		SC A-2-4(0)	█		6.8	0.5	68	31.5	20.2	12.5	7.7			
15						End of Log @ 15 (ft)										

Sample Types ● Disturbed + Undisturbed □ Shelby / U4 ■ Core Cutter	Symbols U SPT Sample ■ Water Sample ▽ Groundwater Level	Abbreviations LL : Liquid Limit PL : Plastic Limit PI : Plastic Index NPI : None PI	w : Moisture Content
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Solid Stem Auger (STA) Log TH-2

Project Info. Project :3275 Center Ice Vw Client :Acordia Homes Location :Monument, CO Job No.:23-0292	Borehole Info. Depth:15 (ft) GWL:- (ft) Drill Date:6/12/23 Logged By:NB+TD	Elevation: Latitude:39.055844 Longitude:-104.887326 Method:Solid Stem Auger	<h2 style="margin: 0;">A Better Soil Solution</h2>
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Depth (ft)	GWL (ft)	Sample Type	Field Tests	USCS / AASHTO	Symbol	Lithology Description	Depth (ft)	w (%)	Particle Analysis Test				Atterberg Limits			Remarks & Comments
									Gravel (%)	Sand (%)	Silt (%)	Clay (%)	LL (%)	PL (%)	PI (%)	
0						Topsoil	0									
0.5						Silty Sand <i>Fine-Coarse Grained Moderate-High Density Low-Moderate Moisture Content Low Clay Content Non Plastic Light Reddish Brown in Color</i>	1									
4.0		U	35	SM A-1-b(0)			4	5.8	17.3	70.2	12.4	NLL	-	NPI		
7.0		U	41	SC A-2-4(0)		Clayey Sand <i>Fine-Coarse Grained Moderate-High Density Low-Moderate Moisture Content Low-Moderate Clay Content Low Plasticity Light Reddish Brown in Color</i>	9	6.6	10.5	67.2	22.4	20.2	12.5	7.7		
14.0		●		SC A-2-4(0)			14	6.3	5.5	70.1	24.4	20.7	13.1	7.6		
15.0						End of Log @ 15 (ft)	15									

Sample Types ● Disturbed + Undisturbed □ Shelby / U4 ■ Core Cutter	Symbols U SPT Sample ■ Water Sample ▽ Groundwater Level	Abbreviations LL : Liquid Limit PL : Plastic Limit PI : Plastic Index NPI : None PI	w : Moisture Content
---	---	--	----------------------

Site Map

Project: 3275 Center Ice Vw

Client: Acordia Homes

Job No.: 23-0292

Location: Monument, CO

A Better Soil Solution



Coordinates

Bore Hole	Latitude	Longitude
TH-1	39.055751	-104.887556
TH-2	39.055844	-104.887326

Particle Analysis Test

Project : 3275 Center Ice Vw

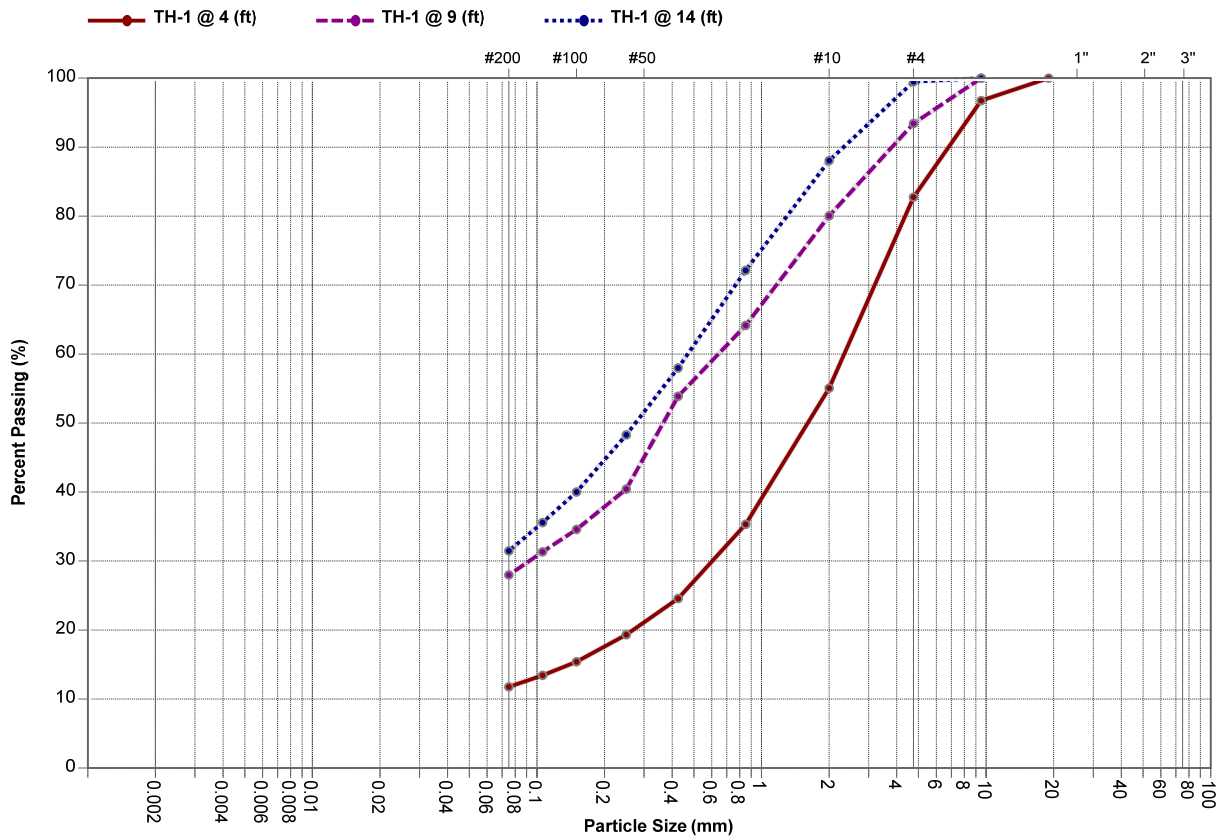
Client : Acordia Homes

Job No.: 23-0292

Location : Monument, CO

A Better Soil Solution

ASTM D6913



Particle Distribution (%)

Clay	Silt	Sand	Gravel	Cobble
	11.8	71	17.3	-
	28	65.4	6.6	-
	31.5	68	0.5	-

Classification

Borehole	Sample Depth (ft)	D10 (mm)	D30 (mm)	D50 (mm)	D60 (mm)	Cc	Cu	LL (%)	PI (%)	Disp. (%)	USCS	AASHTO
TH-1	4	-	0.604	1.606	2.334	156.305	-	-	-	N/A	SP-SM	A-1-b(0)
TH-1	9	-	0.092	0.365	0.642	13.184	-	20.7	7.6	N/A	SC	A-2-4(0)
TH-1	14	-	-	0.275	0.469	-	-	20.2	7.7	N/A	SC	A-2-4(0)

Particle Analysis Test

Project : 3275 Center Ice Vw

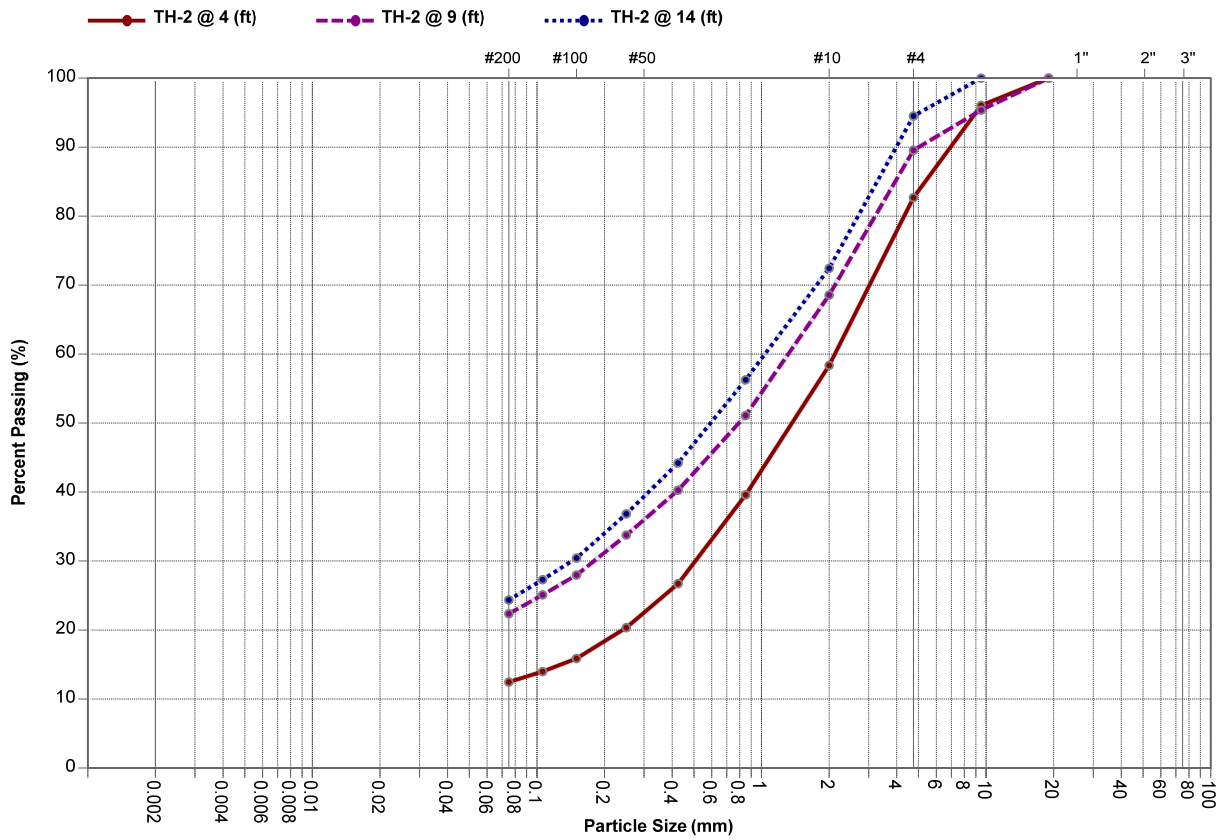
Client : Acordia Homes

Job No.: 23-0292

Location : Monument, CO

A Better Soil Solution

ASTM D6913



Particle Distribution (%)

Clay	Silt	Sand	Gravel	Cobble
-	12.4	70.2	17.3	0.1
-	22.4	67.2	10.5	-
-	24.4	70.1	5.5	-

Classification

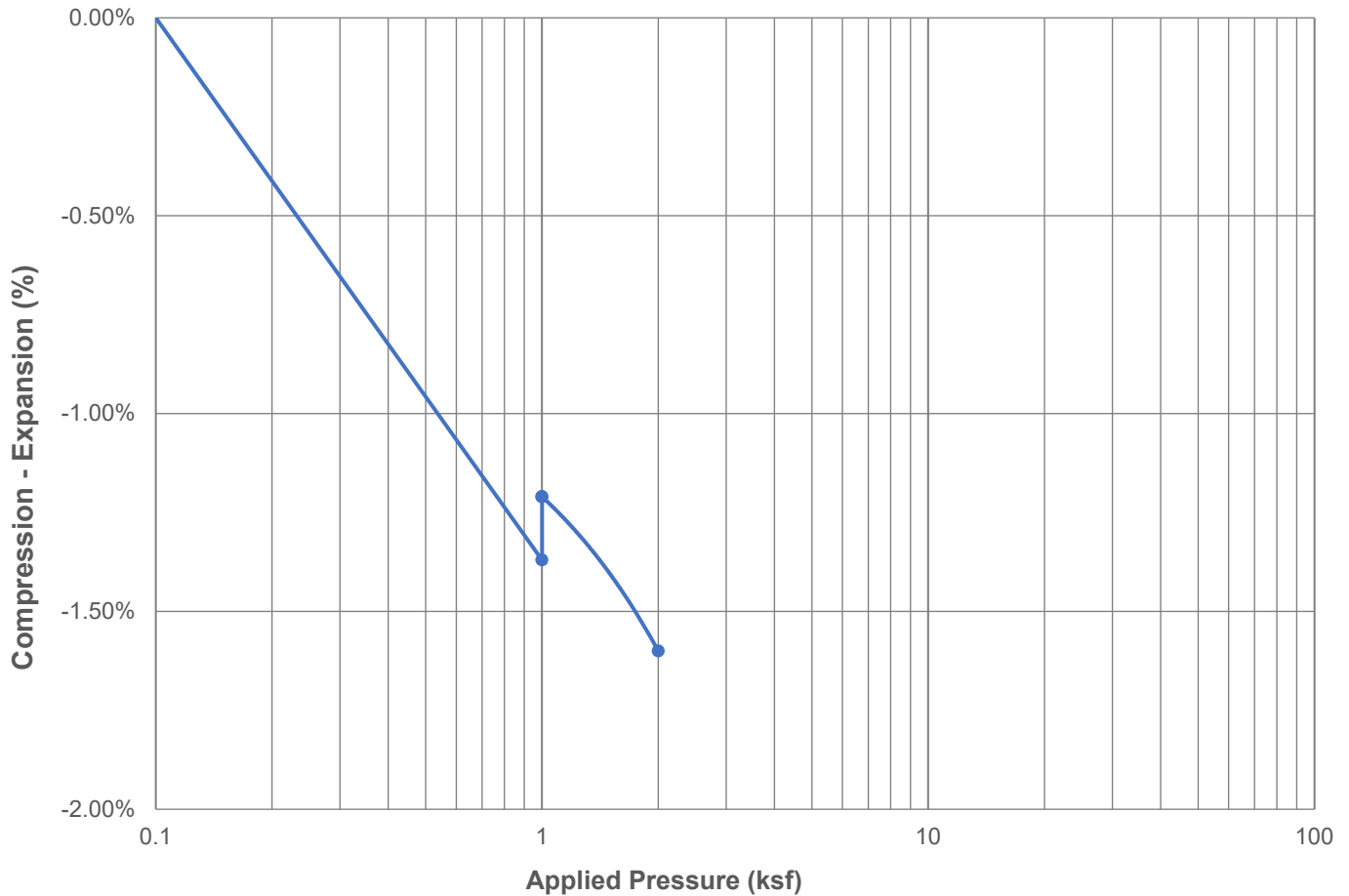
Borehole	Sample Depth (ft)	D10 (mm)	D30 (mm)	D50 (mm)	D60 (mm)	Cc	Cu	LL (%)	PI (%)	Disp. (%)	USCS	AASHTO
TH-2	4	-	0.507	1.367	2.12	121.25	-	-	-	N/A	SM	A-1-b(0)
TH-2	9	-	0.179	0.792	1.315	24.366	-	20.2	7.7	N/A	SC	A-2-4(0)
TH-2	14	-	0.143	0.593	1.036	19.738	-	20.7	7.6	N/A	SC	A-2-4(0)

Swell-Consolidation Test

Project: 3275 Center Ice Vw
 Client: Acordia Homes
 Job No.: 23-0292
 Location: Monument, CO

Borehole: TH-1
 Sample Depth: 14 Ft
 Classification: SC
 Sample Type: Disturbed

A Better Soil Solution



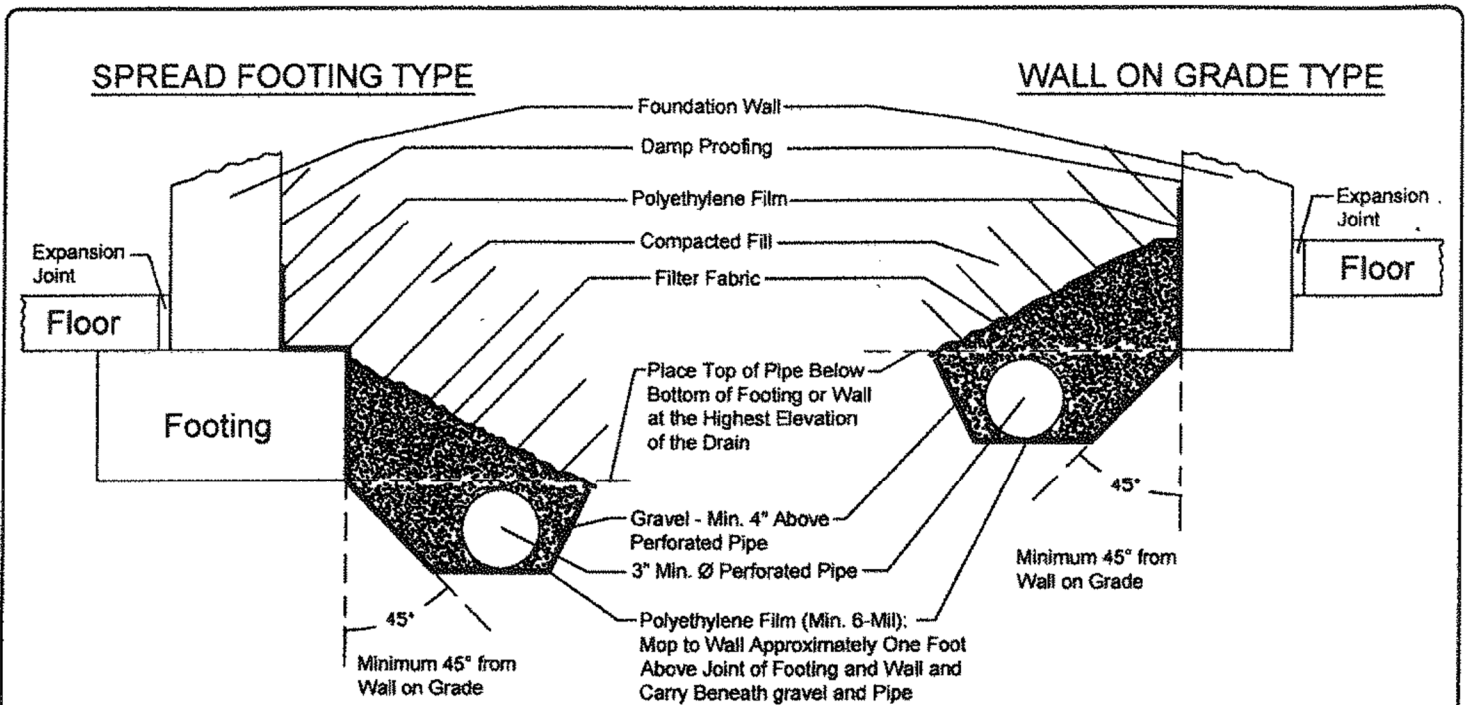
Values

Applied Load (lbs)	Displacement (in)
0	0.0000
1,000	-0.0137
Add Water	-0.0121
2,000	-0.0160

Sample Info

Native Moisture:	6.84%
Post-Test Moisture:	10.85%
Expansion Potential:	0.16%
Deadload (psf):	1,400

Exterior Drain Detail



1. Gravel to be Not More Than 1-1/2" and Not Less Than 1/2" Diameter.
2. Perforated Pipe Diameter Varies With Expected Seepage. 3"Ø and 4"Ø are Most Common. ABS and PVC are Most Common Materials for Pipe. We approve the use of an "EZ Flow Drainage System" by Infiltrator. All specifications in this drain detail are still applicable.
3. Pipe to be Laid out in a Minimum Slope of 1" in 10'.
4. Gravity Outfall is Desired if Possible. Portion of Pipe in Area Not Drained Shall be Non-Perforated. Daylight Must be Maintained Clear of Debris in Order to Function Properly.
5. If Gravity Outfall is Not Possible, Provide a Sump With Operational Pump. Pump May Not Connect to Any Sanitary or Storm Sewer.
6. Soil Backfill Should be Compacted to at Least 80% of the Modified Proctor Denisty in the Upper Three Feet of Fill.
7. Filter Fabric to be Mirafi 140s or Approved Equivalent. Roofing Felt and Sheet Plastic are Not Acceptable.
8. Drain Pipe Shall be Laid Below Protected Area, as Shown in The Detail Above.
9. Mop Polyethylene Film to Wall Approximately One Foot Above Joint of Footing and Wall (Do Not Pull Plastic Tight) and Carry Beneath Gravel and Pipe.
10. The Polyethylene Film Shall be Continued to the Edge of the Excavation.

APPENDIX C
Wastewater Study - RMG

Job No. 194552

October 13, 2023

Andy Alm
2383 Collegiate Drive
Colorado Springs, CO 80918

Re: Wastewater Study
Driftwood Estates, Filing No. 1
Center Ice View, Schedule No. 7133007024
El Paso County, Colorado

Ref: *Soils Report, prepared by A Better Soil Solution, Job #23-022, last dated June 22, 2023.*

Ref: *Driftwood Estates, Filing No. 1, prepared by LWA Land Surveying, Inc. Project 23054, dated October 3, 2023.*

Dear Mr. Alm:

As requested, personnel of RMG – Rocky Mountain Group has performed a preliminary investigation and site reconnaissance at the above referenced address. It is our understanding the parcels included in this study are:

- EPC Schedule No. 7133007024, addressed as 3275 Center Ice View, which consists of 10.54 of acres and is zoned RR-5.

It is our understanding the parcel is to be subdivided into two lots. According to the land survey, referenced above, Lot 1 is to consist of 7.71 acres and Lot 2 is to consist of 5.01 acres. The approximate location of the site is shown on the Site Vicinity Map, Figure 1. The proposed Site Plan is presented in Figure 2.

This letter is to provide information for the on-site wastewater report per the On-Site Wastewater Treatment Systems (OWTS) Regulations of the El Paso County Board of Health pursuant to Chapter 8.

The following are also excluded from the scope of this report including (but not limited to) foundation recommendations, site grading/surface drainage recommendations, subsurface drainage recommendations, geologic, natural and environmental hazards such as landslides, unstable slopes, seismicity, snow avalanches, water flooding, corrosive soils, erosion, radon, wild fire protection, hazardous waste and natural resources.

Previous Studies and Field Investigation

Reports of previous geotechnical engineering/geologic investigations, other than the one listed above, were not available for our review.

SITE CONDITIONS

Personnel of RMG performed a reconnaissance visit on September 29, 2023. The purpose of the reconnaissance visit was to evaluate the site surface characteristics including landscape position, topography, vegetation, natural and cultural features, and current and historic land uses. Two 8-foot deep test pits were performed during our reconnaissance visit. A Test Pit Location Plan is presented in Figure 3.

The site surface characteristics were observed to consist of low lying grasses and weeds across the entire site. Deciduous trees were scattered across the northern portion of the property and denser along the creek banks on the southern portion of the property. The creek was dry at the time of the site visit.

The following conditions were observed with regard to the parcel:

- A well currently **does not** exist on the existing site;
- No runoff or irrigation features anticipated to cause deleterious effects to treatment systems on the site were observed;
- A major waterway exists to the north of the site. The entire site lies outside the designated floodway or floodplain;
- A minor waterway, an unnamed intermittent drainageway, extends through the southern portion of the property. It is our understanding that this drainageway is located within an area to be designated as a "No Build" area.
- Slopes greater than 20 percent **do** exist on the site; and
- Significant man-made cuts **do not** exist on the site.

Treatment Areas

Treatment areas at a minimum must achieve the following:

- The treatment areas must be 4 feet above groundwater or bedrock as defined by the Definitions 8.3.4 of the Regulations of the El Paso County Board of Health, Chapter 8, *OWTS Regulations*, effective July 7, 2018;
- Prior to construction of an OWTS, an OWTS design prepared per *the Regulations of the El Paso County Board of Health, Chapter 8, OWTS Regulations* will need to be completed. A scaled site plan and engineered design will also be required prior to obtaining a building permit;
- Comply with any physical setback requirements of Table 7-1 of the El Paso County Department of Health and Environment (EPCDHE);
- Treatment areas are to be located a minimum 100 feet from any well (existing or proposed), including those located on adjacent properties per Table 7-2 per the EPCDHE;
- Treatment areas must also be located a minimum 50 feet from any spring, lake, water course, irrigation ditch, stream or wetland, and 25 feet from dry gulches;

- Other setbacks include the treatment area to be located a minimum 10 feet from property lines, cut banks and fill areas (from the crest);
- The new lots shall be laid out to ensure that the proposed OWTS does not fall within any restricted areas, (e.g. utility easements, right of ways). Based on the proposed lot layout and the information obtained from the test pit observations, each lot has a minimum of two locations for the OWTS as currently proposed.

Contamination of surface and subsurface water resources should not occur if the treatment areas are evaluated and installed according to El Paso County Health Department and State Guidelines in conjunction with proper maintenance.

DOCUMENT REVIEW

RMG has reviewed the above referenced site plan. We have identified the soil conditions anticipated to be encountered during construction of the proposed OWTS for each proposed lot. Our review included a review of documented Natural Resource Conservation Service (NRCS) data provided by websoilsurvey.nrcs.usda.gov. The Soil Survey Descriptions are presented below.

A review of FEMA Map No. 08041C0267G, effective December 7, 2018 indicates that the proposed treatment areas are not located within an identified floodplain.

SOIL EVALUATION

Personnel of RMG performed a soil evaluation to include two 8-foot deep test pits, on September 29, 2023 (Test Pit TP-1 and TP-2), utilizing the visual and tactile method for the evaluation of the site soils. The test pits were excavated in areas that appeared most likely to be used for residential construction. The Test Pit Logs are presented in Figure 4.

The soil conditions as indicated by the NRCS data are anticipated to consist of:

- 38 – Jarre-Tecolote complex with 8 to 65 percent slopes. The Jarre-Tecolote complex was mapped by the USDA to encompass the majority of the site. Properties of the Jarre-Tecolote complex include well drained soils, depth of the water table is anticipated to be greater than 80 inches, runoff is anticipated to be medium, frequency of flooding and/or ponding is none, and landforms include alluvial fans;
- 65 – Perrypark gravelly sandy loam, 3 to 9 percent slopes. The Perrypark gravelly sandy loam was mapped to encompass a band through the southern end of Lot 1 and the very northern portion of Lot 2. Properties of the Perrypark gravelly sandy loam include well drained soils, depth of the water table is anticipated to be greater than 80 inches, runoff is anticipated to be medium, frequency of flooding and/or ponding is none, and landforms include alluvial fans;
- 69 – Peyton-Pring complex, 8 to 15 percent slopes. This soil condition is located outside of the proposed OWTS locations and has been eliminated from this study. A USDA Soil Survey Map is presented in Figures 5.

Neither groundwater nor bedrock were encountered in the test pits performed by RMG.

An OWTS is proposed for each lot and should conform to the recommendations of a future OWTS site evaluation, performed in accordance with the applicable health department codes prior to construction. This report may require additional test pits in the vicinity of the proposed treatment field. A minimum separation of 4 feet shall be maintained from groundwater and bedrock to the infiltrative surface.

Redoximorphic features indicating the fluctuation of groundwater or higher ground water levels were not observed in the test pits. A Septic Suitability Map is presented in Figure 6.

CONCLUSIONS

In summary, it is our opinion the site is suitable for individual on-site wastewater treatment systems within the cited limitations. It is recommended the areas labeled *ss* – *steep slopes*, indicating slopes greater than 20%, and *sw* – *seasonally wet*, indicating the intermittent drainage, be avoided during the planning and placement of the OWTS. A soil and geology or geologic hazard study was not reviewed in conjunction with the study. It is recommended the areas designated *ss* and *sw* should be considered "No Build" areas. The lots have sufficient acreage to locate each OWTS (and alternate locations) within the EPCDHE physical setback requirements.

There are no foreseeable or stated construction related issues or land use changes proposed at this time.

Soil and groundwater conditions at the site are suitable for individual treatment systems. However, due to the soil having greater than 35% rock, the LTAR of the on-site material is greater than 0.8, which will require the use of an "engineered system". It should be noted that the LTAR values stated above are for the test pit locations performed for this report only. The LTAR values may change throughout the site. If an LTAR value of less than 0.35 (soil types 3A to 5) or greater than 0.80 (soil type 0) is encountered at the time of the site specific OWTS evaluation, an "engineered system" will be required.

Based on the soils encountered in our test pits, soil type R-0, "engineered systems" should be anticipated.

LIMITATIONS

The information provided in this report is based upon the subsurface conditions observed in the profile pit excavations and accepted engineering procedures. The subsurface conditions encountered in the excavation for the treatment area may vary from those encountered in the test pit excavations. Therefore, depth to limiting or restrictive conditions, bedrock, and groundwater may be different from the results reported in this letter.

An OWTS site evaluation will need to be performed in accordance with the applicable health department codes prior to construction.

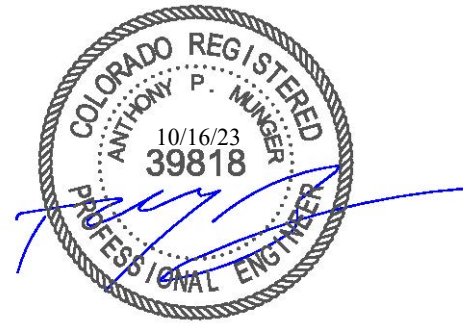
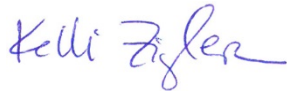
I hope this provides the information you have requested. Should you have questions, please feel free to contact our office.

Cordially,

Reviewed by,

RMG – Rocky Mountain Group

RMG – Rocky Mountain Group



Kelli Zigler
Project Geologist

Tony Munger, P.E.
Sr. Geotechnical Project Manager



NOT TO SCALE

Architecture
Structural
Geotechnical



Engineers / Architects

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COLORADO SPRINGS, CO 80918
(719) 548-0600 ~ WWW.RMGENGINEERS.COM

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

Materials Testing
Forensics
Civil / Planning

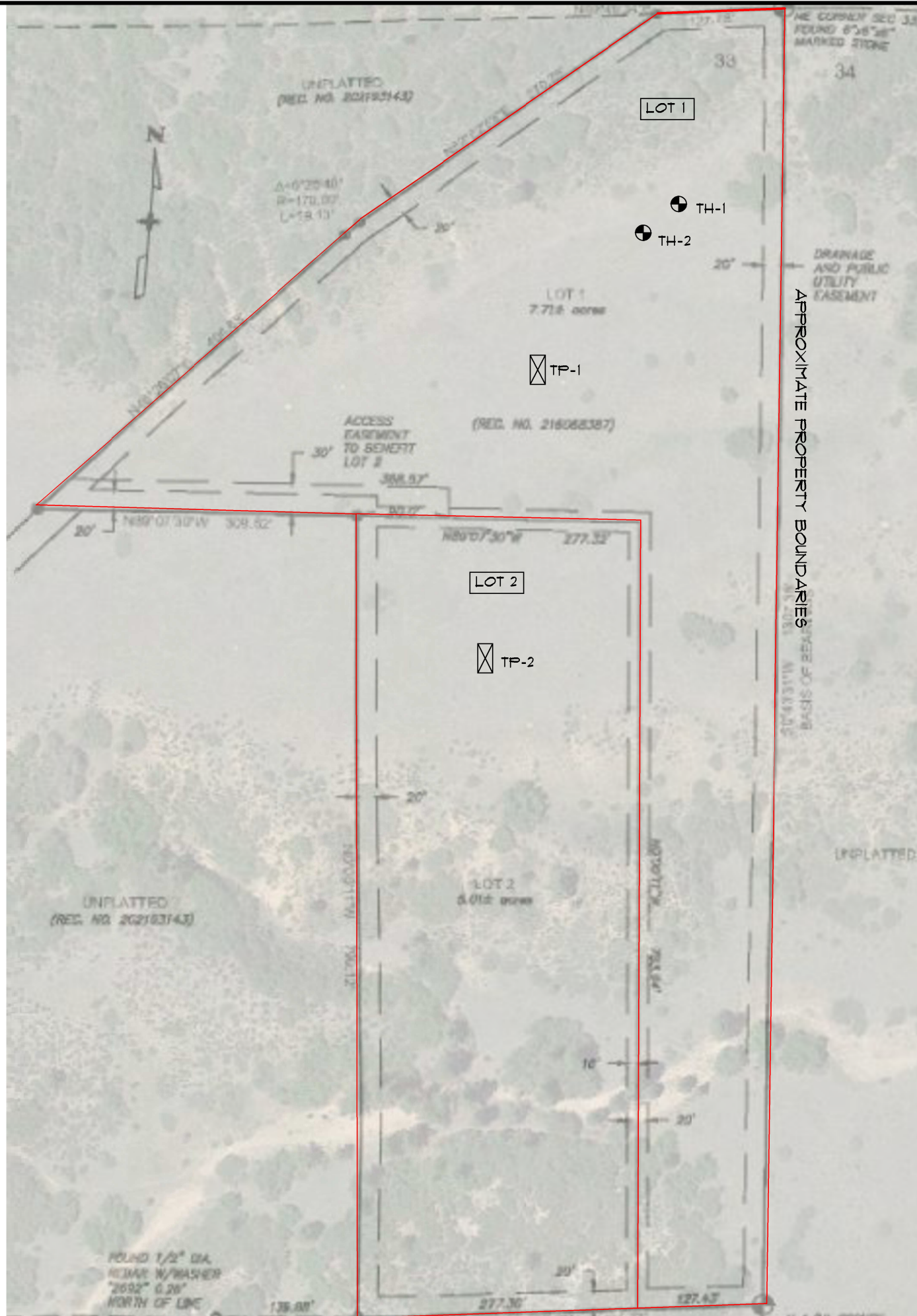
SITE VICINITY MAP

DRIFTWOOD ESATES, FILING NO. 1
CENTER ICE VIEW
EL PASO COUNTY, COLORADO
ANDY ALM

JOB No. 194552

FIG No. 1

DATE 10-13-2023



⊠ DENOTES LOCATION OF RMG TEST PITS PERFORMED FOR THIS STUDY

⊕ DENOTES APPROXIMATE LOCATION OF TEST HOLES PERFORMED BY OTHERS



NOT TO SCALE

BASE MAP PROVIDED BY: LWA LAND SURVEYING

JOB No. 194552

Materials Testing
Forensics
Civil / Planning



Architecture
Structural
Geotechnical

Engineers / Architects

SOUTHERN COLORADO OFFICE
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COLORADO SPRINGS, CO 80918
(719) 548-0600 ~ WWW.RMGENGINEERS.COM

SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

DRIFTWOOD ESTATES, FILING NO. 1
CENTER ICE VIEW
EL PASO COUNTY, COLORADO
ANDY ALM

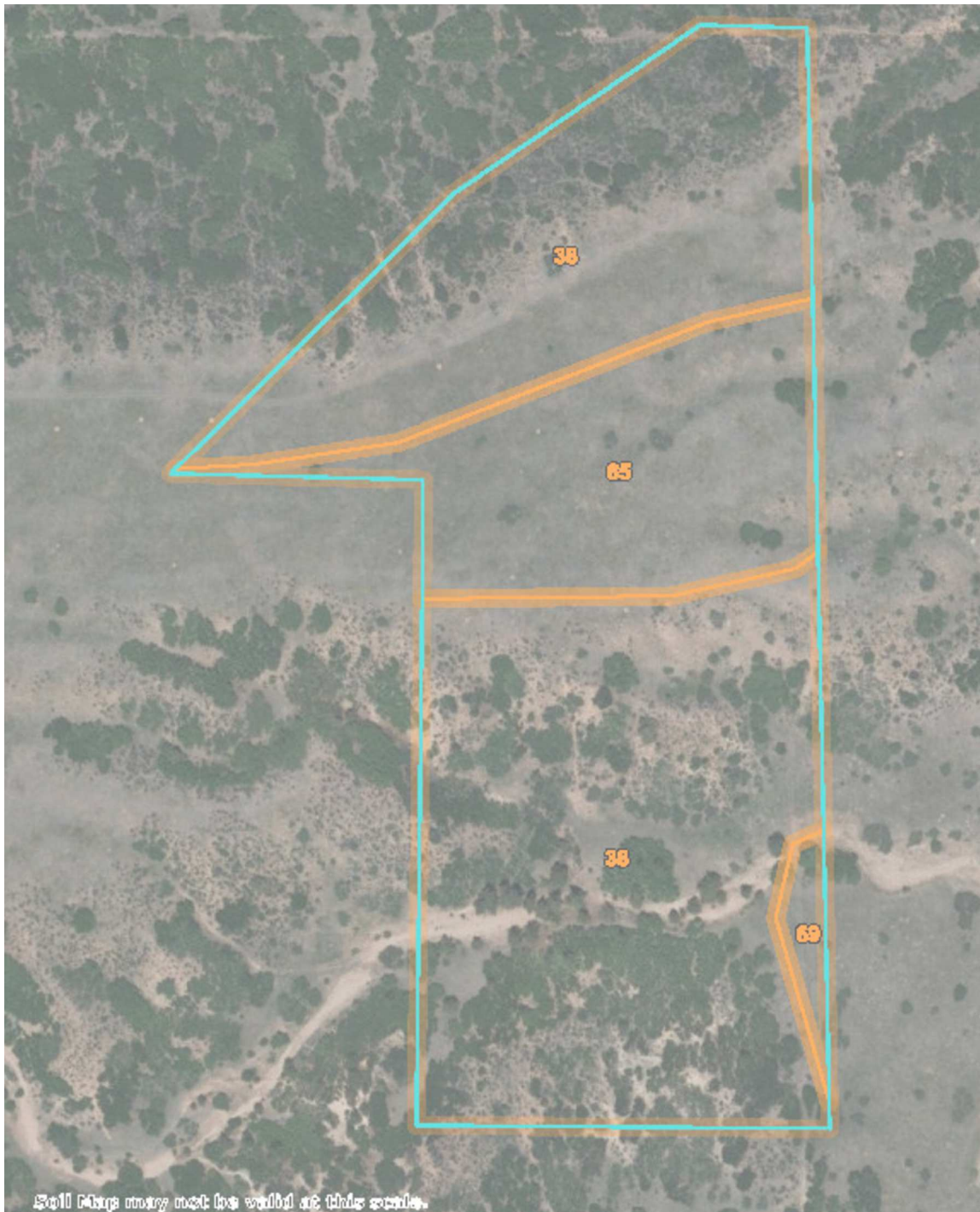
ENGINEER: TM
DRAWN BY: KZ
CHECKED BY: TM

ISSUED: 10-13-2023

TEST PIT
LOCATION PLAN

SHEET No.

FIG-3



38 - Jarre - Tecolote complex with 8 to 65 percent slopes

65 - Perrypark gravelly sandy loam, 3 to 9 percent slopes

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



NOT TO SCALE

Architecture
Structural
Geotechnical



Engineers / Architects

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

Materials Testing
Forensics
Civil / Planning

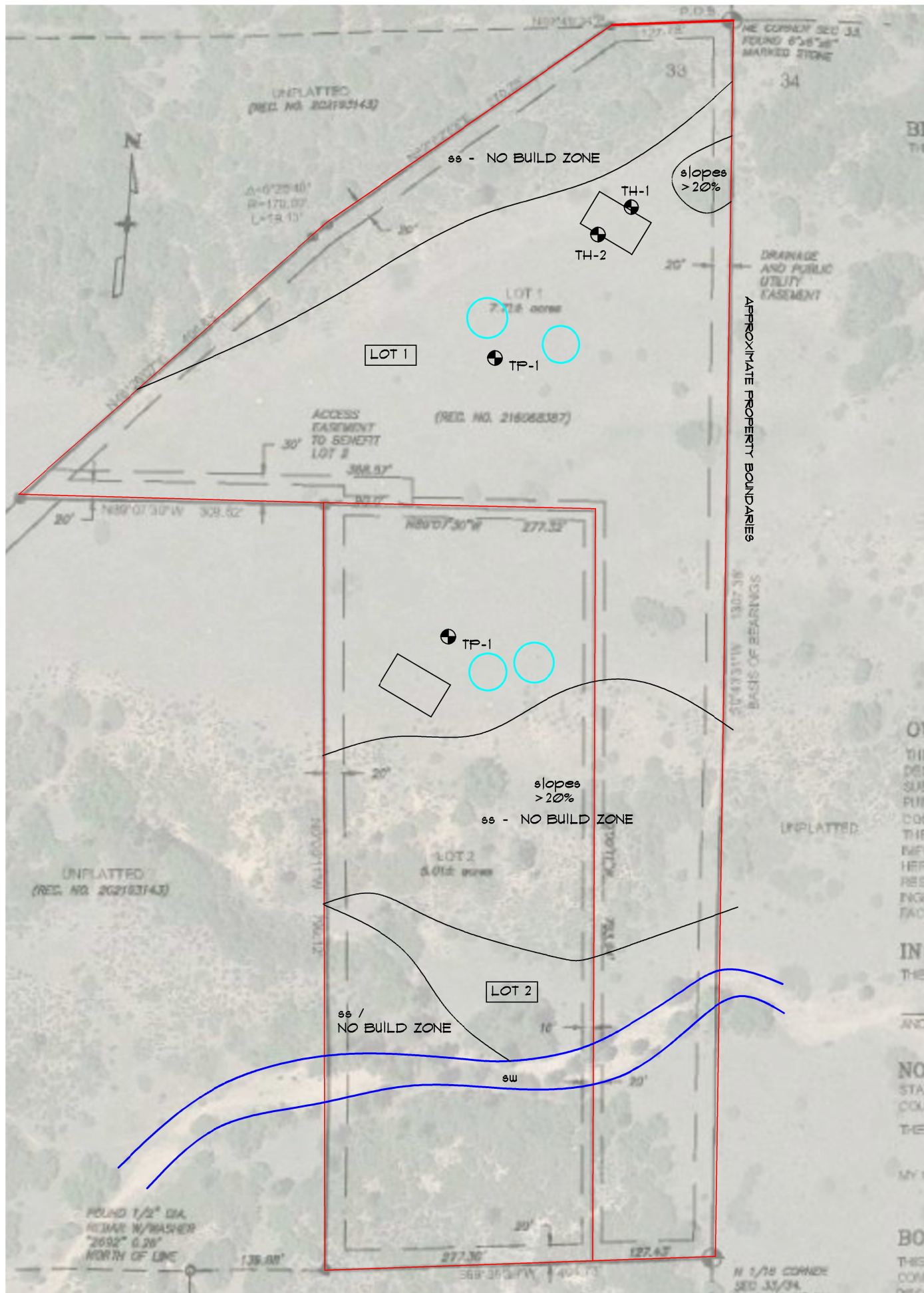
USDA SOIL SURVEY MAP

DRIFTWOOD ESATES, FILING NO. 1
CENTER ICE VIEW
EL PASO COUNTY, COLORADO
ANDY ALM

JOB No. 194552

FIG No. 5

DATE 10-13-2023



ss - steep slopes - slopes greater than 20%

sw - seasonally wet, indicates the intermittent drainage

 APPROXIMATE LOCATION OF HOUSE

 APPROXIMATE LOCATION OF OWTS

NOTE: THE CHOSEN ON-SITE WASTEWATER TREATMENT SYSTEM LOCATIONS ARE FOR ILLUSTRATION ONLY. IF THE EL PASO COUNTY HEALTH DEPARTMENT PHYSICAL SETBACK REQUIREMENTS ARE MET FOR EACH LOT, STEEP SLOPES, AND DRAINAGEWAY ARE AVOIDED THERE ARE NO RESTRICTIONS ON THE OWTS PLACEMENT



NOT TO SCALE

BASE MAP PROVIDED BY: LWA LAND SURVEYING AND GOOGLE EARTH

Materials Testing
Forensics
Civil / Planning



Architecture
Structural
Geotechnical

Engineers / Architects

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

DRIFTWOOD ESTATES, FILING NO. 1
CENTER ICE VIEW
EL PASO COUNTY, COLORADO
ANDY ALM

ENGINEER: TM
DRAWN BY: KZ
CHECKED BY: TM

ISSUED: 10-13-2023

SEPTIC SUITABILITY
MAP

SHEET No.

FIG-6