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WASTEWATER DISPOSAL REPORT

for

William Guman and Associates, Ltd.
Jane Davis Ranch Subdivision

EPC Parcel #: 4200000354, 4200000359, 4200000377, 4200000406, 4200000469, 4200000470, 4233000031

June 2023
(Revised September 2023)

Prepared By:

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William Guman and Associates, Ltd.

JANE DAVIS RANCH SUBDIVISION

EPC Parcel # 4200000354, 4200000359, 4200000377, 4200000406, 4200000469, 4200000470, 4233000031

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Prepared for:

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Colorado Springs, CO 80903

Prepared by:

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5540 Tech Center Drive, Suite 100
Colorado Springs, CO 80919

Table of Contents

1.0 INTRODUCTION AND EXECUTIVE SUMMARY 2

2.0 PROJECTED LAND USES 2

2.1 Projected Land Uses 2

3.0 WASTEWATER REPORT 2

3.1 Wastewater Loads 2

3.2 On-Site Wastewater Treatment Systems (OWTS) 3

APPENDICES

Appendix A – Land Use Exhibit

Appendix B – OWTS Report

1.0 INTRODUCTION AND EXECUTIVE SUMMARY

The purpose of this report is to address the specific wastewater loads for the proposed residential and commercial subdivision located over Parcels # 4200000354, 4200000359, 4200000377, 4200000406, 4200000469, 4200000470, 4233000031 in El Paso County, CO.

EXECUTIVE SUMMARY: **The proposed subdivision has adequate water rights, water quality, area, and soils to support the proposed residential and commercial development on a 300-year basis.**

2.0 PROJECTED LAND USES

2.1 Projected Land Uses

This report pertains to the seven existing parcels totaling 392.91 acres which are proposed to be divided into ninety-two (92) residential lots and two (2) commercial lots. Please refer to the Land Use Exhibit in ***Appendix A***.

3.0 WASTEWATER REPORT

3.1 Wastewater Loads

There are ninety-two (92) residential units and two (2) commercial lots that are proposed for the subdivided property. All facilities will employ the use of on-site wastewater treatment systems for sewage systems. There are 0.433 AF/year of projected water demand for each residence, of which 0.26 AF/year is projected for individual indoor household use. For the commercial property, at total of 4.23 AF/year will be used for indoor use. This equates to a total of 28.15 AF/year total to be sent to septic annually. A breakdown of projected wastewater loads is summarized in Table 3-1. Average daily wastewater loads are expected to be 90% of average daily indoor use.

Table 3-1: Summary of Expected Water Demands & Wastewater Loads

Water						Wastewater
# of SFEs	**Annual Indoor Use 0.26 (AF/YR/SFE)**	**Average Daily Indoor Use (GPD)**	**Irrigation 0.0566 (AF/1,000 SF)**	**Domestic Watering 0.011 (AF/Horse/Year)**	**Total Indoor, Watering, & Irrigation (AF)**	**ADF (@ 90% Indoor Use (GPD)**
92	*Note 1* 23.920	21354	*Note 2* 14.841	*Note 3* 2.024	40.78	19219
# of Commercial Buildings	**Total Sq Ft**	**Annual Indoor Use 0.1 (GPD/FT 2)**	**Average Daily Indoor Use (GPD)**	**Total Irrigation 0.0566 (AF/1,000 SF)**	**Total Commercial & Irrigation (AF)**	**ADF (@ 90% Indoor Use (GPD)**
2	37,767	*Note 4* 4.230	3777	*Note 5* 0.170	4.400	3399
Total					**45.185**	**19219**

Note 1: ***Per 8.4.7(B)(7)(d) of the EPC Land Development Code***

Note 2: ***Assuming 2850 ft^2 of lawn/garden/trees per lot***

Note 3: ***Assume 2 large animals per lot***

Note 4: ***Per 8.4.7(B)(7)(d) of the EPC Land Development Code***

Note 5: ***Assuming 3000 ft^2 of lawn/trees total***

3.2 On-Site Wastewater Treatment System (OWTS)

The proposed single-family homes as well as commercial buildings will be served by individual on-site wastewater treatment systems. The site was evaluated for soil types and long-term acceptance rates (LTAR) with bores drilled on February 24, 2023, as well as the appropriateness of *on-site wastewater treatment systems* (OWTS). This evaluation was performed by RMG Engineers/Architect's Kelli Ziegler, Professional Geologist and Tony Munger, Professional Engineer. Eleven (11) bores were excavated on the site to determine general suitability for the use of OWTS. All bores were drilled to eight feet and classified. Groundwater was encountered at 6 feet in Pit 8.

A visual and tactile examination was performed to classify and determine the soils engineering characteristics. Long term acceptance rates (LTAR) associated with the most restrictive soils observed in the profile pits was between 0.80 – 1.0 gallons per day per square foot (BPD/sf) for the sand layers (Soil Type R-0) found between 2-6 feet deep in all the pits. Groundwater was not encountered in any pit but #8. Bedrock was not encountered in any of the test pits at 8 feet. Due to the large acreage of the proposed subdivision, it should be known that there is a possibility of shallow bedrock in other sections of the property.

USDA soil classification 29 is located around drainage areas on the property with groundwater noted between 0 – 24 inches. This area should be avoided as a septic treatment area.

Subsurface materials encountered in the profile pit excavations were classified as seen below.

- Pit 1 was described as sandy clay loam from 0 – 1.5 feet (soil type 3/R1) and sand from 1.5 – 8 feet (soil type 1/R-0). No groundwater.
- Pit 2 was described as sand from 0-8 feet (soil type 1/R-0).
- Pit 3 was described as sandy clay loam from 0 - 2.5 feet (soil type 3/R1), sand from 2.5-6.5 feet (soil type 1/R-0), clay from 6.5 – 8 feet (soil type 4). No groundwater.
- Pit 4 was described as sand from 0-3 feet (soil type 1/R-0), sandy clay lean from 3-6 feet (soil type 3A), sandy clay from 6-8 feet (soil type 2). No groundwater.
- Pit 5 was described as loam from 0-3.5 feet (soil type 2), sand from 3.5 - 8 feet (soil type 1/R-0). No groundwater. No groundwater.
- Pit 6 was described as sand from 0 – 8 feet (soil type 1/R-0). No groundwater.
- Pit 7 was described as sandy clay loam from 0 - 1.5 feet (soil type 1), sand from 1.5 - 8 feet (soil type 1/R-0). No groundwater.
- Pit 8 was described as clay loam from 0 -1 feet (soil type 3), sandy clay from 1 - 2 feet (soil type 4), sand from 2 - 6 feet (soil type 1/R-0). Groundwater was found at 6 feet.
- Pit 9 was described as sandy clay loam from 0 - 1 feet (soil type 3), sand from 1 – 4.5 feet (soil type R-0), clay from 4.5 - 8 feet (soil type 4). No groundwater.
- Pit 10 was described as sand from 0 - 8 feet (soil type 1). No groundwater.
- Pit 11 was described as sandy loam from 0 – 5 feet (soil type 2), sand from 5 – 7 feet (soil type 1), silty clay loam from 7 – 8 feet (soil type 3).

The following criteria are based on El Paso County OWTS Regulations, each septic system must meet the following minimum criteria.

- Treatment area is a minimum of four feet above bedrock and/or groundwater in septic area.
- Each treatment area must have an OWTS design prepared and presented to El Paso County and approved before an OWTS permit can be obtained.
- Physical setbacks of 100 feet from any well must be provided for desired treatment area.
- Treatment area must be 10 feet from any property lines, gulches, cut banks, and/or fill areas.
- OWTS must not fall in any restricted areas.

According to RMG's report, the site is suitable for individual on-site wastewater treatment systems within its cited limitations. Based on the noted groundwater and bedrock observed throughout the proposed subdivision, an engineered system is anticipated to be required for most of the treatment systems. Each property will need to be evaluated for this requirement.

The *Wastewater Report for Judge Orr Road – Davis Subdivision, Peyton, CO, El Paso County, Colorado* by RMG Engineers/Architects dated April 27, 2023, is included in ***Appendix B***.

Appendix A

DAVIS RANCH SKETCH PLAN

TWO PARCELS OF LAND BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 33 AND A PORTION OF SECTION 34, BOTH IN TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

A. SUBDIVIDERS

OWNERS
Jane Davis Living Trust
9060 Elbert Road
Peyton, CO 80831
TSN 4200000377

14850 Judge Orr Road
TSN 4233000031

Judge Orr Road
TSN 4200000406
Elbert Road
TSN 4200000379

Junior J. Davis
9050 Elbert Road
Peyton, CO 80831- 8319
TSN 4200000218

Junior J. Davis
9350 Elbert Road
Peyton, CO 80831- 8319
TSN 4200000241

B. APPLICANT

APPLICANT | PLANNER | LANDSCAPE ARCHITECT
William Guman & Associates, Ltd.
Attn: Bill Guman, PLA, ASLA, APA
731 North Weber Street, Suite 10
Colorado Springs, CO 80903
bill@guman.net

ENGINEER
JR Engineering
Attn: Bryan T. Law, PE
5475 Tech Center Drive, Suite 235
Colorado Springs, CO 80919
blaw@jrengineering.com

WATER | HYDROLOGY
RESPEC /JDS-Hydro
Attn: Douglas E. Schwenke
5540 Tech Center Drive, Suite 100
Colorado Springs,CO 80919
Douglas.Schwenke@respec.com

SOILS | GEOLOGY
RMG Engineers/Architects
Attn: Kelli Zigler
2910 Austin Bluffs Pkwy., Suite 100
Colorado Springs, CO 80918
KMZigler@rmg-engineers.com

ENVIRONMENTAL
Ecosystem Services, LLC
Attn: Grant Gurnee, PWS
1455 Washburn Street
Erie, CO 80516
grant@ecologicalbenefits.com

TRANSPORTATION:
LSC Transportation Consultants, Inc.
Attn: Jeff Hodsdon, PE
2504 E. Pikes Peak Ave., Suite 304
Colorado Springs, CO 80909
jeff@lsctrans.com

C. LEGAL DESCRIPTION

Two parcels of land being a portion of the Southeast quarter of Section 33 and a portion of Section 34, both in Township 12 South, Range 64 West of the 6th Principal Meridian, County of El Paso, State of Colorado, being more particularly described as follows:

D. BASIS OF BEARINGS

The South Line of Section 34, Township 12 South, Range 64 West of the 6th Principal Meridian, being monumented at the West End by a 3.25" aluminum cap stamped "LS 17496 1992" on a Range Box and at the East End by a 3.25" aluminum cap stamped "LS 17496 1992" in a Range Box, assumed to bear S89 59'23"E.

PARCEL 1:
Beginning at the Southeast Corner of Section 34, Township 12 South, Range 64 West of the 6th Principal Meridian;
Thence on the South Line of said Section 34, N89°59'23"W a distance of 2,110.20 feet;
Thence departing said South line, N00°26'09"W a distance of 1,316.09 feet;
Thence S89°57'13"W a distance of 528.02 feet;
Thence S89°56'16"W a distance of 2,615.89 feet, to the Easterly right-of-way line of Stapleton Drive as described in the document recorded under Reception No. 215041135 and 21504136 in the records of the El Paso County Clerk and Recorder.
Thence on said Easterly right-of-way line, on the arc of a curve to the left whose center bears S84°58'34"W, having a radius of 1,555.00 feet, a central angle of 25°36'01" and an arc length of 694.79 feet, to a point of non-tangent.
Thence departing said Easterly right-of-way line, S89°58'45"E a distance of 194.82 feet;
Thence N89°51'55"E a distance of 1,969.50 feet;
Thence N00° 23'27"W a distance of 658.47 feet;
Thence N00° 28'50"W a distance of 1,312.87 feet;
Thence N00° 30'33"W a distance of 755.55 feet;
Thence N89° 37'43"E a distance of 657.85 feet;
Thence N00° 25'03"W a distance of 165.39 feet.
Thence N89° 37'42"E a distance of 1,316.67 feet;
Thence N00° 29'40"W a distance of 386.90 feet, to the North line of the Northeast quarter of said Section 34;
Thence on said North line, N89°39'41"E a distance of 1,318.81 feet, to the Northeast corner of said Section 34;
Thence on the East line of said Northeast quarter, S00°29'00"E a distance of 2,636.78 feet, to the East quarter of said Section 34;
Thence on the East line of the Southeast quarter of said Section 34, S00°28'37"E a distance of 2,635.75 feet, to the point of beginning;

Containing a calculated area of 16,240,833 Square Feet or 372.8382 Acres.

PARCEL 2:
Commencing at the Southeast corner of Section 33, Township 12 South, Range 64 West of the 6th principal meridian;
Thence N56°29'00"W a distance of 90.43 feet, to the Northerly right-of-way line of Judge Orr Road as described in the document recorded under Reception No. 215041136 in the records of the El Paso County Clerk and Recorder, and the point of beginning;
Thence on said Northerly right-of-way line, S89°56'57"W a distance of 582.45 feet, to a point on the West line of the East half of the Southeast quarter of the Southeast quarter of said Section 33;
Thence on said West line, N00°12'57"W a distance of 1,262.86 feet;
Thence on the West line of the Southeast quarter of the Northeast quarter of the Southeast quarter of said Section 33, N00°12'57"W a distance of 656.08 feet, to a point on the North line of the Southeast quarter of the Northeast Quarter of the Southeast Quarter of said Section 33;
Thence on said North line, S89°58'45"E a distance of 347.63 feet, to a point on the Westerly right-of-way line of Stapleton Road as described in the document recorded under Reception No. 215041136 and a point of a non-tangent curve;
Thence on said Westerly right-of-way line, the following seven (7) courses:

1. **On the arc of a curve to the right whose center bears S57°00'47", having a radius of 1,455.00 feet, a central angle of 32°50'36" and an arc length of 834.04 feet, to a point of tangent;**
2. **S00°08'36"E a distance of 421.95 feet, to a point of curve;**
3. **On the arc of a curve to the left, having a radius of 1,555.00 feet, a central angle of 05°24'11" and an arc length of 146.64 feet, to a point of tangent;**
4. **S05°32'47"E a distance of 200.32 feet, to a point of curve;**
5. **On the arcof a curve to the right, having a radius of 1,455.00 feet, a central angle of 05°12'20" and an arc length of 132.18 feet, to a point of tangent;**
6. **S00°20'27" and a distance of 201.65 feet;**
7. **S44°45'51"W a distance of 40.02 feet, to the point of beginning.**

Containing a calculated area of 1,066,496 square feet or 24.4834 Acres.

E. NOTES

1. **Acreages and percentages are rounded up to equal 100%.**
2. **All areas designated as wetlands and drainageways, buffers, setbacks, and easements are considered as 'No-Build Areas' unless otherwise indicated.**
3. **A portion of the parcels is located within a designated FEMA RFloodplain as determined by the FEMA National Flood Insurance Program Flood Insurance Map Numbers 08041CO556G and 08041C0552G with an effective date of December 7, 2018. Existing floodplain boundaries may be modified. Coordination with FEMA will be completed to establish revised floodplain limits and BFE. If the submittal and review of a floodplain revision occurs independently of this Sketch Plan it shall be approved prior ot platting of any lots currently located within floodplain boundaries.**
4. **The proposed Sketch Plan is located within the Peyton Fire Protection District.**
5. **After approval, this Sketch Plan will expire in 5 years unless a Final Plat is submitted.**
6. **Streets and access locations and configurations are conceptual and subject to change. Detailed street plans will be prepared and reviewed at the subdivision process.**
7. **Access locations onto Stapleton Road, Judge Orr Road, and Elbert Road will be finalized at the Preliminary Plan or Development Plan level of submittal.**
8. **Trails are conceptual only. Detailed plans will be prepared and reviewed at the subdivision process.**
9. **El Paso County Regional Trails on Judge Orr Road, Stapleton Road and Elbert Road are to be coordinated with El Paso County Parks and Recreation at the Preliminary Plan or Development Plan level of submittal, and a Neighborhood Park will be further refined in future zoning and development plan submittals.**
10. **A floodplain development permit is required prior to making any modifications within the indicated 100-year floodplain, including but not limited to grading, drainage, and all roadway crossings.**
11. **A completed U.S. Army Corps of Engineers (COE) permit shall be provided to the El Paso County Planning Department prior to project commencement if ground disturbing activities are scheduled to occur in any wetland area.**
12. **The wetland boundaries as indicated on the Sketch Plan are conceptual and subject to change. All existing wetland areas are to be mapped per the U.S. Army Corps of Engineers during future zoning and development plan submittals.**
13. **In the event the project will create ground disturbing activity in habitat occupied by threatened or endangered species, and/or where development may occur within 300 feet of the centerline of any stream or floodplain, whichever is greater, the applicant will obtain documentation from U.S. Fish and Wildlife Service (FWS) prior to proceeding with the project.**
14. **Information pertaining to wildlife protection measures will be provided by the applicant including fencing requirements, trash and debris containment, protection and enhancement of natural vegetation, weed control and riparian and wetland protection and buffer areas, as appropriate with future zoning and development plan submittals.**
15. **Development proposed by this Sketch Plan is primarily larger lot single-family residential compatible with that of adjacent and by Rural Residential (RR) zone districts. 32% of proposed lots will adhere to zoning and development criteria for RR-2.5 and 57% for RR-5.0 zone districts within the overall 398.91 acre development.**

K. ZONING MAP

L. VICINITY MAP

M. SITE DATA

Existing Land Use:	**Agricultural**	
Existing Zone District	**A-35**	
Site Acreage:		
TSN 4200000377	**69.25 AC**	**(9060 Elbert Road)**
TSN 4233000031	**25.68 AC**	**(14850 Judge Orr Road)**
TSN 4230000406	**103.98 AC**	**(0000 Judge Orr Road)**
TSN 4200000470	**80.00 AC**	**(9060 Elbert Road)**
TSN 4200000359	**40.00 AC**	**(9350 Elbert Road)**
TSN 4200000354	**40.00 AC**	**(9050 Elbert Road)**
TSN 4200000469	**40.00 AC**	**(0000 Elbert Road)**
Total Acreage:	**398.91 AC**	

Proposed Maximum Number of Units: **92 Single Family**
Maximum Gross Density **.23 DU/AC**

Proposed Land Uses: **Residential [2.5 and 5.0 acre single family]**
Commercial [5.78 ac]
Park/Open Space [17.79 ac including detention]

N. STREET DETAILS

Future Local Roads

1. Existing Judge Orr Road - Typical Section

POSTED SPEED LIMIT = 45 MPH. DESIGN SPEED LIMIT = 50 MPH.
NOTE: ULTIMATE SECTION HAS BEEN OVERLAYED.

NOTE: JUDGE ORR ROAD IS PRESENTLY A 2-LANE MINOR ARTERIAL (RURAL). FUTURE CONDITIONS: 4 LANE MINOR ARTERIAL (RURAL).

2. Proposed Rural Local - Typical Section

POSTED SPEED LIMIT = 30 MPH. DESIGN SPEED LIMIT = 30 MPH

O. SHEET INDEX

SKP 1.1 **Subdividers/Applicant | Legal Description | Notes, Zoning Map | Vicinity Map | Site Data | Internal Street Detail**

SKP 1.2 **Sketch Plan | Land Use Summary Table | Parcel Summary Table | Adjacent Owners**

SKP 1.3 **Parcel/Open Space/Trails/Phasing Plan | Open Space and Trails Schedule | Open Space Tract Schedule | Trail Head Detail | Phasing Schedule**

Actual North

0' 300' 600' 900'
SCALE: 1" = 300' - 0"

E. NOTES CONT'D.

16. **Approximately 6 acres with frontage along Judge Orr Road are scheduled for commercial services and will be compatible with the zoning and development criteria of the county's CS zone district.**
17. **Utilities for all proposed development will be via on-site well and septic as supported by the Water Resources Report submitted with this Sketch Plan application.**
18. **A Phasing Plan for all proposed development is provided on Sheet SKP1.3. Phasing will be implemented based upon prevailing market conditions and is subject to change.**
19. **Detention ponds and cross-lot drainage ditches will be located within drainage easements providing access for maintenance by the Davis Ranch Metropolitan District.**
20. **Open spaces, Neighborhood Park, and buffer areas will be maintained by the Davis Ranch Metropolitan District.**
21. **There will be no direct lot access onto Stapleton Road or Judge Orr Road. Access to a portion of the parcel is proposed onto Elbert Road due to Floodplain constraints.**
22. **A Noise Study will be prepared with subsequent submittals to address appropriate mitigation that may be required from impacts of Judge Orr Road, Stapleton Road, and Elbert Road.**
23. **Park improvements provided by the Davis Ranch may be applied to Park Land Dedication and/or fees with review and approval by El Paso County Parks. Any park improvements will be coordinated at a later date with El Paso County Parks via Park Land Credits.**
24. **This Sketch Plan proposes to provide fees in lieu of land for future school development. The project site is located entirely within the Peyton School District No. 23.**
25. **All electric service is to be provided by Mountain View Electric Association (MVEA). Black Hills Energy and natural gas easements will be provided as required.**
26. **Site lighting, if required, will satisfy the requirements of Section 6.2.3. of the El Paso County Land Development Code.**
27. **Davis Ranch will comply with all Federal and State laws, regulations, ordinances, review and permit requirements, and other agency requirements, if any, of applicable agencies including but not limited to: the Colorado Division of Parks and Wildlife, Colorado Department of Transportation, U.S. Army Corps of Engineers, and the U.S. Fish and Wildlife Service regarding the Endangered Species Act particularly as it relates to all listed species.**
28. **The following Districts will serve the Davis Ranch property:**
    a. **Davis Ranch Metropolitan District or HOA for maintenance of any/all common spaces, detention ponds, and drainage easements.**
    b. **Peyton School District No. 23**
    c. **Peyton Fire Protection District (Fire emergency).**
    d. **Peyton Fire Protection District (Emergency services).**
    e. **El Paso County Conservation District.**
    f. **Pikes Peak Library District.**
    g. **El Paso County Roads and Bridges.**
    h. **Upper Black Squirrel Creek Ground Water.**
29. **Mail box kiosk locations and design will be determined at time of Final Plat in coordination with the U.S. Postal Service.**
30. **Perimeter buffers along existing adjacent zoning of A-35 shall be 20 feet where noted on the Sketch Plan. All other buffers to adjacent zoning will be 15 feet as noted on the Sketch Plan.**

F. FLOODPLAIN NOTES

1. **Portions of the Davis Ranch property are bisected by and located within a designated FEMA Floodplain as determined by the FEMA National Flood Insurance Program Flood Insurance Map, numbers 08041C0556G and 06041CO552G with an effective date of December 7, 2018. The existing floodplain boundaries may be revised and/or the Base Floodplain Elevation (BFE) may be modified. Coordination with FEMA will be completed to establish revised floodplain limits and BFE. If the submittal and review of a floodplain revision occurs independently of this Sketch Plan and shall be approved prior to the platting of any lots currently located within floodplain boundaries.**
2. **No development of homes, ancillary structures, or fences will be permitted on any lot that encroaches into areas of a floodplain.**
3. **The status of all floodplains indicated on this Sketch Plan is jurisdictional and are to be determined upon further study and mapping.**

G. PUBLIC STREETS

1. **Internal streets will meet the standards of the El Paso County Engineering Criteria Manual. A deviation request and/or modification of the ECM will be submitted for review and approval for any design that does not conform with these standards.**
2. **All internal streets are designated as public, will be paved, and will provide for levels of vehicular circulation required by the Traffic Impact Study.**
3. **Until approved by the County Engineer, all access points shown from the property onto Stapleton Road, Judge Orr Road, and Elbert Road are conceptual and non-binding upon the county. Approval of this Sketch Plan shall not be interpreted to include approval of any access to any public roads. The County Engineer shall approve accesses in accordance with the requirements and procedures of the Engineering Criteria Manual at the time of Development Plan and/or subdivision submittal and review.**

H. PRIVATE STREETS

1. **Any private streets, if proposed, will be privately owned and maintained by the Davis Ranch Metropolitan District or Homeowner's Association (HOA).**
2. **A waiver of the EPC Land Development Code will be requested to permit private roadways within this Sketch Plan at the time of future subsequent Development Plan submittals.**

I. NO-BUILD / OPEN SPACE / RESIDENTIAL LOT OPEN SPACE EASEMENTS

1. **Per Section 4.2.6.F.8.c. Calculation of Residential Open Space of the El Paso County Land Development Code: *"individual, private residential or commercial lot areas shall not be included on the open space calculation unless the open space areas located on private lots are subject are subject to open space easements and restrictions."***
2. **The "Floodplain - No Build / OS" tracts, into which some residential lots will encroach, are included in the Sketch Plan calculations as "Private Open Space" areas. Lots that encroach into the "Floodplain - No Build / OS" tracts will be platted as open space easements in future zoning and development submittals These areas shall remain Private Open Space in perpetuity with no construction of primary and ancillary structures, sheds, barns, fences, etc. permitted within any no-build areas.**
3. **The Sketch Plan proposes a combination of Public and Private Open Space. Public Open Space will include a Pulic Park, Detention Pond parcels, and 8' Trail Easements located within certain Buffer areas to provide connectivity to Private open space easements and Public open space areas.**
4. **Public Open Space areas will be maintained by the Davis Ranch Metropolitan District or HOA. Private Open Spaces will be maintained by the owner on whose lot Open Space easements may be located.**
5. **See Sketch Plan Sheet SKP1.3 for acreage and tract data for all Public and Private Open Spaces.**

J. SOILS AND GEOLOGIC HAZARDS

1. **Areas of proposed development that are found to be impacted by ground water, imported fill, loose and/or expansive soils, etc., will be mitigated by avoidance, re-grading, engineering design, and construction techniques. A map of any potential hazard areas of concern and recommended mitigation measures are found in the Geological Hazard Study and Wastewater Study prepared by RMG Engineers and Architects (April 27, 2023). Further studies of these conditions that warrant additional mitigation will be provided with the Preliminary Plan or Final Plan.**

K. PHASING PLAN

1. **Davis Ranch will be developed in multiple phases and platted in multiple filings. This Sketch Plan proposes three phases of development, as indicated on Sketch Plan Sheet SKP1.3. Subsequent phasing plans will be developed based upon prevailing market conditions and absorption of developed lots.**
2. **Preliminary phasing boundaries are indicated on this Sketch Plan but are subject to change. Proposed development and build-out of internal streets, park and open space, and installation of utilities will be determined with each phase.**

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ONLY DRAWINGS BEARING THE OFFICIAL STAMP OF THE LICENSED LANDSCAPE ARCHITECT IN THE STATE OF COLORADO ARE VALID FOR CONSTRUCTION PURPOSES.

N
PLAN NORTH: S

PROJECT NAME: DAVIS RANCH
PROJECT ADDRESS: 9350 ELBERT ROAD PEYTON, CO 80831
PROJECT DESCRIPTION: SKETCH PLAN

DATE: 05/30/2023
DESIGNED: WFG
CHECKED: GEM

WILLIAM FREDERICK GUMAN LA-167 05/30/2023 Original Date of Licensure STATE OF COLORADO LICENSED LANDSCAPE ARCHITECT

REVISIONS:		
DATE:	BY:	DESCRIPTION:
NOTES:		

PLAN SCALE: 1" = 300'0" (OR AS NOTED ON PLAN)

SHEET TITLE: SKETCH PLAN

SHEET NO. SKP1.1

1 OF 3 SHEETS

FILE NO. FILE#

DAVIS RANCH SKETCH PLAN

TWO PARCELS OF LAND BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 33 AND A PORTION OF SECTION 34, BOTH IN TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

LAND USE SUMMARY TABLE:

LAND USE CATEGORY	ACREAGE	% OF SITE	MAXIMUM UNITS
LOW DENSITY RR-2.5 ZONING	127.44 ac	32%	49
LOW DENSITY RR-5 ZONING	226.30 ac	57%	43
COMMERCIAL CS ZONING	5.78 ac	1.5%	n.a.
OPEN SPACE PARK ZONING	6.44 ac	1.7%	n.a.
FLOODPLAIN NO-BUILD / OS	31.89 ac	n.a.	n.a.
DETENTION NO-BUILD	11.35 ac	2.9%	n.a.
TRAIL AND TRAIL HEAD	2.69 ac	1.0%	n.a.
15-20' BUFFER	n.a.	n.a.	n.a.
PROPOSED R.O.W.	20.68 ac	4.4%	n.a.
TOTAL:	398.91 ac	100%	92

A. "FLOODPLAIN - NO BUILD / OS" ACREAGE IS INCLUDED WITHIN THE PROPOSED PARCEL ACREAGE AS "PRIVATE OPEN SPACE" AND IS DESIGNATED AS SUCH ON EACH LOT WHICH ENCROACHES INTO THE FLOODPLAIN.

B. 'OPEN SPACE' AREAS INCLUDE PUBLIC PARK PARCEL, DETENTION PARCELS, 8' TRAIL EASEMENTS, AND PRIVATE FLOODPLAIN - NO BUILD / OS.

C. "R.O.W." AREAS INCLUDE ALL INTERNAL STREET RIGHTS-OF-WAY, JUDGE ORR ROAD R.O.W., AND STAPLETON ROAD R.O.W.

D. "TRAIL EASEMENT" INCLUDES A PROPOSED 8' WIDE COUNTY TRAIL EASEMENT TO PROVIDE CONNECTIVITY TO PARK AND FLOODPLAIN - NO BUILD / OS AREAS.

PARCEL SUMMARY

PARCEL	ACREAGE	PROPOSED USE/ZONE	MAXIMUM UNITS
A	3.53	COMMERCIAL	n.a.
B	13.57	RR-5.0	2 DU
C	7.44	RR-2.5	3 DU
D	31.31	RR-2.5	12 DU
E	26.27	RR-5.0	5 DU
F	12.51	RR-2.5	5 DU
G	2.25	COMMERCIAL	n.a.
H	14.74	RR-2.5	5 DU
I	39.59	RR-2.5	16 DU
J	21.85	RR-2.5	8 DU
K	28.40	RR-5.0	3 DU
L	69.79	RR-5.0	14 DU
M	57.97	RR-5.0	11 DU
N	30.35	RR-5.0	6 DU
O	12.65	RR-5.0	2 DU
P	6.44	PARK	n.a.
Q	2.14	DETENTION	n.a.
R	4.88	DETENTION	n.a.
S	4.33	DETENTION	n.a.

ADJACENT PROPERTY OWNERS:

KEY	NAME AND ADDRESS
01	Jane Davis Living Trust 9060 Elbert Road Peyton, CO 80831- 8319 TSN 4200000377
02	Junior J. Davis 9050 Elbert Road Peyton, CO 80831- 8319 TSN 4200000218
03	Junior J. Davis 9350 Elbert Road Peyton, CO 80831- 8319 TSN 4200000241
04	Robert D. Gieck Trust 8349 S. Allison Street Littleton, CO 80128- 6101 TSN 4200000209
05	Mabel L. Brown 9555 Curtis Road Peyton, CO 80831- 7759 TSN 4200000047
06	Jennings Family Trust 2030 Tabor Court Colorado Springs, CO 80919 - 4843 TSN 4233002007
07	FFR7, LLC 1220 Valley Street Colorado Springs, CO 80915 TSN 4233002006
08	Jennings Family Trust 2030 Tabor Court Colorado Springs, CO 80919 - 4843 TSN 4233002004
09	Albert Omar Lopez 7220 Rim Bluff Lane Colorado Springs, CO 80927 TSN 4233002003
10	Roberto S. Torres 9464 Winged Foot Road Peyton, CO 80831 TSN 4233002002
11	Julia B. Morgan Living Trust 4825 Old Farm Drive #314 Colorado Springs, CO 80917 - 1089 TSN 4220000015
12	Maria O. Skaggs P.O. Box 219 Lake Hopatcong, NJ 07849 - 0219 TSN 4200000103
13	Coronado Ranch Partners, LLC 1083 Prickly Pear Place Colorado Springs, CO 80921 TSN 4200000021
14	Julia B. Morgan Living Trust 4825 Old Farm Drive #314 Colorado Springs, CO 80917 - 1089 TSN 4220000015
15	Jerry F. Ager 9365 N. Curtis Road Peyton, CO 80831 - 8226 TSN 4234001001
16	Joseph A. Stenstrom 9055 Elbert Road Peyton, CO 80831 TSN 4200000244
17	Thomas J. Elliott 8995 Elbert Road Peyton, CO 80831 - 8318 TSN 4200000245
18	Charlotte A. Howard 3232 Muirfield Drive Colo. Spgs., CO 80907 TSN 4200000362
19	Brent Houser Ent., LLC 11890 Garrett Road Peyton, CO 80831 - 7685 TSN 4300000539
20	Gorilla Capital Co. 1342 High Street Eugene, OR 97401 TSN 4300000599
21	J.D. Enghaus 14775 Judge Orr Road Peyton, CO 80831 - 8424 TSN 4304003001
22	Rodolfo Escobedo 10075 Burgess Road Colorado Springs, CO 80908 TSN 4304003002
23	Daniel Duane Combss 8410 N. Curtis Road Peyton, CO 80831 - 7927 TSN 4304003003
24	Jennifer Renzelman 14980 Stapleton Road Peyton, CO 80831 - 6202 TSN 4233000034
25	George Tasoulis 227 W. Sylvestor Place Littleton, CO 80129 - 6202 TSN 4233000034
26	Peter J. Hagen 704 Silver Oak Grove Colorado Springs, CO 80906 TSN 4200000377
27	Pete Lien & Sons, Inc. P.O. Box 440 Rapid City, SD 57709 - 0440 TSN 4200000405
28	William R. Bunn 29531 Saratoga Ave. Big Pine Key, FL 33043 - 3207 TSN 4304005019

Actual North

0' 300' 600' 900'

SCALE: 1" = 300' - 0"

William Guman & Associates, Ltd.
URBAN PLANNING | COMMUNITY DESIGN | LANDSCAPE ARCHITECTURE
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ONLY DRAWINGS BEARING THE OFFICIAL STAMP OF THE LICENSED LANDSCAPE ARCHITECT IN THE STATE OF COLORADO ARE VALID FOR CONSTRUCTION PURPOSES.

N
PLAN NORTH: S

PROJECT NAME: DAVIS RANCH
PROJECT ADDRESS: 9350 ELBERT ROAD PEYTON, CO 80831
PROJECT DESCRIPTION: SKETCH PLAN

DATE: 05/30/2023
DESIGNED: WFG
CHECKED: GEM

WILLIAM FREDERICK GUMAN
LA-167
05/30/2023
Original Date of Licensure
STATE OF COLORADO
LICENSED LANDSCAPE ARCHITECT

REVISIONS:		
DATE:	BY:	DESCRIPTION:
NOTES:		

PLAN SCALE: 1" = 300'0" (OR AS NOTED ON PLAN)

SHEET TITLE: SKETCH PLAN

SHEET NO. SKP1.2

2 OF 3 SHEETS

FILE NO. FILE#

DAVIS RANCH SKETCH PLAN

TWO PARCELS OF LAND BEING A PORTION OF THE SOUTHEAST QUARTER OF SECTION 33 AND A PORTION OF SECTION 34, BOTH IN TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO

LAND USE CATEGORY	ACREAGE	% OF SITE	MAXIMUM UNITS
OPEN SPACE PARK ZONING	6.44 ac	1.7%	n.a.
DETENTION NO-BUILD	11.35 ac	2.9%	n.a.
15-20' BUFFER	n.a.	n.a.	n.a.
8' TRAIL ESMT. AND TRAIL HEAD	1.77 ac	1.0%	n.a.
FLOODPLAIN NO-BUILD / OS	31.89 ac	n.a.	n.a.

Park site is intended as Public Open space

Park site will be maintained by the Davis Ranch Metropolitan District of an HOA.

Detention parcels are intended as Public Open Space

Detention areas will be maintained by the Davis Ranch Metropolitan District of an HOA.

A 15' Buffer is located along all adjacent public streets. A 20' Buffer is located along all adjacent A-35 properties.

Buffers are intended as Public Open Space

Buffer areas will be maintained by the Davis Ranch Metropolitan District of an HOA.

8' Trail is located within the 15-20' Buffer areas.

Trail Easements are intended as Public Open Space

Trail Easements will be maintained by the Davis Ranch Metropolitan District or HOA.

'Floodplain - No Build OS" tracts are intended as Private Open Space areas. Lots that encroach into the Flooplain - No Build / OS tracts will be platted at a future zoning and development plan submittal indicating that these areas are to remain Private Open Space with no construction of primary and ancillary structures, sheds, barns, fences, etc., permitted within all no-build areas.

Total acreage of Floodplain - No Build / OS tracts is included in the total acreage of the 2.5 and 5 acre parcels in which future lots will be developed.

Floodplain - No Build / OS tracts are Private Open Space and are not intended as public open space, with the exception of the Trail Easements that cross through these tracts.

TYPICAL TREALHEAD MARKER

OPEN SPACE TRACT SCHEDULE

PARCEL	TRACT	ACREAGE	DESIGNATION	% OF SITE
B	1	1.39 AC	PRIVATE	1.0%
D	2	7.98 AC	PRIVATE	2.0%
I	3	1.16 AC	PRIVATE	1.0%
E	4	10.37 AC	PRIVATE	2.6%
N	5	10.99 AC	PRIVATE	2.6%
P	n.a.	6.44 AC	PUBLIC	2.8%
Q	n.a.	2.14 AC	PUBLIC	1.0%
R	n.a.	4.88 AC	PUBLIC	1.0%
S	n.a.	4.33 AC	PUBLIC	1.0%
TRAIL	n.a.	1.77 AC	PUBLIC	1.0%
TOTAL PRIVATE		31.89 AC		8.0%
TOTAL PUBLIC		19.56 AC		4.9%
TOTAL:		51.45 AC		12.9%

PHASING SCHEDULE

PHASE	PARCEL	TOTAL UNITS	ACREAGE	PHASE	PARCEL	TOTAL UNITS	ACREAGE
1	A	Commercial	3.53 AC	3	L	14	69.74 AC
1	B	2	13.57 AC	3	M	11	57.97 AC
1	C	3	7.44 AC	3	N	6	30.35 AC
1	D	12	31.31 AC	3	S	Detention	4.33 AC
1	Q	Detention	2.15 AC	3	O	2	12.65 AC
2	E	5	26.27 AC				
2	F	5	21.51 AC				
2	G	Commercial	2.25 AC				
2	G	Commercial	2.25 AC				
2	H	5	14.74 AC				
2	R	Detention	4.88 AC				
2	I	16	39.59 AC				
2	J	8	21.85 AC				
2	K	3	14.43 AC				

Actual North

0' 300' 600' 900'

SCALE: 1" = 300' - 0"

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ONLY DRAWINGS BEARING THE OFFICIAL STAMP OF THE LICENSED LANDSCAPE ARCHITECT IN THE STATE OF COLORADO ARE VALID FOR CONSTRUCTION PURPOSES.

N NE E SE S SW W NW

PLAN NORTH: S

PROJECT NAME: DAVIS RANCH

PROJECT ADDRESS: 9350 ELBERT ROAD PEYTON, CO 80831

PROJECT DESCRIPTION: SKETCH PLAN

DATE: 05/23/2023

DESIGNED: WFG

CHECKED: GEM

WILLIAM FREDERICK GUMAN LA-167 05/23/2023 Original Date of Licensure STATE OF COLORADO LICENSED LANDSCAPE ARCHITECT

REVISIONS:		
DATE:	BY:	DESCRIPTION:
NOTES:		

PLAN SCALE: 1" = 3000' (OR AS NOTED ON PLAN)

SHEET TITLE: SKETCH PLAN

SHEET NO. SKP1.3

3 OF 3 SHEETS

FILE NO. FILE#

Appendix B

Job No. 190392

April 27, 2023

William Guman & Associates, Ltd
731 North Weber Street, Ste 10
Colorado Springs, CO 80903

Re: Wastewater Study
Judge Orr Rd
Davis Subdivision
EL Paso County, Colorado

Dear Mr. Guman:

As requested, personnel of RMG – Rocky Mountain Group has performed a preliminary investigation and site reconnaissance at the above referenced address. The approximate location of the site is shown on the Site Vicinity Map, Figure 1.

The site currently consists of six parcels (per the El Paso County Assessor's website) for a combined 398.81 acres. The parcels included in this study are:

- Schedule No. 4200000377, currently addressed as 9060 Elbert Rd, zoned A-35, consists of approximately 69.25 acres, and land use is classified as agricultural grazing land with well and septic;
- Schedule No. 4233000031, currently addressed as 14850 Judge Orr Rd, zoned A-35, consists of approximately 25.68 acres and land use is classified as agricultural grazing land with well and septic;
- Schedule No. 4200000406, currently labeled as Judge Orr Rd, zoned A-35, consists of approximately 103.98 acres and land use is classified as agricultural grazing land;
- Schedule No. 4200000470, currently labeled as Elbert Rd, zoned A-35, consists of approximately 80.00 acres, and land use is classified as agricultural grazing land;
- Schedule No. 4200000359, currently addressed as 9050 Elbert Rd, zoned A-35, consists of approximately 40.00 acres, and land use is classified as agricultural grazing land with well and septic;
- Schedule No. 4200000354, currently addressed as 9350 Elbert Rd, zoned A-35, consists of approximately 40.00 acres, and land use is classified as agricultural grazing land with well and septic.

It is our understanding that the parcels listed above are to be combined then subdivided into 89 single-family residential lots, two commercial lots, and a community park. The new lots are to be zoned as RR-2.5 and/or RR-5, with minimum lot sizes of 2.5 and 5 acres, respectively.

The proposed lots are to be accessed from two new residential roads, one extending north from Judge Orr Road and a second extending west from Stapleton Drive. Access to the commercial lots is to be provided from Judge Orr Road. The lots are to utilize individual wells and On-Site Wastewater Treatment Systems (OWTS). The Proposed Site Boundaries is presented in Figure 2.

This letter is to provide information for the on-site wastewater report per the On-Site Wastewater Treatment Systems 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 for this site and area were available for our review and are listed below:

1. *Soil and Geology Study, Esteban Subdivision, 3 parcels totaling 496.2 acres, El Paso County, Colorado,* RMG – Rocky Mountain Group, Job No. 190388, dated April 27, 2023.
2. *Wastewater Study, Esteban Subdivision, 3 parcels totaling 496.2 acres, El Paso County, Colorado,* RMG – Rocky Mountain Group, Job No. 190388, dated April 27, 2023.
3. *Soil and Geology Study, Judge Orr Rd, 6 parcels totaling 398.91 acres, El Paso County, Colorado,* RMG – Rocky Mountain Group, Job No. 190392, dated April 27, 2023

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

SITE CONDITIONS

Personnel of RMG performed a reconnaissance visit on February 24, 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. Eight 6 to 8-foot deep test pits were performed across the property 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. No deciduous trees are located on the property.

The following conditions were observed with regard to the 398.91-acre parcel:

- 5 wells currently **do** exist on the site;
- No runoff or irrigation features anticipated to cause deleterious effects to treatment systems on the site were observed;
- Three drainageways/wetlands exist on the property. The drainageways lie within the designated floodway or floodplain;
- Slopes greater than 20 percent **do not** 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 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,* will need to be completed. A scaled site plan and engineered design will also be required prior to obtaining an OWTS permit;
- The treatment areas must comply with any physical setback requirements of Table 7-1 of the El Paso County Department of Health and Environment (EPCHDE);
- 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 EPCHDE;
- Treatment areas must also be located a minimum 50 feet from any spring, lake, water course, irrigation ditch, stream or wetlands;
- the treatment areas are to be located a minimum 10 feet from property lines, dry gulches, 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 test pit observations, the parcel has a minimum of two locations for the OWTS.

If the existing systems are to be removed based on the proposed lot layout, the following would apply:

- Depending on the location of the existing septic systems in relation to the lot layout, they may or may not be utilized for new construction. The existing systems were reportedly constructed between 1996 and 2018. The existing septic systems will need to meet the current criteria for a Transfer of Title Inspection per 8.4 (O).6 per EPCHDE;
- If an existing system is to be removed (e.g. tank, components and/or soil) they should be disposed of properly;
- New treatment areas are not to be located within the existing septic field areas unless the existing system and all contaminated soil has been disposed of properly.

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, identified the soil conditions anticipated to be encountered during construction of the proposed OWTS for the lots which 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. 08041C0558G, effective December 7, 2018 indicates that the proposed treatment areas have sufficient space to remain outside the identified floodplain, drainageways and wetlands.

SOIL EVALUATION

Personnel of RMG performed a soil evaluation to include eight 6 to 8-foot deep test pits, on February 24, 2023 (Test Pit TP-1 through TP-11), 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 Figures 4 through 8.

The USDA/NRCS soil survey identifies the site soils as:

- 8 – Blakeland loamy sand, 1 to 9 percent slopes. The Blakeland loamy sand was mapped by the USDA and is located throughout most of the property. The Blakeland loamy sand encompasses the majority of the property. The properties of the Blakeland loamy sand include somewhat excessively drained soil with a depth to water table of over 80 inches. Runoff is anticipated to be low and frequency of flooding or ponding is none. Landforms are flats and hills;
- 19 – Columbine gravelly sandy loam, 0 to 3 percent slopes. The Columbine gravelly sandy loam was mapped by the USDA and is only located in the southwest corner of the property. Properties of the Columbine gravelly sandy loam include well drained soil with a depth to water table of over 80 inches. Runoff is anticipated to be well drained and frequency of flooding or ponding is none. Landforms are fans and hills;
- 29 – Fluvaquentic Haplaquolls, 0 to 2 percent slopes. The Fluvaquentic Haplaquolls was mapped by the USDA and traverses from the western end of the property to the eastern end in the northern portion of the property. Properties of the Fluvaquentic Haplaquolls include poorly drained soil with a depth to water table of 0 to 24 inches. Runoff is anticipated to be very high and frequency of flooding is frequent. Frequency of ponding is none. Landforms are flood plains and swales. The hydrologic soil group of the unit is D.

The USDA Soil Survey Map is presented in Figure 10.

An OWTS is proposed for each proposed lot 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 observed in the test pits. However, groundwater was also encountered in the majority of the test borings performed for the Soil and Geology Study reports, referenced above, at depths ranging from 5 to 34 feet below the existing ground surface.

CONCLUSIONS

In summary, it is our opinion the site is suitable for individual on-site wastewater treatment systems within the cited limitations. 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 generally suitable for individual treatment systems. 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) are encountered at the time of the site specific OWTS evaluation, an "engineered system" will be required.

Additionally, based on the depth of the limiting layers (bedrock and groundwater) encountered at depths ranging from the surface to 5 feet, respectively, below the existing ground surface, the maximum depth of the OWTS components may be limited further limited or mound systems (above the ground surface) may be required.

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. However, due to the depth of bedrock and groundwater encountered in the test borings completed for the Soils and Geology Study, referenced above, the majority of OWTS are anticipated to be “engineered’.

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,

RMG – Rocky Mountain Group

Kelli Zigler

Kelli Zigler
Project Geologist

Reviewed by,

RMG – Rocky Mountain Group

COLORADO REGISTERED
ANTHONY P. MUNGER
4/27/23
39818
PROFESSIONAL ENGINEER

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

NOT TO SCALE

Architecture
Structural
Geotechnical

Materials Testing
Forensics
Civil / Planning

Engineers / Architects

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

SITE VICINITY MAP

JUDGE ORR RD
DAVIS SUBDIVISION
EL PASO COUNTY, COLORADO
WILLIAM GUMAN AND ASSOCIATES

JOB No. 190392

FIG No. 1

DATE 4-27-2023

LAND USE SUMMARY TABLE:

LAND USE CATEGORY	ACREAGE	% OF SITE	MAXIMUM UNITS
LOW DENSITY RR-2.5 ZONING	127.44 ac	32%	49
LOW DENSITY RR-5 ZONING	226.30 ac	57%	40
COMMERCIAL CS ZONING	6.08 ac	1.6%	n.a.
OPEN SPACE PARK ZONING	6.44 ac	2.1%	n.a.
FLOODPLAIN NO-BUILD	n.a.		n.a.
DETENTION NO-BUILD	11.35 ac	2.9%	n.a.
PROPOSED TRAIL	n.a.		n.a.
PROPOSED R.O.W.	17.30 ac	4.4%	n.a.
TOTAL:	394.91 ac	100%	89

NOT TO SCALE

JOB No. 190392

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Materials Testing
Forensics
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Structural
Geotechnical

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JUDGE ORR RD
DAVIS SUBDIVISION
EL PASO COUNTY, COLORADO
WILLIAM GUMAN AND ASSOCIATES

ENGINEER:	TM
DRAWN BY:	NM
CHECKED BY:	TM
ISSUED:	4-27-2023

PROPOSED SITE BOUNDARIES

SHEET No.
FIG-2

DENOTES APPROXIMATE LOCATION OF TEST PITS

NOT TO SCALE

JOB No. 190392

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Structural
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DAVIS SUBDIVISION
EL PASO COUNTY, COLORADO
WILLIAM GUMAN AND ASSOCIATES

ENGINEER:	TM
DRAWN BY:	NM
CHECKED BY:	TM
ISSUED:	4-27-2023

TEST PIT
LAYOUT PLAN

SHEET No.
FIG-3

TEST PIT TP-1

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 1.5 FT SANDY CLAY LOAM (GRANULAR, STRONG)			3 / R-1
1.5 - 8 FT SAND (SINGLE GRAIN, STRUCTURELESS, 40% > 2MM)	2ft		1 / R-0
	4ft		
	6ft		
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

TEST PIT TP-2

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 8.0 FT SAND (SINGLE GRAIN, STRUCTURELESS, 45% > 2MM)			1 / R-0
	2ft		
	4ft		
	6ft		
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

SOIL DESCRIPTIONS

SANDY CLAY LOAM

SAND

Architecture
Structural
Geotechnical

RMG

Materials Testing
Forensics
Civil / Planning

Engineers / Architects
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COLORADO SPRINGS, CO 80918
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TEST PIT LOGS

JUDGE ORR ROAD
DAVIS SUBDIVISION

EL PASO COUNTY, COLORADO
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JOB No. 190392

FIG No. 4

DATE 4-27-2023

TEST PIT TP-3

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 2.5 FT SANDY CLAY LOAM (GRANULAR, STRONG 40% > 2MM)	2ft		3 / R-0
2.5 - 6.5 FT SAND (SINGLE GRAIN, STRUCTURELESS, 40% > 2MM)	4ft 6ft		1 / R-0
6.5 - 8.0 FT CLAY (BLOCKY, MODERATE)			4
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

TEST PIT TP-4

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 3.0 FT SAND (SINGLE GRAIN, STRUCTURELESS 40% > 2MM)	2ft		1 / R-0
3.0 - 6.0 FT SANDY, CLAY LEAN, (GRANULAR, BLOCKY, WEAK, 40% > 2MM)	4ft 6ft		3A
6.0 - 8.0 FT SANDY CLAY (GRANULAR, STRONG)			2
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

SOIL DESCRIPTIONS

- SANDY CLAY LOAM
- SAND
- CLAY
- SANDY CLAY LEAN
- SANDY CLAY

Architecture
Structural
Geotechnical

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JOB No. 190392

FIG No. 5

DATE 4-27-2023

TEST PIT TP-5

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 3.5 FT LOAM (BLOCKY, STRONG)	2ft		2
3.5 - 8.0 FT SAND (SINGLE GRAIN, STRUCTURELESS, 40% > 2MM) NO GROUNDWATER LIMITING LAYER R-0	4ft 6ft 8ft		1 / R-0

TEST PIT TP-6

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 8.0 FT SAND (SINGLE GRAIN, STUCTURELESS) NO GROUNDWATER NO LIMITING LAYER	2ft 4ft 6ft 8ft		1

SOIL DESCRIPTIONS

SAND

LOAM

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Structural
Geotechnical

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TEST PIT LOGS

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JOB No. 190392

FIG No. 6

DATE 4-27-2023

TEST PIT TP-7

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 1.5 FT SAND, CLAY, LOAM (GRANULAR, STRONG, 40% > 2MM)			1
1.5 - 8.0 FT SAND (SINGLE GRAIN, STRUCTURELESS, 40% > 2MM)	2ft 4ft 6ft		1 / R-0
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

TEST PIT TP-8

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 1.0 FT CLAY LOAM (GRANULAR, STRONG)			3
1.0 - 2.0 FT SANDY CLAY (BLOCKY, MODERATE)	2ft		4
2.0 - 6.0 FT SAND (SINGLE GRAIN, STRUCTURELESS 36% > 2MM)	4ft 6ft		1 / R-0
GROUNDWATER AT 6.0' R-0 LIMITING LAYER	8ft		

SOIL DESCRIPTIONS

SANDY CLAY LOAM

SAND

CLAY LOAM

SANDY CLAY

Architecture
Structural
Geotechnical

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TEST PIT LOGS

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FIG No. 7

DATE 4-27-2023

TEST PIT TP-9

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 1.0 FT SANDY, CLAY, LOAM (GRANULAR, STRONG 40% > 2MM)			3 / R-0
1.0 - 4.5 FT SAND (SINGLE GRAIN, SRUCTURELESS 40% > 2MM)	2ft 4ft		R-0
4.5 - 8.0 FT CLAY (BLOCKY, MODERATE) NO GROUNDWATER R-0 LIMITING LAYER	6ft 8ft		4

TEST PIT TP-10

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 8.0 FT SAND (SINGLE GRAIN, STRUCTURELESS) NO GROUNDWATER NO LIMITING LAYER	2ft 4ft 6ft 8ft		1

SOIL DESCRIPTIONS

SAND CLAY LOAM

SAND

CLAY

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FIG No. 8

DATE 4-27-2023

TEST PIT TP-11			
DATE OBSERVED: 2/24/23			
SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 5.0 FT SANDY, LOAM (GRANULAR, STRONG)	2ft 4ft		2
5.0 - 7.0 FT SAND (SINGLE GRAIN, STRUCTURELESS)	6ft		1
7.0 - 8.0 FT SILTY CLAY LOAM (BLOCKY, MODERATE)			3
NO GROUNDWATER NO LIMITING LAYER	8ft		

SOIL DESCRIPTIONS

SANDY LOAM

SAND

SILTY CLAY LOAM

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FIG No. 9

DATE 4-27-2023

8 - Blakeland loamy sand, 1 to 9 percent slopes

19 - Columbine gravelly sandy loam, 0 to 3 percent slopes

29 - Fluvaquentic Haplaquolls, 0 to 2 percent slopes

NOT TO SCALE

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ENGINEER:	TM
DRAWN BY:	NM
CHECKED BY:	TM
ISSUED:	4-18-2023

USDA SOIL SURVEY MAP

SHEET No.
FIG-10

Architectural
Structural
Geotechnical

RMG
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Materials Testing
Forensic
Civil/Planning

SOIL AND GEOLOGY STUDY

Davis Subdivsion
6 parcels totaling 398.91 acres
EL Paso County, Colorado

PREPARED FOR:

William Guman & Associates, Ltd
731 North Weber Street, Ste 10
Colorado Springs, CO 80903

JOB NO. 190392

April 27, 2023

Respectfully Submitted,
RMG – Rocky Mountain Group

Kelli Zigler

Kelli Zigler
Project Geologist

Reviewed by,
RMG – Rocky Mountain Group

COLORADO REGISTERED
ANTHONY P. MUNGER
4/27/23
39818
PROFESSIONAL ENGINEER

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

TABLE OF CONTENTS

1.0 GENERAL SITE AND PROJECT DESCRIPTION 4
1.2 Existing and Proposed Land Use 4
1.3 Project Description 4
1.4 Previous Investigations 4
2.0 QUALIFICATIONS OF PREPARERS 5
3.0 STUDY OVERVIEW 5
3.1 Scope and Objective 5
3.2 Site Evaluation Techniques 6
3.3 Additional Documents 6
4.0 SITE CONDITIONS 6
4.1 Existing Site Conditions 6
4.2 Topography 7
4.3 Vegetation 7
4.4 Aerial Photographs and Remote-Sensing Imagery 7
5.0 FIELD INVESTIGATION AND LABORATORY TESTING 7
5.1 Laboratory Testing 8
6.0 SOIL, GEOLOGY, AND ENGINEERING GEOLOGY 8
6.1 Subsurface Soil Conditions 8
6.2 Bedrock Conditions 8
6.3 U.S. Soil Conservation Service 9
6.4 General Geologic Conditions 9
6.5 Engineering Geology 10
6.6 Structural Features 10
6.7 Surficial (Unconsolidated) Deposits 10
6.8 Features of Special Significance 10
6.9 Groundwater and Drainage of Surface Water 10
6.10 Flooding and Surface Drainage 11
7.0 ECONOMIC MINERAL RESOURCES 11
8.0 IDENTIFICATION AND MITIGATION OF POTENTIAL GEOLOGIC CONDITIONS 12
8.1 Expansive Soils 13
8.2 Compressible Soils 13
8.3 Flood Prone Areas 14
8.4 Ponding Water, Springs and High Groundwater 15
8.5 Scour, Erosion, Accelerated Erosion Along Creek Banks and Drainageways 16
8.6 Faults and Seismicity 17
8.7 Radon 17
9.0 ON-SITE WASTEWATER TREATMENT SYSTEMS 18
10.0 BEARING OF GEOLOGIC CONDITIONS UPON PROPOSED DEVELOPMENT 19
11.0 ANTICIPATED FOUNDATION SYSTEMS 19
11.1 Granular Structural Fill - General 20
11.2 Moisture-Conditioned Structural Fill – General 21
11.3 Exterior Backfill 22
11.4 Surface Detention and Drainage 23
11.5 Foundation Stabilization 23
11.6 Foundation Drains 24
11.7 Design Parameters 24
12.0 ADDITIONAL STUDIES 24
13.0 CONCLUSIONS 25
15.0 CLOSING 26

FIGURES

Site Vicinity Map 1
Proposed Site Boundaries 2
Test Boring/Test Pit Layout Plan 3
Explanation of Test Boring Logs 4
Test Boring Logs 5-16
Summary of Laboratory Test Results 17
Soil Classification Data 18-23
Swell/Consolidation Test Results 24
USGS Topo Map 25
USDA Soil Survey Map 26
Engineering Geology Map 27
FEMA Map 28
Perimeter Drain Detail 29

Appendix A – Additional Reference Documents
Appendix B – Wastewater Study
Appendix C – Individual Sewage Disposal Inspections Forms

1.0 GENERAL SITE AND PROJECT DESCRIPTION

The project lies in the west half of Section 02, Township 13 South, Range 64 West of the 6th Principal Meridian in El Paso County, Colorado. The site is generally located north and west of the intersection of Judge Orr Road and Elbert Road. The approximate location of the site is shown on the Site Vicinity Map, Figure 1.

1.1 Existing and Proposed Land Use

The site currently consists of six parcels (per the El Paso County Assessor's website) for a combined 398.81 acres. The parcels included in this study are:

- Schedule No. 4200000377, currently addressed as 9060 Elbert Rd, zoned A-35, consists of approximately 69.25 acres, and land use is classified as agricultural grazing land with well and septic;
- Schedule No. 4233000031, currently addressed as 14850 Judge Orr Rd, zoned A-35, consists of approximately 25.68 acres and land use is classified as agricultural grazing land with well and septic;
- Schedule No. 4200000406, currently labeled as Judge Orr Rd, zoned A-35, consists of approximately 103.98 acres and land use is classified as agricultural grazing land;
- Schedule No. 4200000470, currently labeled as Elbert Rd, zoned A-35, consists of approximately 80.00 acres, and land use is classified as agricultural grazing land;
- Schedule No. 4200000359, currently addressed as 9050 Elbert Rd, zoned A-35, consists of approximately 40.00 acres, and land use is classified as agricultural grazing land with well and septic;
- Schedule No. 4200000354, currently addressed as 9350 Elbert Rd, zoned A-35, consists of approximately 40.00 acres, and land use is classified as agricultural grazing land with well and septic.

1.2 Project Description

It is our understanding that the parcels listed above are to be combined then subdivided into 89 single family residential lots, two commercial lots, and a community park. Two detention ponds are currently proposed. A rezone from A-35 to RR-2.5 and/or RR-5 has been requested, this rezone will require all the included lots to have a minimum lot size of 2.5 to 5 acres.

The proposed lots are to be accessed from two new residential roads, one extending north from Judge Orr Road and a second extending west from Stapleton Drive. Access to the commercial lots is to be provided from Judge Orr Road. The lots are to utilize individual wells and On-Site Wastewater Treatment Systems (OWTS). The Proposed Site Boundaries is presented in Figure 2.

1.3 Previous Investigations

Reports of previous geotechnical engineering/geologic investigations for this site were not available for our review.

2.0 QUALIFICATIONS OF PREPARERS

This Soil and Geology Study was prepared by a professional geologist as defined by Colorado Revised Statures 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 22 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 22 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 physical reconnaissance of the site and 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:

- Field reconnaissance
- Geologic and topographic maps
- Review of selected publicly available, pertinent engineering reports
- Available aerial photographs
- Subsurface exploration
- 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 currently a combination of develop and undeveloped land. The site is generally located north and west of the intersection of Judge Orr Road and Elbert Road, within El Paso County, Colorado. The site is bound to the south by Judge Orr Road, to the west by Stapleton Road and 5 acre (+/-) parcels of the Judge Orr Ranchettes subdivision, to the east by developed 35-acre residential lots, and to the north by grazing land. Four of the parcels contain an existing single

family residence, well and septic. It is uncertain at this time if the existing residences, wells and septic's are to remain or be removed.

4.2 Topography

Based on our site reconnaissance on February 24, 2023 and USGS 2019 topographic map of the Falcon Quadrangle, the site contains three unnamed drainageways. Each drainageway is also considered a wetland. The southwest portion of the site, east of Stapleton Road, slopes east down to an unnamed drainageway/wetland. The northeast portion of the slope slopes down to the southeast towards the same unnamed drainageway/wetland. The site consists of rolling hills. Minor erosional features were visible along the drainageways. At the time of the site reconnaissance, the drainageways/wetlands were dry. However, earthen ponds within the drainageway contained a slight amount of water. The water level in the drainageways/wetlands and earthen ponds is anticipated to vary, depending upon local precipitation events.

4.3 Vegetation

The site vegetation primarily consists of tall native grasses, cacti, weeds, and other prairie-type vegetation. Deciduous trees are located around the existing residences.

4.4 Aerial Photographs and Remote-Sensing Imagery

Personnel of RMG reviewed aerial photos available through Google Earth Pro dating back to 1985, Colorado Geological Survey (CGS) surficial geologic mapping, and historical photos by historicaerials.com dating back to 1947. The residences were reportedly constructed between 1992 and 2018. Other than the fluctuations of water in the drainageways, that traverses the site from northwest to southeast, historically, the site has remained relatively similar as the present usage.

5.0 FIELD INVESTIGATION AND LABORATORY TESTING

The subsurface conditions were explored by drilling twenty-four (24) exploratory borings on February 8 and 13, 2023, extending to depths of approximately 20 to 35 feet below the existing ground surface. Eleven (11) test pits to depths of 6 to 8 feet were observed on February 24, 2023. The test borings and test pits were spaced to provide preliminary soil information across the site for future residential foundations and on-site wastewater treatment systems. The Test Boring/Test Pit Layout Plan is presented in Figure 3.

The number of borings generally meets the minimum one test boring per 10 acres of development up to 100 acres and one additional boring for every 25 acres of development above 100 acres as required by the ECM, Section C.3.3.

The test borings were drilled with a power-driven, continuous-flight auger drill rig. Samples were obtained during drilling of the test boring in general accordance with ASTM D-1586 and D-3550, utilizing a 2-inch O.D. Split Barrel Sampler and a 2½-inch O.D. California sampler, respectively. The test pits were performed with a mini-excavator, provided by others, and observed by RMG at

the time of excavation. An Explanation of Test Boring Logs and the Test Boring Logs are presented in Figures 4 through 16.

5.1 Laboratory Testing

Soil laboratory testing was performed as part of this investigation. The laboratory tests included moisture content, grain-size analyses, Atterberg Limit tests and one swell test. A Summary of Laboratory Test Results is presented in Figure 17. Soils Classification Data is presented in Figures 18 through 23. The Swell/Consolidation Test Results are presented in Figure 24.

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 eolian deposits and alluvium composed of sand, silt, clay, gravel, and occasional boulders that overlies the Black Squirrel Formation.

6.1 Subsurface Soil Conditions

The subsurface materials encountered in the test borings were classified visually in the field and within the laboratory using the Unified Soil Classification System (USCS). The materials were identified and classified in the laboratory as silty to clayey sand (SM-SC), well graded silty sand (SW-SM) sandy clay (CL), silty to clayey sandstone, and sandy claystone.

Additional descriptions and the interpreted distribution (approximate depths) of the subsurface materials are presented on the Test Boring Logs. The classifications shown on the logs are based upon the engineer's classification of the samples at the depths indicated. Stratification lines shown on the logs represent the approximate boundaries between material types and the actual transitions may be gradual and vary with location.

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 Black Squirrel Formation. The sandstone and claystone bedrock was encountered in all of the test borings. Claystone at this site classifies as CL and CH. Foundation stability within the Black Squirrel sandstone generally is good and permeability is anticipated to be low. If claystone is encountered during construction, it is generally not considered suitable for foundations, and its permeability is anticipated to be very low.

Depending on the final site grading and depth of foundations, bedrock may be encountered in the proposed basement foundation excavations across the entirety of the site. Bedrock may be encountered in the deeper utility trenches for the proposed development. Overall, the Black Squirrel sandstone and claystone can readily be excavated with standard construction equipment such as a front-end loader or excavator.

6.3 U.S. Soil Conservation Service

The USDA/NRCS soil survey identifies the site soils as:

- 8 – Blakeland loamy sand, 1 to 9 percent slopes. The Blakeland loamy sand was mapped by the USDA and is located throughout most of the property. The Blakeland loamy sand encompasses the majority of the property. The properties of the Blakeland loamy sand include somewhat excessively drained soil with a depth to water table of over 80 inches. Runoff is anticipated to be low and frequency of flooding or ponding is none. Landforms are flats and hills.
- 19 – Columbine gravelly sandy loam, 0 to 3 percent slopes. The Columbine gravelly sandy loam was mapped by the USDA and is only located in the southwest corner of the property. Properties of the Columbine gravelly sandy loam include well drained soil with a depth to water table of over 80 inches. Runoff is anticipated to be well drained and frequency of flooding or ponding is none. Landforms are fans and hills.
- 29 – Fluvaquentic Haplaquolls, 0 to 2 percent slopes. The Fluvaquentic Haplaquolls was mapped by the USDA and traverses from the western end of the property to the eastern end in the northern portion of the property. Properties of the Fluvaquentic Haplaquolls include poorly drained soil with a depth to water table of 0 to 24 inches. Runoff is anticipated to be very high and frequency of flooding is frequent. Frequency of ponding is none. Landforms are flood plains and swales. The hydrologic soil group of the unit is D.

The USDA Soil Survey Map is presented in Figure 25.

6.4 General Geologic Conditions

Based on our field observations and review of relevant geologic maps, we identified the geologic conditions (listed below) affecting the development, as shown on the Engineering Geology Map, Figure 26.

The site generally consists of eolian and alluvium deposits of the Pleistocene and Holocene overlying the Black Squirrel Formation of the Paleocene. Eight geologic units were mapped at the site as:

- *Qa_1 – Alluvium one* (upper Holocene) – generally located in the lowest portions of the site where there is active drainage.
- *Qa_2 – Alluvium two* (lower Holocene) – generally located above the lower portions of the site above the modern floodplain.
- *Qa_3 – Alluvium three* (upper Pleistocene) – generally located above Alluvium three and above the modern floodplain.
- *Qes - Eolian Sand* (Holocene to upper Pleistocene) – windblown deposits composed of sand and silt. This unit comprises the majority of the surface material across the site.
- *Qsw – Sheetwash Deposits* (Holocene to upper Pleistocene) – local material deposited by sheetwash on moderate slopes (approximately 10 percent grade)
- *Tbs – Black Squirrel Formation* (Paleocene) – Moderately well sorted arkosic sandstone with beds of micaceous claystone. Claystone contained in this unit may be prone to

swelling when wet. This formation lies beneath the entire site and is not mapped on the Engineering Geology Map.

- *psw – potential seasonally wet* - areas that may collect surface water during high moisture events.
- *Fp – Floodplain* – floodplain as mapped by FEMA. This area contains wetlands and is to be a No Build Zone.

6.5 Engineering Geology

Two engineering geology units were mapped at the site as:

- *3B* – Expansive and potentially expansive soil and bedrock on flat to moderate slopes (0-12%)
- *7A* - Physiographic floodplain where erosion and deposition presently occurs and is generally subject to recurrent flooding. Includes the 100-year flood plain along major streams where flood plain studies have been conducted.

The map unit description for the above units were provided by Charles Robinson and Associates (1977).

6.6 Structural Features

Structural features such as schistocity, 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 encountered at the time of drilling on February 8 and 13, 2023 in 16 of the test borings at depths

ranging from 5 to 34 feet, respectively. Groundwater was also observed in follow-up groundwater checks performed on March 22, 2023.

It should be noted that in granular soils and bedrock, 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.

Based on our knowledge of the area and engineering design and construction techniques commonly employed in the El Paso County area at this time, it is our opinion that basements should be restricted in areas where groundwater was encountered at 15 feet or shallower. Additional recommendations are presented in **Section 8.4**. Shallow groundwater conditions are anticipated to be found at the time of the site-specific subsurface soil investigations.

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

Three natural drainageways exist across the portion of the site east of Stapleton Road. The drainageways traverse the site from the northwest to the southeast. The drainageways were dry at the time of the site reconnaissance visits performed by RMG. The USGS Topo Map is presented in Figure 27.

Based on our review of the Federal Emergency Management Agency (FEMA) Community Panel No. 08041C0558G and the online ArcGIS El Paso County Risk Map, the majority of the site lies outside of a 100-year floodplain. The site is within the boundaries of Zone X and Zone A.

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. Zone A is considered a special flood hazard area with a regulatory floodway. The Base Flood Elevations (BFE) for the drainageway have not been defined. The FEMA Map is presented in Figure 28.

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 Upland Deposits. The deposits are composed of sand, gravel with silt and clay.

These deposits are remnants of older streams deposited on topographic highs or bench like features. The site is underlain primarily by the Black Squirrel Formation and Dawson Arkose, 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 mapped within the Denver Basin Coal Region, the tract identifier is 41-02. However, the area of the site has been mapped "Poor" for coal resources. In this part of the Denver coal region, coal resources are locally present within the lower part of the Laramie Formation of Upper Cretaceous age. The area contains strata that may contain coal. This area is not prospective for metallic mineral resources. No oil and gas wells are drilled in the area, or within two miles of it. Alluvial deposits are commonly mined in the region for sand and gravel. There are no active or inactive gravel pits in the area, but there are several within a three-mile radius of it. Alluvial deposits containing gravel and/or sand cover approximately 112 acres of tract 41-02. Assuming a mineable thickness of 15 feet, this represents 4.1 million tons of potentially useable resource. The quality of the resource has not been determined. In the vicinity of this area, the coal-bearing beds of the Laramie Formation lie at a depth of approximately 1,500 feet (Kirkham and Ladwig, 1979). It is possible that the tract contains coal resources at this depth. The coal seams in the Laramie Formation tend to be lenticular and discontinuous in comparison to areas currently being mined in western Colorado.

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 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 or Uncontrolled/Undocumented Fill Placement
- Valley Fill
- Downhill/Down-slope Creep
- Soil Slumps and Undercutting
- Corrosive Minerals

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

8.1 Expansive Soils

Based on the test borings performed for this investigation and our experience with similar soils in the area, the sandy clay and claystone bedrock generally possess low to high swell potential. It is anticipated expansive clay soils or claystone bedrock will be encountered at the time of the site-specific subsurface soil investigations, and that final mitigations and construction recommendations will be provided at that time. These materials are readily mitigated with typical construction practices common to this region of El Paso County, Colorado.

Mitigation

Sporadic areas of expansive soils and bedrock are anticipated. If expansive soils or bedrock are encountered beneath the foundations, mitigation will be required. Due to the variability of the soil/bedrock conditions across the site and the anticipated 2.5- to 5-acre lot sizes, "mass" subexcavation during land development is currently not proposed, nor are we proposing it at this time.

Localized overexcavation below the proposed foundations and replacement with structural fill is anticipated to be the preferred mitigation. Overexcavation is anticipated for the majority of the lots. Overexcavation depths of 3 to 6 feet are anticipated. Moisture-conditioning and recompacting the on-site clays (if desired) may also be considered for mitigation of expansive materials, but may result in differing overexcavation depths and foundation design parameters. Floor slabs bearing directly on expansive material should be expected to experience a higher degree of movement. Overexcavation and replacement below the floor slabs has been successful in reducing slab movement.

The final determination of mitigation alternatives and foundation design criteria are to be determined in site-specific subsurface soil investigations for each lot. Provided that appropriate mitigations and/or foundation design adjustments are implemented, the presence of expansive soils or bedrock is not considered to pose a risk to the proposed structures.

8.2 Compressible Soils

Based on the test borings performed for this investigation, the silty to clayey sands will be encountered within some of the building excavations. In some cases, loose sands may be encountered in the excavations. Overexcavation and recompaction is a suitable mitigation.

Mitigation

If loose soils are encountered beneath the foundations, mitigation will be required. Due to the variability of the soil/bedrock conditions across the site and the anticipated 2.5- to 5-acre lot sizes, "mass" subexcavation is not currently proposed, nor are we proposing it at this time.

Localized overexcavation below the proposed foundations and replacement with structural fill is anticipated to be the preferred mitigation. If loose soils are encountered during the open excavation observation, they may require additional compaction to achieve the allowable bearing pressure

indicated in this report. Fluctuations in material density may occur. In some cases, removal and recompaction of loose soil may be required. 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 final determination of mitigation alternatives and foundation design criteria are to be determined in site-specific subsurface soil investigations for each lot. Provided that appropriate mitigations and/or foundation design adjustments are implemented, the presence of expansive soils or bedrock is not considered to pose a risk to the proposed structures.

8.3 Flood Prone Areas

Based on our review of the FEMA map and the online ArcGIS El Paso County Risk Map the majority of the site lies outside the 100-year floodplain. However, portions of the site surrounding the unnamed drainageway do lie within a Regulatory Floodway. Per the latest approved edition of the Pikes Peak Regional Building Code, the lowest finished floor elevation (including basement together with attendant utility and sanitary facilities) shall be elevated one-foot or more above the designated Base Floor elevation (BFE).

<u>Mitigation</u>
We recommend that the proposed residences be located outside the designated Regulatory Floodway. Based on review of the draft Sketch Plan, provided by William Guman and Associates, the floodways are to be a No Build Zone. If new development and/or construction are proposed near the floodway, additional investigations should be performed to determine the feasibility of construction within the streamside outer buffer zone and, if necessary, develop mitigation recommendations.

Per the latest approved edition of the Pikes Peak Regional Building Code, the lowest finished floor elevation (including basement together with attendant utility and sanitary facilities) shall be elevated one-foot or more above the BFE.

Builders should be advised that mitigation may be required for the potential floodwater and any resulting debris. Designs may be required to include (but are not limited to) openings to automatically equalize hydrostatic pressure, anchorage to resist buoyancy, "breakaway" panels, etc.

At the time of permit submittal, although not anticipated, the building department may require the preparation of either a Zero Rise Certification or a Less Than One Foot Rise Certification to demonstrate that the proposed structures will cause zero or less than one foot of rise (respectively) in the established BFE. If this certification cannot be obtained, more extensive submittals to FEMA may be required.

The presence of the floodplain is not believed to pose a high risk if the structures and OWTS's are located appropriately on the lots Provided that the recommendations presented herein, as well as

any requirements stipulated by the governing regulatory agencies, are followed, the presence of the revised floodplain/floodway is not anticipated to preclude the proposed construction

8.4 Ponding Water, Springs and Groundwater

Based on the site observations, review of USGS topographic maps dating back to 1951, and review of Google Earth images dating back to September 1999, springs do not appear to originate on the subject site. However, ponding water and areas of seasonal shallow groundwater were encountered during our investigation. In these areas, we would anticipate the potential for periodically high subsurface moisture conditions and frost heave potential. These areas lie within low-lying portions of the site.

Ponding surface water is likely to be encountered in the low lying drainageways. These areas are denoted as *psw – potential seasonally wet* areas on the Engineering and Geology Map, Figure 26.

Drilling occurred in March, generally when seasonal groundwater levels are considered slightly higher than the winter months (November through February). The presence of groundwater was observed in the 16 of the test borings and one of the test pits performed for this investigation. Groundwater measurements are limited to the time of years measured and are considered snapshots only. The depth of groundwater was erratic due to the presence of the existing drainageway and the varying soil conditions on-site. Groundwater and/or perched water should be anticipated on a majority of the lots within the subdivision

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 the land development phase 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, installation of an underdrain below the roadways, 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. The potential exists for high groundwater levels during high moisture periods and should structures encroach on these areas, the following mitigations should be followed.

<u>Mitigation</u>
The feasibility of basement construction should be evaluated prior to the site-specific Subsurface Soil Investigation for each lot. Seasonal variations in underground water conditions are expected due to the unnamed drainageway. It is assumed underground water beneath the subject site predominates in fractured weathered consolidated sedimentary bedrock located at depth. If shallow underground water conditions are encountered during the site-specific Subsurface Soil Investigations and/or Open Excavation Observations, mitigations may include restricting basement construction, raising the grade of the residence and/or a combination of surface and subsurface drainage systems, vertical drainboard, etc.

To date, RMG has not been provided with a lot layout, cut/fill plans or a site grading plan. As such, we are unable to map areas where groundwater is anticipated to be within 15 feet of the

proposed ground surface. Therefore, basement construction should be restricted except where one of the following conditions apply:

- A year-long groundwater monitoring study is undertaken, and the results indicate that groundwater is sufficiently deep to allow basement construction;
- The proposed construction will result in at least 15 feet of separation between the proposed ground surface and the groundwater elevation. Where groundwater encroaches shallower than 15 feet, the ground surface may be modified (raised) to increase the separation to meet these criteria.

A Basement Feasibility Map is included in Figure 29. This map shows the areas where groundwater was encountered at depths less than 15 feet.

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. This includes crawlspace areas but not the walkout trench, if applicable. Perimeter drains help prevent the intrusion of water into areas below grade. A typical perimeter drain detail is presented in Figure 30.

If groundwater is encountered at the time of the site-specific subsurface soil investigations within 4 to 6 feet of the proposed basement slab elevation, an underslab drain would be considered in conjunction with the perimeter drain. It must be understood that subsurface drains are designed to intercept some types of subsurface moisture and not others. Therefore, the drain(s) could operate properly and not mitigate all moisture problems relating to foundation performance or moisture intrusion into the basement area. A typical underslab drain detail is presented if Figure 31.

8.5 Scour, Erosion, Accelerated Erosion Along Creek Banks and Drainageways

Scour generally refers to a localized loss of soil, often around a foundation element(s). Erosion generally refers to lowering the ground surface over a wide area.

Visible evidence of ongoing erosion/scour along the drainageway was not observed. Due to the current alignment of the drainageway and the configuration of the site, the drainageway transverse the northern portion of the site. As such, depending on the lot layout, additional drainage improvements may be required

Signs of significant and ongoing surface erosion were not observed on the site. It is our understanding that silt fencing (during construction) and vegetative cover (post-construction) are generally installed along that banks to reduce the potential for erosion. Personnel of RMG have not reviewed the designs of these individual improvements for adequacy to support the anticipated design flows. However, these improvements appear to be intended to reduce the potential for significant erosion across the surface of the site.

Note, further disturbance and/or long term exposure without vegetative cover will increase the potential for erosion across the site.

Mitigation
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 a location that will not significantly alter the overall drainage of the development or result in the need for additional drainage mitigation measures at the time of construction on nearby lots.

Any landscaping in the immediate vicinity of the proposed structures should utilize xeriscape techniques in order to minimize needed irrigation to maintain landscaping. Further, stormwater and snowmelt runoff from parking (driveway) areas should be directed towards drainage channels and away from slopes, both during construction activities and upon completion of site development.

8.6 Faults and Seismicity

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 0.213g 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

"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 and the 80133 zip code 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 the subdivision. The site was evaluated in general accordance with the El Paso Land Development Code, specifically sections 8.4.8. Eight test pits ranging in depth from 6 to 8 feet 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 B.

The United States Department of Agriculture (USDA) as discussed in section 6.3 consisted of sandy loam and loamy sand. Limiting layers were encountered in one of the test pits at 6 feet due to groundwater. Signs of seasonal groundwater were not observed in the remaining test pits. The long term acceptance rates (LTAR) associated with the soils observed in the test pits range from 0.2 to 0.80 gallons per day per square foot (soil types 4 to 1).

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:

- 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, most recently amended May 23, 2018;
- Each lot (after purchase but prior to construction of an OWTS) will require an OWTS site evaluation report prepared per *the Regulations of the El Paso County Board of Health, Chapter 8 OWTS Regulations*. During the site reconnaissance, a minimum of two 8-foot deep test pits will need to be excavated in the vicinity of the proposed treatment area;
- 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;
- Each lot shall be designed to insure that a minimum of 2 sites are appropriate for a OWTS and do not fall within the restricted areas, potentially seasonally wet and floodplain, as identified on the Engineering and Geology Map, Figure 67;

If the existing systems are to be removed based on the proposed lot layout, the following would apply:

- Depending on the location of the existing septic systems in relation to the lot layout, they may or may not be utilized for new construction. The existing systems were constructed between 1996 and 2018. The existing septic systems will need to meet the current criteria for a Transfer of Title Inspection per 8.4 (O).6 per EPCDHE;
- If an existing system is to be removed (e.g. tank, components and/or soil) they should be disposed of properly;
- New treatment areas are not to be located within the existing septic field areas unless the existing system has been disposed of properly.

It is our opinion that if the EPCDHE physical setback requirements (both horizontal and vertical) are met for each lot, there are no restrictions on the placement of the individual On-site Wastewater Treatment Systems.

Soil and groundwater conditions at the site are suitable for individual treatment systems. 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 (or soil types 3A to 5) or greater than 0.80 (soil type 0) are encountered at the time of the site specific OWTS evaluation an "engineered system" will be required. Engineered systems should be anticipated for the majority of the lots within this subdivision due to the groundwater and bedrock conditions encountered.

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, seismicity and radon. Geologic conditions (as described in section 8 of this report) found to be present at this site include potentially expansive and compressible soils, ponding water, shallow groundwater and flood prone areas. It is our opinion that the existing geologic and engineering conditions can be satisfactorily mitigated through proper engineering, design, and construction practices.

11.0 ANTICIPATED FOUNDATION SYSTEMS

Based on the information presented previously, conventional shallow foundation systems consisting of standard spread footings/stemwalls or conventionally-reinforced stiffened (ribbed) slabs-on-grade are anticipated to be suitable for the proposed residential structures. It is assumed

that the deepest excavation cuts will be approximately 7 to 10 feet below the final ground surface, not including overexcavation which may be required on a lot-by-lot basis.

Due to the swell potential, the claystone is generally not suitable for support of spread footing foundations or floor slabs. Where expansive soils are encountered near spread footing foundation or floor slab levels, they should be removed. In general, the exposed surface soils should be scarified and moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to a minimum of 92 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557).

After compaction of the in-situ soil, the foundation construction should then be backfilled in compacted lifts to bottom of footing elevation with approved native soil or structural fill consisting of well-graded non-cohesive granular material. The material should not be excessively wet, should be free of organic matter and construction debris, and contain no rock fragments greater than 2-inches in any dimension. Structural fill material should be placed in 8-inch loose lifts with moisture content within 2 percent of optimum as determined by ASTM D-1557. Each loose lift should be compacted to a minimum of 92 percent of Modified Proctor maximum dry density as determined by ASTM D-1557. The structural fill should be density tested to verify compaction meets these requirements.

The foundation design should be prepared by a qualified Colorado Registered Professional Engineer using the recommendations presented in this report. This foundation system should be designed to span a minimum of 10 feet under the design loads. The bottoms of exterior foundations should be at least 30 inches below finished grade for frost protection. When prepared and properly compacted, total settlement of 1-inch or less with differential settlement of ½ inch or less is estimated. Settlement in granular material generally occurs relatively rapidly with construction loads. Long-term consolidation settlement should not be an issue if the fill materials are prepared as recommended above.

The foundation system for each lot should be designed and constructed based upon recommendations developed in a detailed Subsurface Soil Investigation completed after site development activities are complete. The recommendations presented in the Subsurface Soil Investigations should be verified by an Open Excavation Observation following the excavation on each lot.

11.1 Granular Structural Fill - General

The processed sandstone (maximum particle size of 3 inches) is suitable for use as structural fill. Claystone is not considered suitable for use as structural fill. Except as described above for foundations, areas to receive structural fill should have topsoil, organic material, and debris removed. The upper 6-inches of the exposed surface soils should be scarified and moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to a minimum of 92 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557).

Structural fill should be placed in thin lifts not to exceed 6 inches and moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to a minimum of 92 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557).

Structural fill placed on slopes should be benched into the slope. Maximum bench heights should not exceed 4 feet, and bench widths should be wide enough to accommodate compaction equipment. Structural fill should not be placed on frozen subgrade or allowed to freeze during moisture conditioning and placement. To verify the condition of the compacted soils, density tests should be performed during placement.

11.2 Moisture-Conditioned Structural Fill – General

Areas to receive moisture-conditioned expansive soils used as structural fill should have topsoil, organic material, or debris removed. The upper 6 inches of the exposed surface soils should be scarified and moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to a minimum of 98 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698) or to a minimum of 95 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D-1557) prior to placing structural fill.

Moisture-conditioned structural fill placed on slopes should be benched into the slope. Maximum bench heights should not exceed 4 feet, and bench widths should be wide enough to accommodate compaction equipment.

Moisture conditioned structural fill shall consist of a moisture-conditioned, on-site cohesive fill material. The fill material shall be moisture conditioned and replaced as follows:

- Fill shall be free of deleterious material and shall not contain rocks or cobbles greater than 6 inches in diameter.

- Claystone fill shall be thoroughly "pulverized" and shall not contain claystone chunks greater than 1 1/2 inches in diameter.

- When claystone is to be incorporated, the fill materials shall be processed in a stockpile **(processing these materials in the excavations will not be permitted)**. These stockpiled fill materials shall be moisture-conditioned to a minimum of 1 percent to 4 percent above optimum moisture content (as determined by the Standard Proctor test, ASTM D-698), with an average of not less than 1 1/2 percent above optimum moisture content. These materials, once moisture conditioned and thoroughly mixed, should rest in the stockpile a minimum of 24 hours to ensure proper distribution of the moisture through the material. After resting, the materials should be re-wet and re-mixed to replace the surficial moisture lost to evaporation during the resting period. Fill materials not containing claystone do not require processing in a stockpile.

- Fill materials shall be moisture-conditioned to a minimum of 1 percent to 4 percent above optimum moisture content (as determined by the Standard Proctor test, ASTM D-698), with an average of not less than 1 1/2 percent above optimum moisture content.

- The moisture-conditioned materials should be placed in maximum 6" compacted lifts. These materials should be compacted to a minimum of 98 percent of the maximum dry density as determined by the Standard Proctor test (ASTM D-698). Material not meeting the above requirements shall be reprocessed.

Materials used for moisture-conditioned structural fill should be approved by RMG prior to use. Moisture-conditioned structural fill should not be placed on frozen subgrade or allowed to freeze during moisture conditioning and placement.

To verify the condition of the compacted soils, density tests should be performed during placement. The first density tests should be conducted when 24 inches of fill have been placed.

It is anticipated that the existing soils will require the addition of water to achieve the required moisture content. The fill soils should be thoroughly mixed or disked to provide uniform moisture content through the fill. It should be noted, that the clay soils compacted at the above moisture contents are likely to result in wet, slick conditions. We recommend that the excavation contractor retained to perform this work have significant experience processing subexcavation and moisture-conditioned soils.

Frequent moisture content and density tests shall be performed in the field to verify conformance with the above specifications. Furthermore, representative samples of the moisture-conditioned fill shall be obtained by personnel of RMG on a daily basis for follow-up swell testing to demonstrate that the swell potential has been reduced to not more than 1 percent swell when saturated under a 1,000 psf surcharge pressure. Areas where the follow-up swell tests indicate swells higher than that value shall have the fill material removed, reprocessed, recompacted, and retested.

RMG should be contacted a minimum of 3 days prior to initiation of subexcavation and moisture conditioning processes in order to schedule appropriate field services. Fill shall not be placed on frozen subgrade or allowed to freeze during processing. The time of the year when night temperatures are above freezing are the most optimal period for a sub-excavation operation.

Following completion of the subexcavation and moisture conditioning process, it is imperative that the "as-compacted" moisture content be maintained prior to construction and establishment of landscape irrigation. This may require reprocessing of materials and addition of supplemental water to prevent remobilization of swell potential within the fill.

11.3 Exterior Backfill

Backfill should be placed in loose lifts not exceeding 8 to 12 inches, moisture conditioned to facilitate compaction (usually within 2 percent of the optimum moisture content) and compacted to 85 percent of the maximum dry density as determined by the Modified Proctor test, ASTM D-1557 on exterior sides of walls in landscaped areas. In areas where backfill supports pavement

and/or concrete flatwork, the materials should be compacted to 90 percent of the maximum dry density.

Fill placed on slopes should be benched into the slope. Maximum bench heights should not exceed 4 feet, and bench widths should be wide enough to accommodate compaction equipment.

The appropriate government/utility specifications should be used for fill placed in utility trenches. If material is imported for backfill, the material should be approved by the Geotechnical Engineer prior to hauling it to the site.

The backfill should not be placed on frozen subgrade or allowed to freeze during moisture conditioning and placement. Backfill should be compacted by mechanical means, and foundation walls should be braced during backfilling and compaction.

11.4 Surface Detention and Drainage

The ground surface should be sloped from structures with a minimum gradient of 10 percent for the first 10 feet. This is equivalent to 12 inches of fall across this 10-foot zone. 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 5 feet from the foundation and sloped parallel with the wall with a minimum slope of 2 percent to intercept the surface water and transport it around and away from the structure. Roof drains should extend across backfill zones and landscaped areas to a region that is graded to direct flow away from the structure. Water should be kept from ponding near the foundations.

Landscaping should be selected to reduce irrigation requirements. Plants used close to foundation walls should be limited to those with low moisture requirements and irrigated grass should not be located within 5 feet of the foundation. To help control weed growth, geotextiles should be used below landscaped areas adjacent to foundations. Impervious plastic membranes are not recommended.

Irrigation devices should not be placed within 5 feet of the foundation. Irrigation should be limited to the amount sufficient to maintain vegetation. Excess surface water may increase the likelihood of slab and foundation movements.

11.5 Foundation Stabilization

Groundwater and loose soils were encountered at the time of drilling. If moisture conditions encountered at the time of the foundation excavation result in water flow into the excavation and/or destabilization of the foundation bearing soils, stabilization techniques should be implemented. Various stabilization methods can be employed, and can be discussed at the time of construction. However, a method that affords potentially a reduced amount of overexcavation (versus other methods) and provides increased performance under moderately to severely unstable conditions is the use of a layered geogrid and structural fill system.

Additionally, dependent upon the rate of groundwater flow into the excavation, a geosynthetic vertical drain and an overexcavation perimeter drain may be required around the lower portions of the excavation to allow for installation of the layered geogrid and structural fill system.

11.6 Foundation Drains

A subsurface perimeter drain is required around portions of the structure which will have habitable or storage space located below the finished ground surface. This includes crawlspace areas but not the walkout trench, if applicable.

Groundwater was encountered during this investigation. Depending on the conditions encountered during the lot-specific subsurface soil investigation and the conditions observed at the time of the open excavation observation, additional subsurface drainage systems may be recommended.

One such system is an underslab drainage layer to help intercept groundwater before it enters the slab area should the groundwater levels rise. In general, if groundwater was encountered within 4 to 6 feet of the proposed basement slab elevation, an underslab drain should be anticipated. Another such system would consist of a subsurface drain and/or vertical drain board placed around the perimeter of the overexcavation to help intercept groundwater and allow for proper placement and compaction of the replacement structural fill. Careful attention should be paid to grade and discharge of the drain pipes of these systems.

11.7 Design Parameters

The allowable bearing pressure of the subsurface soils should be determined by a detailed site specific subsurface soil investigation and verified by and open excavation observation, as noted above.

12.0 ADDITIONAL STUDIES

The findings, conclusions and recommendations presented in this report were provided to evaluate the suitability of the site for future development. Unless indicated otherwise, the test borings, test pits, laboratory test results, conclusions and recommendations presented in this report are not intended for use for design and construction. ***A site-specific subsurface soil investigation will be required for all proposed structures including (but not limited to) residences and any proposed retaining walls, etc.***

To develop recommendations for construction of the proposed roadways, a pavement design investigation should be performed. This investigation should consist of additional test borings, soil laboratory testing and specific recommendations for the design and construction of roadway pavement sections.

13.0 CONCLUSIONS

Based upon our evaluation of the geologic conditions, it is our opinion that the proposed 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.

Basement construction should be restricted except where one of the following conditions apply:

- A year-long groundwater monitoring study is undertaken, and the results indicate that groundwater is sufficiently deep to allow basement construction;
- The proposed construction will result in at least 15 feet of separation between the proposed ground surface and the groundwater elevation. Where groundwater encroaches shallower than 15 feet, the ground surface may be modified (raised) to increase the separation to meet this criteria.

In addition to the previously identified mitigation alternatives, surface and subsurface drainage systems should be considered. 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 sandy clay and claystone will classify as Type A material OSHA in 29 CFR Part 1926. OSHA required that temporary excavations made in Type A materials be laid back at ratios no steeper than 1:3/4 (horizontal to vertical), unless the excavation is shored and braced. We believe the silty to clayey sand and sandstone 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.

15.0 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 **William Guman & Associates, Ltd** 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

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SITE VICINITY MAP

JUDGE ORR RD
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EL PASO COUNTY, COLORADO
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JOB No. 190392

FIG No. 1

DATE 4-27-2023

LAND USE SUMMARY TABLE:

LAND USE CATEGORY	ACREAGE	% OF SITE	MAXIMUM UNITS
LOW DENSITY RR-2.5 ZONING	127.44 ac	32%	49
LOW DENSITY RR-5 ZONING	226.30 ac	57%	40
COMMERCIAL CS ZONING	6.08 ac	1.6%	n.a.
OPEN SPACE PARK ZONING	6.44 ac	2.1%	n.a.
FLOODPLAIN NO-BUILD	n.a.		n.a.
DETENTION NO-BUILD	11.35 ac	2.9%	n.a.
PROPOSED TRAIL	n.a.		n.a.
PROPOSED R.O.W.	17.30 ac	4.4%	n.a.
TOTAL:	394.91 ac	100%	89

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ENGINEER:	TM
DRAWN BY:	NM
CHECKED BY:	TM
ISSUED:	4-27-2023

PROPOSED SITE BOUNDARIES

SHEET No.
FIG-2

DENOTES APPROXIMATE LOCATION OF TEST BORINGS

DENOTES APPROXIMATE LOCATION OF TEST PITS

NOT TO SCALE

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TEST PIT/TEST BORING LAYOUT PLAN

SHEET No.
FIG-3

SOILS DESCRIPTION

CLAYEY SAND

CLAYSTONE

SANDSTONE

SANDY CLAY

SILTY SAND

SILTY TO CLAYEY SAND

UNLESS NOTED OTHERWISE, ALL LABORATORY
TESTS PRESENTED HEREIN WERE PERFORMED BY:
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2910 AUSTIN BLUFFS PARKWAY
COLORADO SPRINGS, COLORADO

SYMBOLS AND NOTES

XX — STANDARD PENETRATION TEST - MADE BY DRIVING A SPLIT-BARREL SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30", IN GENERAL ACCORDANCE WITH ASTM D-1586. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).

XX — UNDISTURBED CALIFORNIA SAMPLE - MADE BY DRIVING A RING-LINED SAMPLER INTO THE SOIL BY DROPPING A 140 LB. HAMMER 30", IN GENERAL ACCORDANCE WITH ASTM D-3550. NUMBER INDICATES NUMBER OF HAMMER BLOWS PER FOOT (UNLESS OTHERWISE INDICATED).

FREE WATER TABLE

DEPTH AT WHICH BORING CAVED

BULK — DISTURBED BULK SAMPLE

AUG — AUGER "CUTTINGS"

4.5 — WATER CONTENT (%)

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EXPLANATION OF TEST BORING LOGS

JOB No. 190392

FIGURE No. 4

DATE Apr/27/2023

TEST BORING: **1**

DATE DRILLED:
2/8/23
GROUNDWATER @ 14.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, tan to brown, medium dense, moist to wet				
			22	3.2
5				
			18	3.3
10				
15			11	4.7
SANDSTONE, SILTY TO CLAYEY, with gravel, brown to gray, hard to very hard, moist to wet				
20			50/8"	13.5
25			50/10"	14.9
30			50/6"	12.8
35			50/8"	11.7

TEST BORING: **2**

DATE DRILLED:
2/13/23
GROUNDWATER @ 13.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, with gravel, tan, medium dense, moist to wet				
5			17	20.4
SANDSTONE, CLAYEY, brown to olive, medium hard, moist to wet				
10			34	11.3
15			31	3.4
CLAYSTONE, SANDY, dark gray, medium hard to hard, moist to wet				
20			50	16.9

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TEST BORING LOG

JOB No. 190392

FIGURE No. 5

DATE Apr/27/2023

TEST BORING: **3**

DATE DRILLED:
2/13/23
GROUNDWATER @ 23.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, tan, medium dense, moist				
5			21	4.1
10			17	7.4
SANDSTONE, SILTY TO CLAYEY, brown to dark gray, firm to hard, moist to wet				
15			40	13.6
20				
25			50/9"	10.4
30				
CLAYSTONE, SANDY, dark gray, hard, moist to wet				
35			50/9"	15.0

TEST BORING: **4**

DATE DRILLED:
2/13/23
GROUNDWATER @ 9.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, tan, medium dense, moist to wet				
5			14	1.9
10			16	14.8
SANDSTONE, SILTY TO CLAYEY, dark gray, medium hard to hard, moist to wet				
15			50/9"	14.8
20			50/9"	13.0

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TEST BORING LOG

JOB No. 190392

FIGURE No. 6

DATE Apr/27/2023

TEST BORING: **5**

DATE DRILLED:
2/8/23
GROUNDWATER @ 13.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
	SAND, SILTY, with gravel, tan to brown, medium dense, moist		19	3.9
5				
	CLAY, SANDY, with gravel and clayey sand seams, brown to gray, very stiff, moist		18	19.9
	SANDSTONE, CLAYEY, gray, hard, moist to wet			
10				
			50/6"	16.2
15				
			50/9"	19.1
20				

TEST BORING: **6**

DATE DRILLED:
2/13/23
GROUNDWATER @ 13.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
	SAND, SILTY, with gravel, tan to brown, loose to medium dense, moist to wet			
5			4	2.1
10			24	3.1
15			23	12.1
20	CLAYSTONE, SANDY, gray, medium hard, moist to wet		48	13.2

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TEST BORING LOG

JOB No. 190392

FIGURE No. 7

DATE Apr/27/2023

TEST BORING: **7**

DATE DRILLED:
2/13/23
GROUNDWATER @ 15.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, tan, medium dense, moist to wet				
5			24	2.0
10			20	13.9
SANDSTONE, CLAYEY, brown, moist to wet				
CLAYSTONE, SANDY, brown to olive, medium hard, moist to wet				
15			50/9"	15.8
SANDSTONE, SILTY, gray, hard, moist to wet				
20			50/6"	12.9

TEST BORING: **8**

DATE DRILLED:
2/8/23
GROUNDWATER @ 7.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, tan to gray, medium dense, moist to wet				
5			18	2.3
10			20	14.4
SANDSTONE, CLAYEY, gray, hard, moist to wet				
15			50/10"	15.1
20			50/10"	18.5

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TEST BORING LOG

JOB No. 190392

FIGURE No. 8

DATE Apr/27/2023

TEST BORING: **9**

DATE DRILLED:
2/8/23
GROUNDWATER @ 11.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, with gravel, tan to brown, medium dense, moist			18	1.5
5			24	12.1
SANDSTONE, CLAYEY, brown to gray, hard to very hard, moist to wet				
10				
15			50/8"	11.9
20			50/6"	25.9

TEST BORING: **10**

DATE DRILLED:
2/8/23
NO GROUNDWATER ON
2/8/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, CLAYEY, with gravel, tan, loose to medium dense, moist				
5			9	7.2
10			29	9.5
SANDSTONE, CLAYEY, with gravel, gray, hard, moist				
15			50/8"	12.9
20			50/8"	12.4

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TEST BORING LOG

JOB No. 190392

FIGURE No. 9

DATE Apr/27/2023

TEST BORING: **11**

DATE DRILLED:
2/13/23
GROUNDWATER @ 19.5 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, tan, medium dense, moist				
			13	2.1
5				
CLAYSTONE, SANDY, olive, weathered to medium hard, moist				
			17	18.8
10				
			50/8"	18.4
15				
SANDSTONE, CLAYEY, with gravel, gray, hard to very hard, moist to wet				
20			50/10"	9.2
			50/8"	11.9
25				
			50/10"	10.8
30				
			50/6"	21.3
35				

TEST BORING: **12**

DATE DRILLED:
2/8/23
NO GROUNDWATER ON
2/8/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, CLAYEY, with gravel, brown, medium dense, moist				
5			23	10.9
SANDSTONE, SILTY TO CLAYEY, with gravel, brown to gray, medium hard to very hard, moist				
10			50/10"	11.5
15			45	13.8
20			50/6"	12.2

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TEST BORING LOG

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FIGURE No. 10

DATE Apr/27/2023

TEST BORING: **13**

DATE DRILLED:
2/13/23
GROUNDWATER @ 13.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, with gravel, tan to gray, loose to medium dense, moist to wet				
			7	1.9
5				
			16	12.5
10				
SANDSTONE, CLAYEY, gray, medium hard, moist to wet			45	14.5
15				
20				16.0

TEST BORING: **14**

DATE DRILLED:
2/13/23
GROUNDWATER @ 13.5 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, with gravel, tan to olive, medium dense, moist				
5			20	1.7
10			10	13.5
SANDSTONE, CLAYEY, with gravel, brown to gray, firm to medium hard, moist to wet				
15			42	12.4
20			45	14.7

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TEST BORING LOG

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FIGURE No. 11

DATE Apr/27/2023

TEST BORING: **15**

DATE DRILLED:
2/13/23
GROUNDWATER @ 9.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, with gravel, tan to brown, medium dense, moist to wet				
			16	1.6
5				
			22	10.3
10				
SANDSTONE, CLAYEY, with gravel, brown to gray, hard, moist to wet				
15			50/10"	12.5
			50/9"	12.1
20				

TEST BORING: **16**

DATE DRILLED:
2/13/23
GROUNDWATER @ 22.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY, with gravel, tan, medium dense to dense, moist				
5			21	3.2
10			43	4.4
SANDSTONE, SILTY TO CLAYEY, gray to dark gray, firm to very hard, moist to wet				
15			29	15.2
20				
25			50/11"	16.7
30				
35			50/6"	7.6

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TEST BORING LOG

JOB No. 190392

FIGURE No. 12

DATE Apr/27/2023

TEST BORING: **17**

DATE DRILLED:
2/13/23
GROUNDWATER @ 7.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, with gravel, tan, medium dense, moist to wet				
			22	2.5
5				
			24	13.1
10				
SANDSTONE, CLAYEY, tan to gray, firm to hard, moist to wet				
15			21	15.9
20			50	15.1

TEST BORING: **18**

DATE DRILLED:
2/8/23
GROUNDWATER @ 7.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, with gravel, tan to gray, medium dense, moist to wet				
5			14	3.1
10			19	16.5
SANDSTONE, CLAYEY, with gravel, gray, hard to very hard, moist to wet				
15			50/9"	16.7
20			50/6"	15.6

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TEST BORING LOG

JOB No. 190392

FIGURE No. 13

DATE Apr/27/2023

TEST BORING: **19**

DATE DRILLED:
2/13/23
GROUNDWATER @ 10.5 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
	SAND, CLAYEY, with gravel, tan to brown, loose to medium dense, moist to wet			
		■	18	5.0
5				
		■	7	23.8
10 ▽				
	SANDSTONE, CLAYEY, with gravel, brown to gray, hard to very hard, moist to wet			
15		■	50	13.1
		■	50/4"	13.4
20				

TEST BORING: **20**

DATE DRILLED:
2/13/23
GROUNDWATER @ 11.5 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
	SAND, SILTY TO CLAYEY, with gravel, tan to brown, medium dense, moist to wet			
5		■	15	4.6
10 ▽		■	14	11.1
	SANDSTONE, CLAYEY, with gravel, gray, medium hard to hard, moist to wet			
15		■	40	12.7
20		■	50	15.8

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TEST BORING LOG

JOB No. 190392

FIGURE No. 14

DATE Apr/27/2023

TEST BORING: **21**

DATE DRILLED:
2/13/23
GROUNDWATER @ 7.5 '
3/22/23

SANDSTONE, CLAYEY, with gravel, tan to brown and gray to dark gray, medium hard to very hard, moist

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
		■	36	5.4
5				
▽		■	44	12.7
10				
15		■	30	14.2
20		■	50/6"	15.1

TEST BORING: **22**

DATE DRILLED:
2/13/23
GROUNDWATER @ 14.5 '
3/22/23

SANDSTONE, CLAYEY, with gravel and claystone seams, tan to gray, firm to hard, moist to wet

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
5		■	50/10"	6.2
10		■	45	10.6
▽ 15		■	50/10"	13.6
20		■	24	15.7

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TEST BORING LOG

JOB No. 190392

FIGURE No. 15

DATE Apr/27/2023

TEST BORING: **23**

DATE DRILLED:
2/13/23
GROUNDWATER @ 4.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, SILTY TO CLAYEY, with gravel, tan to brown, medium dense, moist to wet				
			13	1.1
5				
			21	10.4
10				
15				15.2
SANDSTONE, CLAYEY, gray, moist to wet				
20				18.6

TEST BORING: **24**

DATE DRILLED:
2/13/23
GROUNDWATER @ 14.0 '
3/22/23

DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
SAND, CLAYEY, with gravel, tan, medium dense, moist				
5			19	7.6
SANDSTONE, CLAYEY, with gravel, tan to brown, medium hard, moist				
10			30	13.0
CLAYSTONE, SANDY, brown, medium hard, moist				
SANDSTONE, CLAYEY, with gravel, gray, hard to very hard, moist to wet				
15			50/11"	11.5
20			50/6"	16.3
25			50/7"	16.3
30			50/10"	17.8
35			50/7"	17.3

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TEST BORING LOG

JOB No. 190392

FIGURE No. 16

DATE Apr/27/2023

Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	Load at Saturation (psf)	% Swell/ Collapse	USCS Classification
1	2.0	3.2								
1	7.0	3.3		NP	NP	7.7	6.0			SW-SM
1	14.0	4.7								
1	19.0	13.5								
1	24.0	14.9		NP	NP	0.0	17.6			SM
1	29.0	12.8								
1	34.0	11.7								
2	4.0	20.4		NP	NP	0.0	6.1			SW-SM
2	9.0	11.3								
2	14.0	3.4								
2	19.0	16.9								
3	4.0	4.1								
3	9.0	7.4		NP	NP	15.0	5.7			SW-SM
3	14.0	13.6								
3	24.0	10.4								
3	34.0	15.0								
4	4.0	1.9								
4	9.0	14.8								
4	14.0	14.8		NP	NP	0.4	18.9			SM
4	19.0	13.0								
5	2.0	3.9								
5	7.0	19.9		44	28	0.0	45.2			SC
5	14.0	16.2								
5	19.0	19.1								
6	4.0	2.1		NP	NP	0.0	6.4			SP-SM
6	9.0	3.1								
6	14.0	12.1								
6	19.0	13.2								
7	4.0	2.0		NP	NP	0.0	12.2			SM
7	9.0	13.9								
7	14.0	15.8								
7	19.0	12.9								
8	4.0	2.3								
8	9.0	14.4		NP	NP	3.2	12.6			SM

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 190392
FIGURE No. 17
PAGE 1 OF 4
DATE Apr/27/2023

Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	Load at Saturation (psf)	% Swell/ Collapse	USCS Classification
8	14.0	15.1								
8	19.0	18.5								
9	2.0	1.5								
9	7.0	12.1	115.7			2.4	36.6		- 2.1	
9	14.0	11.9								
9	19.0	25.9								
10	4.0	7.2				7.1	27.1			
10	9.0	9.5								
10	14.0	12.9								
10	19.0	12.4								
11	2.0	2.1								
11	7.0	18.8		44	28	0.0	41.9			SC
11	14.0	18.4								
11	19.0	9.2								
11	24.0	11.9								
11	29.0	10.8		32	19	0.1	31.6			SC
11	34.0	21.3								
12	4.0	10.9								
12	9.0	11.5								
12	14.0	13.8		NP	NP	0.0	46.4			SM
12	19.0	12.2								
13	2.0	1.9		NP	NP	0.1	5.4			SP-SM
13	7.0	12.5								
13	14.0	14.5								
13	19.0	16.0								
14	4.0	1.7								
14	9.0	13.5		27	16	0.0	43.7			SC
14	14.0	12.4								
14	19.0	14.7								
15	2.0	1.6								
15	7.0	10.3		NP	NP	8.0	8.7			SW-SM
15	14.0	12.5								
15	19.0	12.1								
16	4.0	3.2		NP	NP	6.3	7.7			SW-SM

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 190392
FIGURE No. 17

DATE Apr/27/2023

Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	Load at Saturation (psf)	% Swell/ Collapse	USCS Classification
16	9.0	4.4								
16	14.0	15.2								
16	24.0	16.7		NP	NP	0.0	22.8			SM
16	34.0	7.6								
17	2.0	2.5		NP	NP	15.7	10.4			SW-SM
17	7.0	13.1								
17	14.0	15.9								
17	19.0	15.1								
18	4.0	3.1								
18	9.0	16.5		34	20	0.8	46.3			SC
18	14.0	16.7								
18	19.0	15.6								
19	2.0	5.0								
19	7.0	23.8		27	13	1.9	31.9			SC
19	14.0	13.1								
19	19.0	13.4								
20	4.0	4.6				0.0	41.2			
20	9.0	11.1								
20	14.0	12.7								
20	19.0	15.8								
21	2.0	5.4								
21	7.0	12.7		NP	NP	7.4	14.0			SM
21	14.0	14.2								
21	19.0	15.1								
22	4.0	6.2								
22	9.0	10.6		30	14	0.6	52.8			CL
22	14.0	13.6								
22	19.0	15.7								
23	2.0	1.1								
23	7.0	10.4		NP	NP	24.4	3.3			SW
23	14.0	15.2								
23	19.0	18.6								
24	4.0	7.6								
24	9.0	13.0		35	21	3.1	28.0			SC

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 190392
FIGURE No. 17

DATE Apr/27/2023

Test Boring No.	Depth	Water Content (%)	Dry Density (pcf)	Liquid Limit	Plasticity Index	% Retained No.4 Sieve	% Passing No. 200 Sieve	Load at Saturation (psf)	% Swell/ Collapse	USCS Classification
24	14.0	11.5								
24	19.0	16.3								
24	24.0	16.3		NP	NP	1.4	17.2			SM
24	29.0	17.8								
24	34.0	17.3								

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SUMMARY OF LABORATORY TEST RESULTS

JOB No. 190392
FIGURE No. 17
PAGE 4 OF 4
DATE Apr/27/2023

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Test Boring	Depth (ft)	Classification	LL	PL	PI
●	1	7.0	**WELL-GRADED SAND with SILT(SW-SM)**	**NP**	**NP**	**NP**
⊠	1	24.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**
▲	2	4.0	**WELL-GRADED SAND with SILT(SW-SM)**	**NP**	**NP**	**NP**
★	3	9.0	**WELL-GRADED SAND with SILT(SW-SM)**	**NP**	**NP**	**NP**
⊙	4	14.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**

	Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	1	7.0	**7.7**	**86.3**	**6.0**	
⊠	1	24.0	**0.0**	**82.4**	**17.6**	
▲	2	4.0	**0.0**	**93.9**	**6.1**	
★	3	9.0	**15.0**	**79.3**	**5.7**	
⊙	4	14.0	**0.4**	**80.7**	**18.9**	

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SOIL CLASSIFICATION DATA

JOB No. 190392

FIGURE No. 18

DATE Apr/27/2023

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Test Boring	Depth (ft)	Classification	LL	PL	PI
●	5	7.0	**CLAYEY SAND(SC)**	**44**	**16**	**28**
⊠	6	4.0	**POORLY GRADED SAND with SILT(SP-SM)**	**NP**	**NP**	**NP**
▲	7	4.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**
★	8	9.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**
⊙	9	7.0				

	Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	5	7.0	**0.0**	**54.8**	**45.2**	
⊠	6	4.0	**0.0**	**93.6**	**6.4**	
▲	7	4.0	**0.0**	**87.8**	**12.2**	
★	8	9.0	**3.2**	**84.2**	**12.6**	
⊙	9	7.0	**2.4**	**61.0**	**36.6**	

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SOIL CLASSIFICATION DATA

JOB No. 190392

FIGURE No. 19

DATE Apr/27/2023

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Test Boring	Depth (ft)	Classification	LL	PL	PI
●	10	4.0				
⊠	11	7.0	CLAYEY SAND(SC)	44	16	28
▲	11	29.0	CLAYEY SAND(SC)	32	13	19
★	12	14.0	SILTY SAND(SM)	NP	NP	NP
⊙	13	2.0	POORLY GRADED SAND with SILT(SP-SM)	NP	NP	NP

	Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	10	4.0	7.1	65.9	27.1	
⊠	11	7.0	0.0	58.1	41.9	
▲	11	29.0	0.1	68.2	31.6	
★	12	14.0	0.0	53.6	46.4	
⊙	13	2.0	0.1	94.5	5.4	

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SOIL CLASSIFICATION DATA

JOB No. 190392

FIGURE No. 20

DATE Apr/27/2023

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Test Boring	Depth (ft)	Classification	LL	PL	PI
●	14	9.0	**CLAYEY SAND(SC)**	27	11	16
⊠	15	7.0	**WELL-GRADED SAND with SILT(SW-SM)**	NP	NP	NP
▲	16	4.0	**WELL-GRADED SAND with SILT(SW-SM)**	NP	NP	NP
★	16	24.0	**SILTY SAND(SM)**	NP	NP	NP
⊙	17	2.0	**WELL-GRADED SAND with SILT and GRAVEL(SW-SM)**	NP	NP	NP

	Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	14	9.0	0.0	56.3	43.7	
⊠	15	7.0	8.0	83.3	8.7	
▲	16	4.0	6.3	86.0	7.7	
★	16	24.0	0.0	77.2	22.8	
⊙	17	2.0	15.7	73.9	10.4	

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SOIL CLASSIFICATION DATA

JOB No. 190392

FIGURE No. 21

DATE Apr/27/2023

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Test Boring	Depth (ft)	Classification	LL	PL	PI
●	18	9.0	**CLAYEY SAND(SC)**	34	14	20
⊠	19	7.0	**CLAYEY SAND(SC)**	27	14	13
▲	20	4.0				
★	21	7.0	**SILTY SAND(SM)**	NP	NP	NP
⊙	22	9.0	**SANDY LEAN CLAY(CL)**	30	16	14

	Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	18	9.0	0.8	52.9	46.3	
⊠	19	7.0	1.9	66.2	31.9	
▲	20	4.0	0.0	58.8	41.2	
★	21	7.0	7.4	78.6	14.0	
⊙	22	9.0	0.6	46.6	52.8	

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SOIL CLASSIFICATION DATA

JOB No. 190392

FIGURE No. 22

DATE Apr/27/2023

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Test Boring	Depth (ft)	Classification	LL	PL	PI
●	23	7.0	**WELL-GRADED SAND with GRAVEL(SW)**	**NP**	**NP**	**NP**
⊠	24	9.0	**CLAYEY SAND(SC)**	**35**	**14**	**21**
▲	24	24.0	**SILTY SAND(SM)**	**NP**	**NP**	**NP**

	Test Boring	Depth (ft)	%Gravel	%Sand	%Silt	%Clay
●	23	7.0	24.4	72.3	3.3	
⊠	24	9.0	3.1	68.9	28.0	
▲	24	24.0	1.4	81.5	17.2	

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SOIL CLASSIFICATION DATA

JOB No. 190392

FIGURE No. 23

DATE Apr/27/2023

PROJECT: **Judge Orr Rd, Davis Sub, El Paso County, Colorado**
SAMPLE DESCRIPTION: **SAND, CLAYEY**
NOTE: SAMPLE WAS INUNDATED WITH WATER AT 1,000 PSF

SAMPLE LOCATION: **9 @ 7 FT**
NATURAL DRY UNIT WEIGHT: **115.7 PCF**
NATURAL MOISTURE CONTENT: **12.1%**
PERCENT SWELL/COMPRESSION: **- 2.1**

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SWELL/CONSOLIDATION TEST RESULTS

JOB No. 190392

FIGURE No. 24

DATE Apr/27/2023

PIN
- Approximate location based on user input and does not represent an authoritative property location

MAP PANELS
- Selected FloodMap Boundary
- Digital Data Available
- No Digital Data Available
- Unmapped

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*
- Otherwise Protected Area
- Coastal Barrier Resource System Area

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

NOT TO SCALE

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JUDGE ORR RD
DAVIS SUBDIVISION
EL PASO COUNTY, COLORADO
WILLIAM GUMAN AND ASSOCIATES

ENGINEER:	TM
DRAWN BY:	NM
CHECKED BY:	TM
ISSUED:	4-27-2023

FEMA MAP

SHEET No.
FIG-25

8 - Blakeland loamy sand, 1 to 9 percent slopes

19 - Columbine gravelly sandy loam, 0 to 3 percent slopes

29 - Fluvaquentic Haplaquolls, 0 to 2 percent slopes

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USDA SOIL SURVEY MAP

SHEET No.
FIG-26

NOT TO SCALE

GEOLOGIC CONDITIONS

Qes - Eolian Sand (Holocene to upper Pleistocene) Fine to coarse grained sand. Unit is faintly stratified, non-cohesive, and drains well. Unit may exceed 5 feet in thickness

Qa_2 - Alluvium two (Lower Holocene) Moderately consolidated silt, sand, gravel, clay and occasional boulders. Units is subject to occasional flooding with a local maximum exposed thickness of over 20 feet.

Qa_3 - Alluvium three (Upper Pleistocene) Poorly sorted silt, sand, gravel, and cobbles with occasional boulders. Clays in this unit are potentially expansive. Maximum exposed thickness locally exceeds 20 feet.

Qa_1 - Alluvium one (Upper Holocene) Poor to moderately sorted sand, gravel, silt and minor clay with occasional boulders. Predominantly sandy gravel with sandy silt matrix. Unit is subject to frequent flooding. Maximum local exposed thickness exceeds 5 feet.

psw - Potentially seasonally wet areas where groundwater can fluctuate to be at or near the surface.

Fp - Floodplain as mapped by FEMA - this area contains wetlands and is to be a No Build Zone.

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ENGINEERING GEOLOGY MAP

SHEET No.
FIG-27

PIN
- Approximate location based on user input and does not represent an authoritative property location

MAP PANELS
- Selected FloodMap Boundary
- Digital Data Available
- No Digital Data Available
- Unmapped

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*
- Otherwise Protected Area
- Coastal Barrier Resource System Area

SPECIAL FLOOD HAZARD AREAS
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- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

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DRAWN BY:	NM
CHECKED BY:	TM
ISSUED:	4-27-2023

FEMA MAP

SHEET No.
FIG-28

GENERAL NOTES:

1. BOTTOM OF DRAIN PIPE SHALL BE AT OR BELOW BOTTOM OF FOOTING AT ALL LOCATIONS
2. ALL DRAIN PIPE SHALL BE PERFORATED PLASTIC, WITH THE EXCEPTION OF THE DISCHARGE PORTION WHICH SHALL BE SOLID, NON-PERFORATED PIPE.
3. DRAIN PIPE SHALL HAVE POSITIVE FALL THROUGHOUT.
4. DRAIN PIPE SHALL BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. IF A GRAVITY OUTFALL CANNOT BE ACHIEVED, THEN A SUMP PIT AND PUMP SHALL BE USED. THE OUTFALL SHOULD EXTEND PAST BACKFILL ZONES AND DISCHARGE TO A LOCATION THAT IS GRADED TO DIRECT WATER OFF-SITE.
5. ALL DRAIN COMPONENTS SHALL BE RATED/APPROVED BY THE MANUFACTURER FOR THE INSTALLED DEPTH AND APPLICATION
6. DRAIN SYSTEM, INCLUDING THE OUTFALL OF THE DRAIN, SHALL BE OBSERVED BY QUALIFIED PERSONNEL PRIOR TO BACKFILLING TO VERIFY INSTALLATION.
7. A VERTICAL SEGMENT OF PERFORATED DRAIN PIPE, CAPPED AT THE TOP, SHALL EXTEND TO FINISH GRADE WITHIN ALL WINDOW WELLS.

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PERIMETER DRAIN

FIG No. 29

GENERAL NOTES:

1. ALL DRAIN PIPE SHALL BE PERFORATED PLASTIC, WITH THE EXCEPTION OF THE DISCHARGE PORTION WHICH SHALL BE SOLID, NON-PERFORATED PIPE.

2. DRAIN PIPE SHALL HAVE POSITIVE FALL THROUGHOUT.

3. DRAIN PIPE SHALL BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. IF A GRAVITY OUTFALL CANNOT BE ACHIEVED, THEN A SUMP PIT AND PUMP SHALL BE USED. THE OUTFALL SHOULD EXTEND PAST BACKFILL ZONES AND DISCHARGE TO A LOCATION THAT IS GRADED TO DIRECT WATER OFF-SITE.

4. ALL DRAIN COMPONENTS SHALL BE RATED/APPROVED BY THE MANUFACTURER FOR THE INSTALLED DEPTH AND APPLICATION

5. DRAIN SYSTEM, INCLUDING THE OUTFALL OF THE DRAIN, SHALL BE OBSERVED BY QUALIFIED PERSONNEL PRIOR TO BACKFILLING TO VERIFY INSTALLATION.

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UNDERSLAB DRAIN

FIG No. 30

APPENDIX A
Additional Reference Documents

1. *Draft Sketch Plan, Davis Ranch, 9350 Elbert Road, Peyton, CO 80831*, prepared by William Guman and Associates, dated April 19, 2023.
2. *Flood Insurance Rate Map, El Paso County, Colorado and Unincorporated Areas, Community Panel No. 08041C0556G,* Federal Emergency Management Agency (FEMA), effective December 7, 2018.
3. *Geologic Map of the Falcon Quadrangle, El Paso County, Colorado*, Morgan, M.L. and White, J.L, 2012, Colorado Geological Survey Open-File Report OF-12-05.
4. *Falcon Quadrangle, Environmental and Engineering Geologic Map for Land Use*, compiled by Dale M. Cochran, Charles S. Robinson & Associates, Inc., Golden, Colorado, 1977.
5. *Falcon Quadrangle, Map of Potential Geologic Hazards and Surficial Deposits*, compiled by Dale M. Cochran, Charles S. Robinson & Associates, Inc., Golden, Colorado, 1977.
6. Colorado's Decision Support Systems, CWCB, DWR, Well Permits,
7. *El Paso County, Master Plan for Mineral Extraction,* dated February 8, 1996.
8. *Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands Administered by the Colorado State Land Board,* prepared by Colorado Geological Survey, dated February 19, 2003, Open-file Report OF-03-07.
9. *Pikes Peak Regional Building Department:* https://www.pprbd.org/.
   https://property.spatialest.com/co/elpaso/#/property/4300000534
   Schedule No. 4300000534, 4300000537, and 4300000538.
10. *Colorado Geological Survey, USGS Geologic Map Viewer*:
    http://coloradogeologicalsurvey.org/geologic-mapping/6347-2/.
11. *Historical Aerials:* https://www.historicaerials.com/viewer, Images dated 1947, 1952, 1955, 1960, 1983, 1984, 1985, 1999, 2005, 2009, 2011, 2013, 2015, 2017, and 2019.
12. *USGS Historical Topographic Map Explorer:* http://historicalmaps.arcgis.com/usgs/ Colorado Springs, Black Forest Quadrangle dated 1898, 1909, 1948, 1969, 1981 and 1989.
13. *Google Earth Pro*, Imagery dated 1999, 2004, 2005, 2006, 2011, 2013, 2015, 2017, 2019 and 2020.

APPENDIX B

Wastewater Study

Job No. 190392

April 27, 2023

William Guman & Associates, Ltd
731 North Weber Street, Ste 10
Colorado Springs, CO 80903

Re: Wastewater Study
Judge Orr Rd
Davis Subdivision
EL Paso County, Colorado

Dear Mr. Guman:

As requested, personnel of RMG – Rocky Mountain Group has performed a preliminary investigation and site reconnaissance at the above referenced address. The approximate location of the site is shown on the Site Vicinity Map, Figure 1.

The site currently consists of six parcels (per the El Paso County Assessor's website) for a combined 398.81 acres. The parcels included in this study are:

- Schedule No. 4200000377, currently addressed as 9060 Elbert Rd, zoned A-35, consists of approximately 69.25 acres, and land use is classified as agricultural grazing land with well and septic;
- Schedule No. 4233000031, currently addressed as 14850 Judge Orr Rd, zoned A-35, consists of approximately 25.68 acres and land use is classified as agricultural grazing land with well and septic;
- Schedule No. 4200000406, currently labeled as Judge Orr Rd, zoned A-35, consists of approximately 103.98 acres and land use is classified as agricultural grazing land;
- Schedule No. 4200000470, currently labeled as Elbert Rd, zoned A-35, consists of approximately 80.00 acres, and land use is classified as agricultural grazing land;
- Schedule No. 4200000359, currently addressed as 9050 Elbert Rd, zoned A-35, consists of approximately 40.00 acres, and land use is classified as agricultural grazing land with well and septic;
- Schedule No. 4200000354, currently addressed as 9350 Elbert Rd, zoned A-35, consists of approximately 40.00 acres, and land use is classified as agricultural grazing land with well and septic.

It is our understanding that the parcels listed above are to be combined then subdivided into 89 single-family residential lots, two commercial lots, and a community park. The new lots are to be zoned as RR-2.5 and/or RR-5, with minimum lot sizes of 2.5 and 5 acres, respectively.

The proposed lots are to be accessed from two new residential roads, one extending north from Judge Orr Road and a second extending west from Stapleton Drive. Access to the commercial lots is to be provided from Judge Orr Road. The lots are to utilize individual wells and On-Site Wastewater Treatment Systems (OWTS). The Proposed Site Boundaries is presented in Figure 2.

This letter is to provide information for the on-site wastewater report per the On-Site Wastewater Treatment Systems 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 for this site and area were available for our review and are listed below:

1. *Soil and Geology Study, Esteban Subdivision, 3 parcels totaling 496.2 acres, El Paso County, Colorado,* RMG – Rocky Mountain Group, Job No. 190388, dated April 27, 2023.
2. *Wastewater Study, Esteban Subdivision, 3 parcels totaling 496.2 acres, El Paso County, Colorado,* RMG – Rocky Mountain Group, Job No. 190388, dated April 27, 2023.
3. *Soil and Geology Study, Judge Orr Rd, 6 parcels totaling 398.91 acres, El Paso County, Colorado,* RMG – Rocky Mountain Group, Job No. 190392, dated April 27, 2023

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

SITE CONDITIONS

Personnel of RMG performed a reconnaissance visit on February 24, 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. Eight 6 to 8-foot deep test pits were performed across the property 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. No deciduous trees are located on the property.

The following conditions were observed with regard to the 398.91-acre parcel:

- 5 wells currently **do** exist on the site;
- No runoff or irrigation features anticipated to cause deleterious effects to treatment systems on the site were observed;
- Three drainageways/wetlands exist on the property. The drainageways lie within the designated floodway or floodplain;
- Slopes greater than 20 percent **do not** 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 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,* will need to be completed. A scaled site plan and engineered design will also be required prior to obtaining an OWTS permit;
- The treatment areas must comply with any physical setback requirements of Table 7-1 of the El Paso County Department of Health and Environment (EPCHDE);
- 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 EPCHDE;
- Treatment areas must also be located a minimum 50 feet from any spring, lake, water course, irrigation ditch, stream or wetlands;
- the treatment areas are to be located a minimum 10 feet from property lines, dry gulches, 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 test pit observations, the parcel has a minimum of two locations for the OWTS.

If the existing systems are to be removed based on the proposed lot layout, the following would apply:

- Depending on the location of the existing septic systems in relation to the lot layout, they may or may not be utilized for new construction. The existing systems were reportedly constructed between 1996 and 2018. The existing septic systems will need to meet the current criteria for a Transfer of Title Inspection per 8.4 (O).6 per EPCHDE;
- If an existing system is to be removed (e.g. tank, components and/or soil) they should be disposed of properly;
- New treatment areas are not to be located within the existing septic field areas unless the existing system and all contaminated soil has been disposed of properly.

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, identified the soil conditions anticipated to be encountered during construction of the proposed OWTS for the lots which 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. 08041C0558G, effective December 7, 2018 indicates that the proposed treatment areas have sufficient space to remain outside the identified floodplain, drainageways and wetlands.

SOIL EVALUATION

Personnel of RMG performed a soil evaluation to include eight 6 to 8-foot deep test pits, on February 24, 2023 (Test Pit TP-1 through TP-11), 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 Figures 4 through 8.

The USDA/NRCS soil survey identifies the site soils as:

- 8 – Blakeland loamy sand, 1 to 9 percent slopes. The Blakeland loamy sand was mapped by the USDA and is located throughout most of the property. The Blakeland loamy sand encompasses the majority of the property. The properties of the Blakeland loamy sand include somewhat excessively drained soil with a depth to water table of over 80 inches. Runoff is anticipated to be low and frequency of flooding or ponding is none. Landforms are flats and hills;
- 19 – Columbine gravelly sandy loam, 0 to 3 percent slopes. The Columbine gravelly sandy loam was mapped by the USDA and is only located in the southwest corner of the property. Properties of the Columbine gravelly sandy loam include well drained soil with a depth to water table of over 80 inches. Runoff is anticipated to be well drained and frequency of flooding or ponding is none. Landforms are fans and hills;
- 29 – Fluvaquentic Haplaquolls, 0 to 2 percent slopes. The Fluvaquentic Haplaquolls was mapped by the USDA and traverses from the western end of the property to the eastern end in the northern portion of the property. Properties of the Fluvaquentic Haplaquolls include poorly drained soil with a depth to water table of 0 to 24 inches. Runoff is anticipated to be very high and frequency of flooding is frequent. Frequency of ponding is none. Landforms are flood plains and swales. The hydrologic soil group of the unit is D.

The USDA Soil Survey Map is presented in Figure 10.

An OWTS is proposed for each proposed lot 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 observed in the test pits. However, groundwater was also encountered in the majority of the test borings performed for the Soil and Geology Study reports, referenced above, at depths ranging from 5 to 34 feet below the existing ground surface.

CONCLUSIONS

In summary, it is our opinion the site is suitable for individual on-site wastewater treatment systems within the cited limitations. 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 generally suitable for individual treatment systems. 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) are encountered at the time of the site specific OWTS evaluation, an "engineered system" will be required.

Additionally, based on the depth of the limiting layers (bedrock and groundwater) encountered at depths ranging from the surface to 5 feet, respectively, below the existing ground surface, the maximum depth of the OWTS components may be limited further limited or mound systems (above the ground surface) may be required.

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. However, due to the depth of bedrock and groundwater encountered in the test borings completed for the Soils and Geology Study, referenced above, the majority of OWTS are anticipated to be “engineered’.

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,

RMG – Rocky Mountain Group

Kelli Zigler

Kelli Zigler
Project Geologist

Reviewed by,

RMG – Rocky Mountain Group

COLORADO REGISTERED
ANTHONY P. MUNGER
4/27/23
39818
PROFESSIONAL ENGINEER

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

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SITE VICINITY MAP

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FIG No. 1

DATE 4-27-2023

LAND USE SUMMARY TABLE:

LAND USE CATEGORY	ACREAGE	% OF SITE	MAXIMUM UNITS
LOW DENSITY RR-2.5 ZONING	127.44 ac	32%	49
LOW DENSITY RR-5 ZONING	226.30 ac	57%	40
COMMERCIAL CS ZONING	6.08 ac	1.6%	n.a.
OPEN SPACE PARK ZONING	6.44 ac	2.1%	n.a.
FLOODPLAIN NO-BUILD	n.a.		n.a.
DETENTION NO-BUILD	11.35 ac	2.9%	n.a.
PROPOSED TRAIL	n.a.		n.a.
PROPOSED R.O.W.	17.30 ac	4.4%	n.a.
TOTAL:	394.91 ac	100%	89

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PROPOSED SITE BOUNDARIES

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FIG-2

DENOTES APPROXIMATE LOCATION OF TEST PITS

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TEST PIT
LAYOUT PLAN

SHEET No.
FIG-3

TEST PIT TP-1

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 1.5 FT SANDY CLAY LOAM (GRANULAR, STRONG)			3 / R-1
1.5 - 8 FT SAND (SINGLE GRAIN, STRUCTURELESS, 40% > 2MM)	2ft		1 / R-0
	4ft		
	6ft		
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

TEST PIT TP-2

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 8.0 FT SAND (SINGLE GRAIN, STRUCTURELESS, 45% > 2MM)			1 / R-0
	2ft		
	4ft		
	6ft		
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

SOIL DESCRIPTIONS

SANDY CLAY LOAM

SAND

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TEST PIT LOGS

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FIG No. 4

DATE 4-27-2023

TEST PIT TP-3

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 2.5 FT SANDY CLAY LOAM (GRANULAR, STRONG 40% > 2MM)	2ft		3 / R-0
2.5 - 6.5 FT SAND (SINGLE GRAIN, STRUCTURELESS, 40% > 2MM)	4ft 6ft		1 / R-0
6.5 - 8.0 FT CLAY (BLOCKY, MODERATE)			4
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

TEST PIT TP-4

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 3.0 FT SAND (SINGLE GRAIN, STRUCTURELESS 40% > 2MM)	2ft		1 / R-0
3.0 - 6.0 FT SANDY, CLAY LEAN, (GRANULAR, BLOCKY, WEAK, 40% > 2MM)	4ft 6ft		3A
6.0 - 8.0 FT SANDY CLAY (GRANULAR, STRONG)			2
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

SOIL DESCRIPTIONS

- SANDY CLAY LOAM
- SAND
- CLAY
- SANDY CLAY LEAN
- SANDY CLAY

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TEST PIT LOGS

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FIG No. 5

DATE 4-27-2023

TEST PIT TP-5

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 3.5 FT LOAM (BLOCKY, STRONG)	2ft		2
3.5 - 8.0 FT SAND (SINGLE GRAIN, STRUCTURELESS, 40% > 2MM) NO GROUNDWATER LIMITING LAYER R-0	4ft 6ft 8ft		1 / R-0

TEST PIT TP-6

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 8.0 FT SAND (SINGLE GRAIN, STUCTURELESS) NO GROUNDWATER NO LIMITING LAYER	2ft 4ft 6ft 8ft		1

SOIL DESCRIPTIONS

SAND

LOAM

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TEST PIT LOGS

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FIG No. 6

DATE 4-27-2023

TEST PIT TP-7

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 1.5 FT SAND, CLAY, LOAM (GRANULAR, STRONG, 40% > 2MM)			1
1.5 - 8.0 FT SAND (SINGLE GRAIN, STRUCTURELESS, 40% > 2MM)	2ft 4ft 6ft		1 / R-0
NO GROUNDWATER R-0 LIMITING LAYER	8ft		

TEST PIT TP-8

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 1.0 FT CLAY LOAM (GRANULAR, STRONG)			3
1.0 - 2.0 FT SANDY CLAY (BLOCKY, MODERATE)	2ft		4
2.0 - 6.0 FT SAND (SINGLE GRAIN, STRUCTURELESS 36% > 2MM)	4ft 6ft		1 / R-0
GROUNDWATER AT 6.0' R-0 LIMITING LAYER	8ft		

SOIL DESCRIPTIONS

SANDY CLAY LOAM

SAND

CLAY LOAM

SANDY CLAY

Architecture
Structural
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TEST PIT LOGS

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FIG No. 7

DATE 4-27-2023

TEST PIT TP-9

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 1.0 FT SANDY, CLAY, LOAM (GRANULAR, STRONG 40% > 2MM)			3 / R-0
1.0 - 4.5 FT SAND (SINGLE GRAIN, SRUCTURELESS 40% > 2MM)	2ft 4ft		R-0
4.5 - 8.0 FT CLAY (BLOCKY, MODERATE) NO GROUNDWATER R-0 LIMITING LAYER	6ft 8ft		4

TEST PIT TP-10

DATE OBSERVED: 2/24/23

SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 8.0 FT SAND (SINGLE GRAIN, STRUCTURELESS) NO GROUNDWATER NO LIMITING LAYER	2ft 4ft 6ft 8ft		1

SOIL DESCRIPTIONS

SAND CLAY LOAM

SAND

CLAY

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TEST PIT LOGS

JUDGE ORR ROAD
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FIG No. 8

DATE 4-27-2023

TEST PIT TP-11			
DATE OBSERVED: 2/24/23			
SOIL DESCRIPTION	DEPTH (FT)	SYMBOL	SOIL TYPE
0 - 5.0 FT SANDY, LOAM (GRANULAR, STRONG)	2ft 4ft		2
5.0 - 7.0 FT SAND (SINGLE GRAIN, STRUCTURELESS)	6ft		1
7.0 - 8.0 FT SILTY CLAY LOAM (BLOCKY, MODERATE)			3
NO GROUNDWATER NO LIMITING LAYER	8ft		

SOIL DESCRIPTIONS

SANDY LOAM

SAND

SILTY CLAY LOAM

Architecture
Structural
Geotechnical

RMG

Materials Testing
Forensics
Civil / Planning

Engineers / Architects
SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY, SUITE 100,
COLORADO SPRINGS, CO 80918
(719) 548-0600 ~ WWW.RMGENGINEERS.COM
SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

TEST PIT LOGS

JUDGE ORR ROAD
DAVIS SUBDIVISION

EL PASO COUNTY, COLORADO
WILLIAM GUMAN AND ASSOCIATES LTD.

JOB No. 190392

FIG No. 9

DATE 4-27-2023

8 - Blakeland loamy sand, 1 to 9 percent slopes

19 - Columbine gravelly sandy loam, 0 to 3 percent slopes

29 - Fluvaquentic Haplaquolls, 0 to 2 percent slopes

NOT TO SCALE

JOB No. 190392

RMG
Materials Testing
Forensics
Civil / Planning
Architecture
Structural
Geotechnical
Engineers / Architects
SOUTHERN COLORADO OFFICE
2910 AUSTIN BLUFFS PKWY, SUITE 100,
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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

JUDGE ORR RD
DAVIS SUBDIVISION
EL PASO COUNTY, COLORADO
WILLIAM GUMAN AND ASSOCIATES

ENGINEER:	TM
DRAWN BY:	NM
CHECKED BY:	TM
ISSUED:	4-18-2023

USDA SOIL SURVEY MAP

SHEET No.
FIG-10

APPENDIX C

Individual Sewage Disposal Inspections Forms

EL PASO COUNTY HEALTH DEPARTMENT
INDIVIDUAL SEWAGE DISPOSAL INSPECTION FORM

Permit # 6764 DB

Date 10/27/92

APPROVED YES ✓ NO # 4200000354 ENVIRONMENTALIST M Hanley P

Address 9350 Elbert Rd Owner Davis

Legal Description Sec Pt NE 1/4 NE 1/4 34 TWN 12S RANGE 64

Residence ✓ Commerical ____ # of Bedrooms 3 System Installer Davis

SEPTIC TANK

Commercial ✓ Noncommercial ____ Measurements: L ____ W ____ D ____

Construction Material Cement Liq. Cap. 1250 gal

DISPOSAL FIELD

Exc. Depth ____ Width ____ Total Length ____ Sq. Ft. ____

Rock ____ Depth ____ Under ____ Over ____

Rockless System: ~~Diameter of Pipe~~ 15 Infiltrator units in a trench

Seepage Pits: Number of rings ____ Lining Material ____ Sq. Ft. 562 1/2

Working Depth ____ Width ____

Engineer Design Yes ____ Type ____ Engineer Approval Letter Yes ____

Well 50 feet from Tank ____ 100 feet from leach field ____

Well Installed at Time of Septic System Inspection Yes ____ No ✓ Public Water ____

Acres 40

Water Supply well

EL PASO COUNTY • COUNTY HEALTH DEPARTMENT
501 North Foote Avenue • Colorado Springs, Colorado • 578-3125

Permit 6764

Receipt No. 841

PERMIT

TO CONSTRUCT, ALTER, REPAIR or MODIFY ANY INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Issued To JUNIOR DAVIS Date 10-1-92

Address of Property 9350 ELBERT ROAD Phone 683-3114
(Permit valid at this address only)

Sewage-Disposal System work to be performed by JUNIOR DAVIS Phone 591-1089

This Permit is issued in accordance with 25-10-106 Colorado Revised Statutes 1973, as amended. PERMIT EXPIRES upon completion-installation of sewage-disposal system or at the end of twelve (12) months from date of issue—whichever occurs first—(unless work is in progress). This permit is revokable if all stated requirements are not met.

— THIS PERMIT DOES NOT DENOTE APPROVAL OF ZONING AND ACREAGE REQUIREMENTS —

$150.00
PERMIT FEE (NOT REFUNDABLE)

DIRECTOR, COUNTY HEALTH DEPARTMENT

10-1-93
DATE OF EXPIRATION

ENVIRONMENTALIST

NOTE: LEAVE ENTIRE SEWAGE-DISPOSAL SYSTEM UNCOVERED FOR FINAL INSPECTION. 48-HOUR ADVANCE NOTICE REQUIRED.

SEPTIC TANK:	TRENCH SYSTEM:	BED SYSTEM:	SEEPAGE PIT SYSTEM:
	total square feet 302 ____ ft. of trench ____ inches wide		total square feet ____
1250 gallons	____ ft. of trench ____ inches wide	total square feet ____	____ rings or ____ diam.x ____ w/d

NOTES: INSTALL PER EL PASO COUNTY ISDS REGULATIONS. MAINTAIN MINIMUM DISTANCES. KEEP LEACHFIELD IN AREA OF PERCOLATION TEST.

The Health Office shall assume no responsibility in case of failure or inadequacy of a sewage-disposal system, beyond consulting in good faith with the property owner or representative. Free access to the property shall be authorized at reasonable times for the purpose of making such inspections as are necessary to determine compliance with requirements of this law.

El Paso County Health Department
501 North Foote Avenue
Colorado Springs, CO 80909-4593
(303) 578-3125

M.H.

(New)

APPLICATION FOR A PERMIT TO CONSTRUCT, REMODEL, OR INSTALL A SEWAGE DISPOSAL SYSTEM

NAME OF OWNER Junior Davis HOME PHONE 683-3114 WORK PHONE 591-1089

ADDRESS OF PROPERTY 9350 Elbert Road DATE 9-8-92 El Paso

LEGAL DESCRIPTION OF PROPERTY Sec Pt, NE Qtr, NE Qtr 34 Twp 12S Range 64

TAX SCHEDULE NUMBER ~~42000-00-241~~ SYSTEM CONTRACTOR Davis Gas shop PHONE 591-1089

OWNER'S ADDRESS IF DIFFERENT 9439 Ellicott Hwy

TYPE OF HOUSE CONSTRUCTION 3 bedroom SOURCE AND TYPE OF WATER SUPPLY Well

SIZE OF LOT 40 acres MAXIMUM POTENTIAL NUMBER OF BEDROOMS 3 BASEMENT (yes or no) yes

PERCOLATION TEST RESULTS ATTACHED (yes or no) yes

A plot plan and accompanying information are essential; it may be drawn on the back of this application or be attached. Please include by measured distance the location of wells including neighbors' wells, springs, water supply lines, cisterns, buildings, proposed structures, property lines, property dimensions, subsoil drains, lakes, ponds, water courses, streams, and dry gulches. Please show the location of the proposed septic system by directions and distances from actual and/or proposed dwellings, structures, or fixed reference objects. Give complete directions to the property from major highways. (ANSWER QUESTIONS ON BACK OF FORM).

Applicant acknowledges that the completeness of the application is conditional upon such further mandatory and additional tests and reports as may be required by the department to be made and furnished by the applicant for purposes of evaluation of the application; and issuance of the permit is subject to such terms and conditions as deemed necessary to ensure compliance with rules and regulations adopted under Article 10, Title 25, C.R.S. 1973 as amended. The undersigned hereby certifies that all statements made, information and reports submitted by the applicant are or will be represented to be true and correct to the best of my knowlege and belief and are designed to be relied on by the El Paso County Health Dept. in evaluating the same for purposes of issuing the permit applied for herein. I further understand that any falsification or misrepresentation may result in the denial of the application or revocation of any permit granted based upon said application and in legal action for perjury as provided by law.

SIGNATURE Jane Davis

HEALTH DEPARTMENT USE ONLY

PERMIT NUMBER 6764 RECEIPT NUMBER 841 DATE TO LAND USE DEPARTMENT Attached 9/22/92 [illegible]

ABSORPTION AREA 302# TANK CAPACITY 1250 gal DATE OF SITE INSPECTION 9/29/92

REMARKS: Install per EPC ISDS reg. Maintain minimum distances. Keep leachfield in area of perc test.

APPLICATION IS APPROVED (✓) DENIED ( ) DATE 9/29/92 ENVIRONMENTALIST [illegible] Henley

ANSWER THE FOLLOWING ITEMS AND/OR INCLUDE ON PLOT PLAN.

PROPERTY LINES see Plat

PROPERTY DIMENSIONS 1390X1920

LOCATION OF PROPOSED SEPTIC SYSTEM see plat

LOCATION OF WELL 150' from well

LOCATION OF ADJACENT WELLS 900 ft +

BUILDINGS Resident

PROPOSED BUILDINGS House

WATER SUPPLY LINE well

CISTERNS no

SPRINGS no

LAKES no

PONDS no

WATER COURSES see Plat

STREAMS no

DRY GULCHES see Plat

SUBSOIL DRAINS no

DIRECTIONS TO PROPERTY FROM MAIN HIGHWAYS:

DAVIS GAS SHOP, INC

3603 E.St.Vrain 591-1089
Colorado Springs, Co. 80909

DAVIS GAS SHOP, INC

3603 E.St.Vrain 591-1089
Colorado Springs, Co. 80909

EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT , Permit # 8464
INDIVIDUAL SEWAGE DISPOSAL SYSTEM INSPECTION FORM Date 11-1-94

APPROVED: YES X NO #4200000377 ENVIRONMENTALIST Brad Wallace

Address 9060 Elbert Road Owner Junior J. Davis

Legal Description S2, SW4, NE4, N2, NW4, SE4, S34 - 12 - 64
Residence X, # of bedrooms 3; Commercial ____; System Installer owner

SEPTIC TANK:
Commercial X; Noncommercial ____, L 9'10", W ____, WD ____
Construction Material Pre-Cast Concrete, capacity 1,250 gallons.

DISPOSAL FIELD:
Rock Systems:
Trench: depth ____, width ____, total length ____, sq. feet ____
Bed: depth ____, length ____, width ____, sq. feet ____
Rock type ____, depth ____, under PVC ____, over PVC ____
Seepage Pits: # of pits ____, total # of rings ____, working depth(s) ____
size of pit(s) L X W ____, lining material ____, total sq. feet ____
Rockless Systems:
Chamber: Type Infiltrators, number of chambers 28, bed ____, trench X
sq. ft./section 18 FT², reduction allowed 50 %, sq. ft required 599 FT²
total sq. ft. installed 1008 FT², depth of installation 32" → 44"
Engineer Design Y or (N), Designing Engineer ____,
Approval letter provided? Y or (N)
Well 50 feet from tank (Y) or N 100 feet from leach field (Y) or N
Well installed at time of septic system inspection (Y) or N Public Water ____
*Approval will be revoked if in the future the well is found to be within 50 feet of the septic tank and/or 100 feet of the disposal field.

NOTES:

Acres 40 **EL PASO COUNTY • DEPARTMENT OF HEALTH AND ENVIRONMENT** Permit 8464

301 South Union Blvd. • Colorado Springs, Colorado • 578-3125

Water Supply well Receipt No. 5465

PERMIT

TO CONSTRUCT, ALTER, REPAIR OR MODIFY ANY INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Issued to JUNIOR J. DAVIS Date 9-13-94

Address of Property 9060 ELBERT ROAD, S2,SW4,NE4, N2,NW4,SE4 SEC 34-12-64 Phone 591-1089

(Permit valid at this address only)

Sewage-Disposal System work to be performed by OWNER Phone 591-1089

This Permit is issued in accordance with 25-10-106 Colorado Revised Statutes 1973, as amended. PERMIT EXPIRES upon completion-installation of sewage-disposal system or at the end of twelve (12) months from date of issue–whichever occurs first-(unless work is in progress). This permit is revokable if all stated requirements are not met.

–THIS PERMIT DOES NOT DENOTE APPROVAL OF ZONING AND ACREAGE REQUIREMENTS–

$150.00

PERMIT FEE (NOT REFUNDABLE)

DIRECTOR, DEPARTMENT OF HEALTH AND ENVIRONMENT

9-13-95

DATE OF EXPIRATION

ENVIRONMENTALIST

NOTE: LEAVE ENTIRE SEWAGE-DISPOSAL SYSTEM UNCOVERED FOR FINAL INSPECTION. 48 HOUR ADVANCE NOTICE REQUIRED.

SEPTIC TANK:	TRENCH SYSTEM:	BED SYSTEM:	SEEPAGE PIT SYSTEM:
	total square feet 599		total square feet
1250 gallons	ft. of trench inches wide		
	ft. of trench inches wide	total square feet	rings or diam.x w/d

NOTES: INSTALL IN AREA AND DEPTH (30 INCHES) OF PERC TEST. RECOMMEND 60 PER CENT INCREASE IN LEACH FIELD IF CLOTHES WASHER AND GARBAGE GRINDER ARE INSTALLED IN HOME FOR A TOTAL OF 958 SQ. FT. INSTALL ACCORDING TO EL PASO COUNTY ISDS REGULATIONS.

The Health Office shall assume no responsibility in case of failure or inadequacy of a sewage-disposal system, beyond consulting in good faith with the property owner or representative. Free access to the property shall be authorized at reasonable time for the purpose of making such inspections as are necessary to determine compliance with requirements of this law.

Brad

EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT
301 South Union Boulevard
Colorado Springs, CO 80910-3123

APPLICATION FOR A PERMIT TO CONSTRUCT, REMODEL, OR INSTALL A SEWAGE DISPOSAL SYSTEM

Name of Owner Junior J Davis Daytime Phone 591-1089

Address of Property 9060 Ellert Rd Date 9-7-94

Legal Descripion of Property S2SW4NE4 N2NW4SE4 SEC 34-12-64

Tax Schedule Number 4200-00-218 028925 Septic Contractor/Phone 591-1089

Type of House Construction Frame Source of Water Well

Size of Lot 40 acres Basement (Y or ~~N~~) Percolation Test Attached (~~Y~~ or N)

MAXIMUM POTENTIAL NUMBER OF BEDROOMS 3

I have supplied a plot plan as described on the back of this form. I acknowledge the completeness of the application is conditional upon such further mandatory & additional tests & reports as may be required by the Department to be made & furnished by the applicant for purposes of evaluating the application, & issuance of the permit is subject to such terms & conditions as deemed necessary to ensure compliance with rules & regulations adopted pursuant to C.R.S. 1973, 10-25-101 et. seq. I hereby certify all statements made, information and reports submitted by me are or will be represented to be true & correct to the best of my knowledge & belief, & are designed to be relied on by the El Paso County Department of Health in evaluating the same for purposes of issuing the permit applied for herein. I further understand any falsification or misrepresentation may result in the denial of the application or revocation of any permit granted based upon said application & in legal action for perjury as provided by law.

OWNER'S SIGNATURE Junior J Davis

****

DEPARTMENT OF HEALTH USE ONLY

Absorption Area 599 FT² Tank Capacity 1,250 Date/Site Inspection 9-8-94

Remarks: Install in area and depth (30") of perc Test. Recommend 60% increase in Leach Field area if cloths washer and garbage grinder will be installed in home for a Total of 958 FT². Install according to EPCHD Regulations.

Application is (X) approved (Pending Planning dept. Approval) ( ) denied

Environmentalist Brad A. Wall Date 9-8-94

****

Permit # 8464 Receipt # 5465 Date to Planning Dept 9-8-94

EHS-10/93

PROPERTY AND PERC HOLES MUST BE CLEARLY MARKED/POSTED

The following information must be on your plot plan.
Please check ( ) the items that apply.

(X) Property Lines
( ) Property Dimensions
(X) Proposed Septic System Site
(X) Well(s)
( ) Adjacent Well(s)
(X) Building(s)
(X) Proposed Building(s)
( ) Water Line
( ) Cistern
( ) Subsoil Drain(s)

Are any of these within 100 feet of your proposed septic system (including adjoining property)? Also draw on the plot plan.

Spring(s) no
Lake(s) no
Pond(s) no
Stream(s) no
Dry Gulch(s) no
Natural Drainage Course(s) no

Give complete directions to the property from a main highway.

Highway 24 East to Judge or Rd ~~go~~ right on Judge or Rd to Ellert Rd ~~go~~ left on Ellert ½ mile to first Driveway to left

El Paso County, CO
Public Health
Prevent • Promote • Protect

Environmental Health Division
1675 W. Garden of the Gods Rd., Suite 2044
Colorado Springs, CO 80907
(719) 578-3199 *phone*
(719) 575-8664 *fax*
www.elpasocountyhealth.org

ENGINEERED ON-SITE WASTEWATER TREATMENT SYSTEM
FINAL INSPECTION FORM

P

On-site ID: ON0039568 Tax schedule (APN) #: 4233000031 Permit Type: New ☒ Major ☐ Minor ☐
Environmental Health Specialist: Neil Mayes Final Inspection Date: 12/27/2018 **Approved: YES** ☒ **NO** ☐

Residential Property Information:
Owner: Davis Jane Living Trust Address: 14850 Judge Orr Rd, Peyton, CO 80831 Approved No. Bedrooms: 4
Water supply: Municipal ☐ Well ☒ Cistern ☐ Date well installation verified: 12/27/2018 GPS of Well: 38°57.362'N 104°33.275'W
Approval will be revoked if in the future any well is found to be within 50 feet of the septic tank and/or 100 feet of the soil treatment area.

Minimum System Requirements: Soil Type: 2 LTAR: 0.60 Limiting Layer: ☒ Groundwater 72 – 78" ☐ Bedrock
OWTS Tank: Capacity (gallons): 1250
Soil Treatment Area (STA): Sq. Ft. (10-1): 875 Sq. Ft. (10-2): 1050 Sq. Ft. (10-3): 735 Sq. Ft. (with Diverter Valve): (10-2)/(2)
NDDS (STA): Sq. Ft. (10-1): ___ NDDS Factor: ___ Sq. Ft. (NDDS adjustment): ___

Engineering:
Design Engineer: Parr Engineering & Consulting, Inc. **Engineer design #:** 18.341
Date engineer record drawing/certification letter received: 12/27/2018

Final system installation:
Licenses Installer: Tier 2: ☒ **Installer:** Down To Earth Excavating

Treatment Level: 1 ☒ 1PD ☐ 2 ☐ 2N ☐ 3 ☐ 3N ☐

OWTS Tank: GPS Location: 38°57.346'N 104°33.255'W
Construction Material: Concrete Capacity (gallon): 1250 Existing ☐ New ☒

OWTS Pump Tank: YES ☐ NO ☒ Capacity (gallon): _ Audio/visual Alarm: YES ☐ NO ☐
Pump (Gal/dose): _____ Dose: _ Total Dynamic Head: _ Elevation difference:

Soil Treatment Area (STA): GPS Location: 38°57.335'N 104°33.256'W Total Sq. Ft installed: 765
Configuration: Trench ☐ Bed ☒ Distribution: Gravity ☒ Pressure Dosed ☐ NDDS ☐
☐ Rock and Pipe: Width: ___ Total Length: ___ Installation Depth: ___
Depth of Rock (under pipe): ___ Type of cover on Rock: ___
☒ Chambers: Type: Arc 36 LP Sq. Ft/chamber: 15 No. Chambers: 51 Installation Depth (range): 20 – 24"
☐ NDDS: # Zones: ___ # Laterals/zone: ___
☐ Seepage Pit: # Rings: ___

Notes:

1 Site Map - AS-BUILT
1" = 50'-0"

Parr Engineering & Consulting, Inc.
11590 Black Forest Road, Suite 10
Colorado Springs, Colorado 80908
Phone: 719-494-0404

14850 JUDGE ORR, 80831

As-Built

Project number	18.341	C1 A.B.
Date	12/21/18	
Drawn by	S.DUNFEE	
Checked by	C.PARR	Scale 1" = 50'-0"

Notify Environmental Health of any change of ownership, type of business activity, business name, or billing address by calling (719) 578-3199. Failure to notify Environmental Health may result in late penalties, Permit/License denial or revocation, and business closure. PERMITS/LICENSES TO OPERATE AND ANNUAL FEE PAYMENTS ARE NOT TRANSFERABLE. Permits become void on change of ownership. New owners must apply and pay for a new Permit(s)/License(s) prior to beginning operation.

Attn: DAVIS JANE LIVING TRUST
14850 JUDGE ORR RD
PEYTON, CO 80831

El Paso County, CO
Public Health
Prevent • Promote • Protect

EL PASO COUNTY PUBLIC HEALTH
ENVIRONMENTAL HEALTH DIVISION
1675 W. GARDEN OF THE GODS ROAD, SUITE 2044
COLORADO SPRINGS, CO 80907
PHONE: (719) 578-3199 FAX: (719) 578-3188
www.elpasocountyhealth.org

MAJOR REPAIR PERMIT - OWTS

Valid From 9/13/2018 To 9/13/2019

PERMITEE : DAVIS JANE LIVING TRUST
14850 JUDGE ORR RD
PEYTON, CO 80831

OWNER NAME : DAVIS JANE LIVING TRUST

Onsite ID: ON0039568
Tax Schedule # : 4233000031
Permit Issue Date: 09/13/2018
Dwelling Type: RESIDENTIAL
# of Bedrooms (if Res): 4
Proposed Use (if Comm):
Designed Gallons/Day:
Water Source: PRIVATE WELL

System Installation Requirements:

- **An Engineered OWTS system to be installed on site due to encountering seasonal and standing groundwater between 72 - 78", requiring a Tier II licensed installer.**
- **System installation to include gravity fed to chamber in a bed layout, max installation depth of 24" due to ground water evidence. Minimum tank requirements 1250 gallon and 735 sq ft of soil treatment area (62 Q4 / 49 Arc 36 chambers required).**
- **The system must be installed per approved Parr Engineering design document #18.341 stamped and dated 9.12.2018, changes to the approved design document must be submitted and approved by Public Health prior to installation.**
- **All horizontal setbacks must be maintained through system installation. In addition system must remain completely uncovered, including the tank size, for final inspection.**
- **The well must be installed at time of final inspection, or final approval will not be given until well installation is verified.**
- **Engineered systems require the as built drawing and certification letter from the engineer be submitted to Public Health prior to final approval and Regional Building sign off**
- **Ensure that all work is completed prior to contacting and requesting final line for inspection, otherwise additional fees may be incurred.**

Notify Environmental Health of any change of ownership, type of business activity, business name, or billing address by calling (719) 578-3199. Failure to notify Environmental Health may result in late penalties, Permit/License denial or revocation, and business closure. PERMITS/LICENSES TO OPERATE AND ANNUAL FEE PAYMENTS ARE NOT TRANSFERABLE. Permits become void on change of ownership. New owners must apply and pay for a new Permit(s)/License(s) prior to beginning operation.

Attn: DAVIS JANE LIVING TRUST
14850 JUDGE ORR RD
PEYTON, CO 80831

El Paso County, CO
Public Health
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EL PASO COUNTY PUBLIC HEALTH
ENVIRONMENTAL HEALTH DIVISION

1675 W. GARDEN OF THE GODS ROAD, SUITE 2044
COLORADO SPRINGS, CO 80907
PHONE: (719) 578-3199 FAX: (719) 578-3188
www.elpasocountyhealth.org

This permit is issued in accordance with 25-10-106 Colorado Revised Statutes. The PERMIT EXPIRES upon completion/installation of the Onsite Wastewater Treatment System, or at the end of twelve (12) months from date of issue, whichever occurs first. If both a Building Permit and an Onsite Wastewater Treatment System Permit are issued for the same property and construction has not commenced prior to the expiration date of the Building Permit, the Onsite Wastewater Permit shall expire at the same time as the Building Permit. This permit is revocable if all stated requirements are not met. The Onsite Wastewater Treatment System must be installed by an El Paso County Licensed System Contractor, or the property owner.

The Health Officer shall assume no responsibility in case of failure or inadequacy of an Onsite Wastewater Treatment System, beyond consulting in good faith with the property owner or representative. Access to the property shall be authorized at reasonable time for the purpose of making such inspections as are necessary to determine compliance with the requirements of this law (permit).

Inspection request line: Call (719) 575-8699 before 3:30 p.m. the business day prior to the requested inspection date.

Authorized By: Environmental Health Specialist

El Paso County, CO
Public Health
Prevent • Promote • Protect

Environmental Health Division

1675 W. Garden of the Gods Rd., Suite 2044
Colorado Springs, CO 80907
(719) 578-3199 phone
(719) 578-3188 fax
www.elpasocountyhealth.org

SB001 0228 AR0014319 ON0039568

APPLICATION FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM PERMIT

Property Information:

Property Address: 14850 Judge Orr Rd City and Zip: Peyton 80831

Legal Description: E2SE4SE4 SE4NE4SE4 sec 33-12-64 ex rts to county

Tax Schedule #: 4233 000031 Lot size: 2.5 acres

Is the property gated: ☐ Yes ☒ No Please provide a gate code if necessary: _____

Site Located Inside City Limits: ☐ Yes ☒ No Proposed Use: ☒ Residential ☐ Commercial

Water Supply: ☒ Well ☐ Cistern ☐ Municipal Potential Number of Bedrooms: 4

Has a Conditional Acceptance Document been issued for this property: ☐ Yes ☒ No ☐ Unsure

Owner Information: ☒ Primary Contact

Owner: Jane Davis Daytime Phone: 719-749-2057

Owners Mailing Address: 9060 Elbert Rd Peyton CO 80831

Email Address: dogshopjane@hotmail.com Fax #: NA

General Contractor: owner Phone/Email: _____

OWTS Installer Information: ☐ Primary Contact

System Installer: Down to Earth Exc. Daytime Phone: 719-495-3660

Email Address: rick.downtoearthexc@gmail.com Licensed installer: ☐ Tier 1 ☒ Tier 2

All engineer-design systems must be installed by a Tier 2 licensed installer

CURRENT FEES AS APPROVED BY THE EL PASO COUNTY BOARD OF HEALTH

All payments are due at the time of application submittal; by cash, check or major credit card (Visa / MC)

- ☐ New Permit: $750.00 (EPCPH Charge) + $147.00 (EPC Planning Dept. Surcharge) + $23.00 (CDPHE Surcharge) = $920.00
- ☐ Major Repair Permit: $535.00 (EPCPH Charge) + $23.00 (CDPHE Surcharge) = $558.00
- ☐ Minor Repair Permit: $245.00 (EPCPH Charge) + $23.00 (CDPHE Surcharge) = $268.00

Permits expire one year from date of issuance, unless otherwise noted

REQUIRED: Provide a complete written scope of work to be performed on the property.

add on to leach field to accomadate 4 bedrooms

The following documents MUST be included with your application.

- ☐ A soils report: including at least 1 soil profile excavation pit, in accordance with section 8.5 A-F of OWTS regulations
- ☐ A clear and legible design document: including the proposed and alternate locations, as well as system layout, labeled with all setbacks to pertinent structures and features in table 7-1.
- ☐ Provide directions to property, from a main highway, on the back side of application.

Failure to provide the above listed documents may result in denial of the permit application

I certify that the information provided on this application is in compliance with Section 8.3, Chapter 8 of the On-site Wastewater System (OWS) Regulations of the El Paso County Board of Health. I also authorize the assigned representative of El Paso County Public Health to enter onto this property in order to obtain information necessary for the issuance of a permit.

Applicant Signature: Jane Davis Date: 9-13-18

Reviewed 2018 approved (12/04/2017)

- [x] Property address or lot number must be clearly marked and visible from the road.
- [x] Profile excavation test pit and/or soil profile holes must be clearly marked
- [x] Proposed and alternate soil treatment areas must be protected from compaction and disturbance
- [x] Locked gates require the gate code or lock combination be provided on front of application
- [x] Please provide directions to the property from a main highway, by text or picture, below.

from Colorado Springs go East on Hwy 24 past Falcon to Judge Orr Rd (at Meadow lake Airport) Go East on Judge Orr Rd approx 1 mile to site. Site will be on the North side of road at the intersection of Curtis Rd

Failure to comply with the above information may result in an additional charge for a return trip.

Permit #: _____ Site Inspection date: 9/13/18

Date Approvals Rcvd: Development Services: 6/29/18 Floodplain/enumerations: N/A

Design: [ ] Conventional [X] Engineer Design Engineer: Parr Engineering

Engineer Job #: 18.341 Engineer Date Stamped: 8/20/18

LTAR/Soil Type: 0.60 / Type 2 Groundwater: 78" PP1/ 72" PP2 Bedrock: — PP1/ — PP2

Minimum Requirements: Tank Capacity: 1250 Soil Treatment Area: 735

System Feed: [X] Gravity [ ] Pump to Gravity [ ] Pressure Dosed [ ] Other: _____

System Media: [X] Chambers [ ] Rock and Pipe [ ] Other Soil Treatment Area: [ ] Trenches [X] Bed

Additional Comments: _____

E.H. Specialist: Neil Mayer Date: 9/13/18 [X] Approved [ ] Denied