

Job No. 192628

July 13, 2023  
Revised July 24, 2023

Meadowlake Developments LLC  
455 E Pikes Peak Ave, Ste 101  
Colorado Springs, CO 80903

Re: Wastewater Study  
Meadow Lake Industrial  
Section 9, Township 15 South, Range 65 West  
El Paso County, Colorado

The Land Development Code does not have provisions for a community OWTS. Few of the proposed lots are large enough to support OWTS on their own. We will likely place a plat restriction on the smaller lots that they can never be developed with OWTS, which may preclude development of these sites until such time central services are available through the metro district.

Please provide a map depicting the proposed OWTS locations.

Dear Client:

Where is this acreage coming from? The total site is approx. 250 acres and most of these parcels listed are incorrect as well.

As requested, personnel of RMG – Rocky Mountain Group has performed a preliminary investigation and site reconnaissance at the above referenced address. It is our understanding the site currently consists of four parcels (per the El Paso County Assessor's website) for a combined 344.78 acres:

- **North:** Schedule No. 4300000553, currently labeled as N Curtis Rd, zoned I-3 and I-2, consists of approximately 54.51 acres and land use is classified as agricultural grazing land;
- **Central:** Schedule No. 4300000552, currently labeled as N Curtis Rd, zoned I-3 and I-2, consists of approximately 108.0 acres and land use is classified as agricultural grazing land;
- **South:** Schedule No. 4300000551, currently labeled as Falcon Highway, zoned CS, I-3, and I-2, consists of approximately 45.29 acres, and land use is classified as agricultural grazing land;
- **Southwest:** Schedule No. 4300000548, currently labeled as Falcon Highway, zoned CS and I-2, consists of approximately 136.98 acres and land use is classified as agricultural grazing land. Not included in this study.

The currently proposed development only includes the eastern portion of the north, central and south parcels. The southwest parcel and the western portions of the other three parcels are to remain undeveloped at this time. If development is proposed in the future, an additional wastewater study will be required. An unnamed drainageway transverses the site from the north to the south.

A Site Vicinity Map is presented in Figure 1.

This is not the correct number of lots. Preliminary plan depicts 27 lots and two tracts. This is probably not a critical comment, but it does misrepresent the number of proposed developable lots, so I would recommend updating the language for clarity.

### **Project Description**

It is our understanding that the four parcels listed above are to be combined into one parcel and then subdivided into approximately 30 lots. Site usage on the 29 subdivided lots is primarily to consist of equipment storage, and some lots may contain structures. The structures are anticipated to include pre-engineered metal buildings (PEMB), with or without a small internal office. The area that is to be developed is to include 29 industrial lots/tracts ranging from 0.5 to 3.82 acres. Two of the 29 proposed lots are to be utilized as detention pond tracts and two additional lots (or portions of) are to be utilized as On-site Wastewater Treatment Systems (OWTS) tracts. The remainder of the site (combined into a single, larger lot that includes the drainageway) is to remain undeveloped at this time.

It is anticipated the proposed 29 lots are to be accessed from the west, from a new road extending north from Falcon Highway. Additionally, interior cul-de-sacs are proposed for access to the interior lots, which will also provide fire access. Currently the lots are to utilize a shared well and two shared OWTS's. One OWTS is to service the northern portion of the site and a second OWTS is to service the southern portion of the site. Each OWTS is to service multiple lots. At a future date, the OWTS are to be replaced with a centralized wastewater system. Once the centralized waste system is installed, the original OWTS locations are to be properly disposed of or abandoned and designated as a no build area. The Proposed Site Plan is presented in Figure 2.

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

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

### **Previous Studies and Field Investigation**

One geotechnical engineering report was available for our review for a nearby site and one geologic investigation was completed in conjunction with this study. Both are listed below:

1. *Soil and Geology Study, Meadow Lake Industrial, Section 9, Township 15 South, Range 65 West, El Paso County, Colorado*, RMG – Rocky Mountain Group, Job No. 192628, dated July 13, 2023.
2. *Soil, Geology, & Geologic Hazard Study, Saddlehorn Ranch – Filing No. 2, Curtis Road & Judge Orr Road, El Paso County, Colorado*, Entech Job No. 213148, dated February 9, 2022.

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

## SITE CONDITIONS

Personnel of RMG performed a reconnaissance visit on March 29, 2023. The purpose of the reconnaissance visit was to evaluate the site surface characteristics including landscape position, topography, vegetation, natural and cultural features, and current and historic land uses. Three 8-foot deep test pits were performed across the site 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 parcel:

- A well currently **does not** exist on the existing site;
- No runoff or irrigation features anticipated to cause deleterious effects to treatment systems on the site were observed;
- A minor waterway, unnamed tributary, exists through the western portion of the property. However, the portion of the site included in this study lies outside any 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

In reviewing the El Paso County Board of Health Regulations, Chapter 8, Table 6-2, usage is to be designed for 20/gallons per person per day. It is anticipated each structure is to have approximately 5 to 7 employees per site per day. If each OWTS system services no more than 14 sites, overall usage for each shared system is not anticipated to exceed 2,000 gallons per day. Due to the majority of lots sizes being under 2.5 acres and the anticipated low flows and usage per structure, shared OWTS systems are proposed as an alternative to minimize cost and site disturbance. If properly designed, the proposed shared systems should provide adequate wastewater treatment for the currently proposed 25 developable lots (29 subdivided lots minus 2 lots each for detention ponds and OWTS).

Per the El Paso County Land Development Code, Chapter 8, Design Considerations and Standard 8.4.8 (B)(1)(c)

Treatment areas at a minimum must achieve the following:

- The treatment areas must be 4 feet above groundwater or bedrock as defined by the Definitions 8.3.4 of the Regulations of the El Paso County Board of Health, Chapter 8, *OWTS Regulations*, effective July 7, 2018;
- Prior to construction of an OWTS, an OWTS design prepared per *the Regulations of the El Paso County Board of Health, Chapter 8, OWTS Regulations* will need to be completed. A scaled site plan and engineered design will also be required prior to obtaining a building permit;

- Comply with any physical setback requirements of Table 7-1 of the El Paso County Department of Health and Environment (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 wetland;
- Other setbacks include the treatment area to be located a minimum 10 feet from property lines, cut banks and fill areas (from the crest);
- The new lots shall be laid out to ensure that the proposed OWTS do 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.

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 site, which included a review of documented Natural Resource Conservation Service - NRCS data provided by [websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov). The Soil Survey Descriptions are presented below. A review of FEMA Map No. 08041C0566G, effective December 7, 2018 indicates that the proposed treatment areas are not located within an identified floodplain.

## **SOIL EVALUATION**

Personnel of RMG performed a soil evaluation to include three 8-foot deep test pits, on March 29, 2023 (Test Pits TP-1 through TP-3), utilizing the visual and tactile method for the evaluation of the site soils. At the time of our field investigation, the lots which were to contain the shared OWTS were not yet identified. The test pits were located relatively evenly across the site to obtain representative information regarding the distribution of soil types across the site, to aid in determining the locations of the two shared OWTS systems. Based on the materials encountered in our test pits, it is anticipated that the any of the designated 29 lots will be suitable for use as one of the shared OWTS locations. It's our understanding that the general locations of the OWTS have been selected subsequent to our field investigation, but that the final placement is to be determined by the civil engineer completing the OWTS design. The Test Pit Logs are presented in Figures 4 and 5.

The soil conditions as indicated by the USDA web soil survey data indicated 5 soil types across the entire property. However, included in our descriptions below are the soil conditions in the area to be developed, which are anticipated to consist of loamy sand and sandy loam as described below:

- 8 – Blakeland loamy sand, 1 to 9 percent slopes. The Blakeland loamy sand was mapped by the USDA to encompass the majority of the proposed lot areas. 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.

- 83 – Stapleton sandy loam, 3 to 8 percent slopes. The Stapleton sandy loam was mapped by the USDA to encompasses the very northwest corner and parallels the Blakeland loamy sand long the west side of the proposed lot areas. The Stapleton sandy loam was mapped by the USDA to encompasses the majority of the property. The properties of the Stapleton sandy loam include well 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 hills.

A USDA Soil Survey Map is presented in Figure 5.

Groundwater and bedrock were not encountered in the test pits performed by RMG.

Two shared OWTS are proposed for the lots and should conform to the recommendations of a future OWTS site evaluation, performed in accordance with the applicable health department codes prior to construction. The future report will 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 groundwater levels were not observed in the test pits.

## 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 suitable for the proposed shared 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. Due to the shared OWTS concept, it is anticipated that each OWTS will require an “engineered system”.

## LIMITATIONS

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

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

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

Cordially,

Reviewed by,

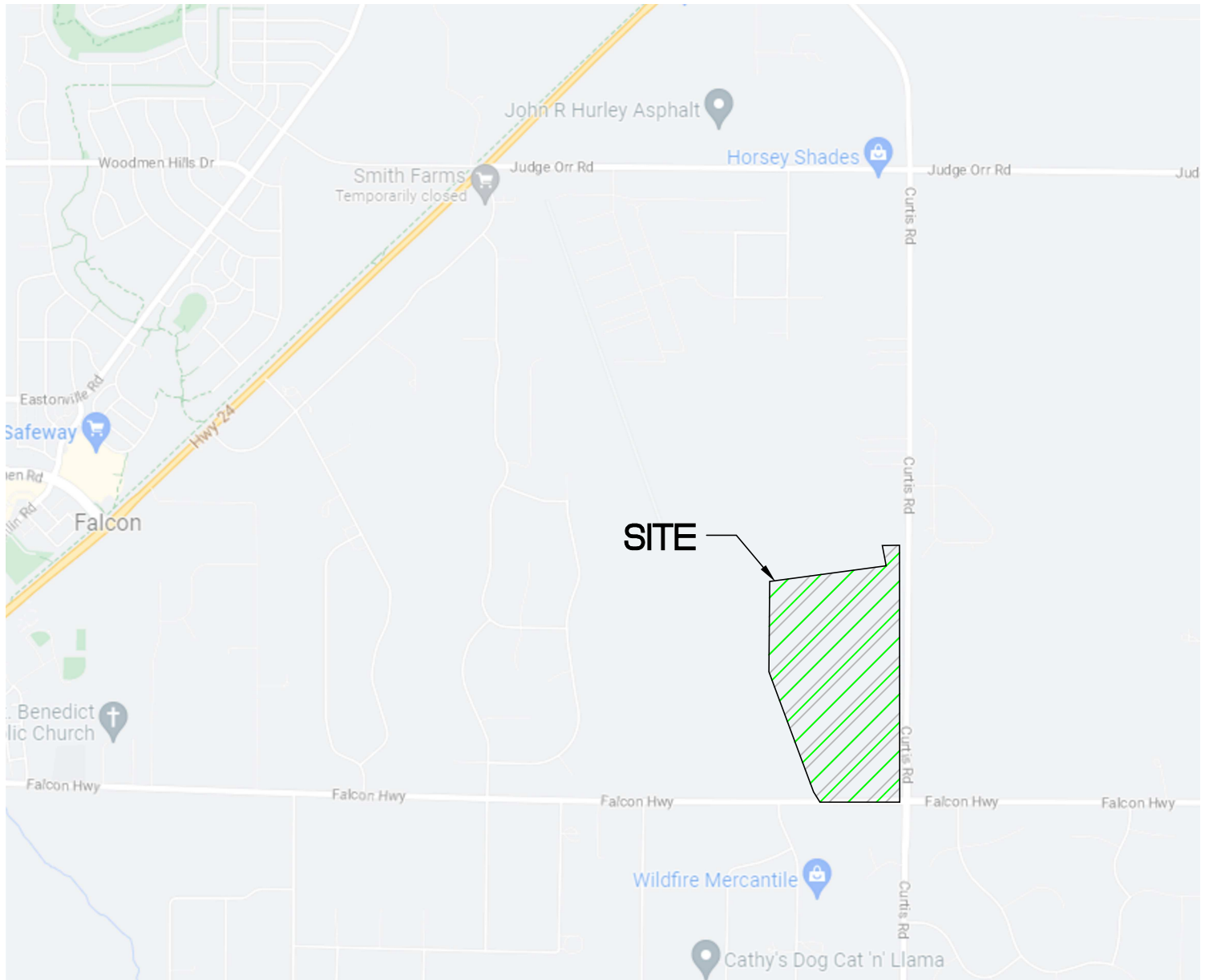
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Kelli Zigler  
Project Geologist

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



NOT TO SCALE

Architecture  
Structural  
Geotechnical



**Engineers / Architects**

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SOUTHERN COLORADO, DENVER METRO, NORTHERN COLORADO

Materials Testing  
Forensics  
Civil / Planning

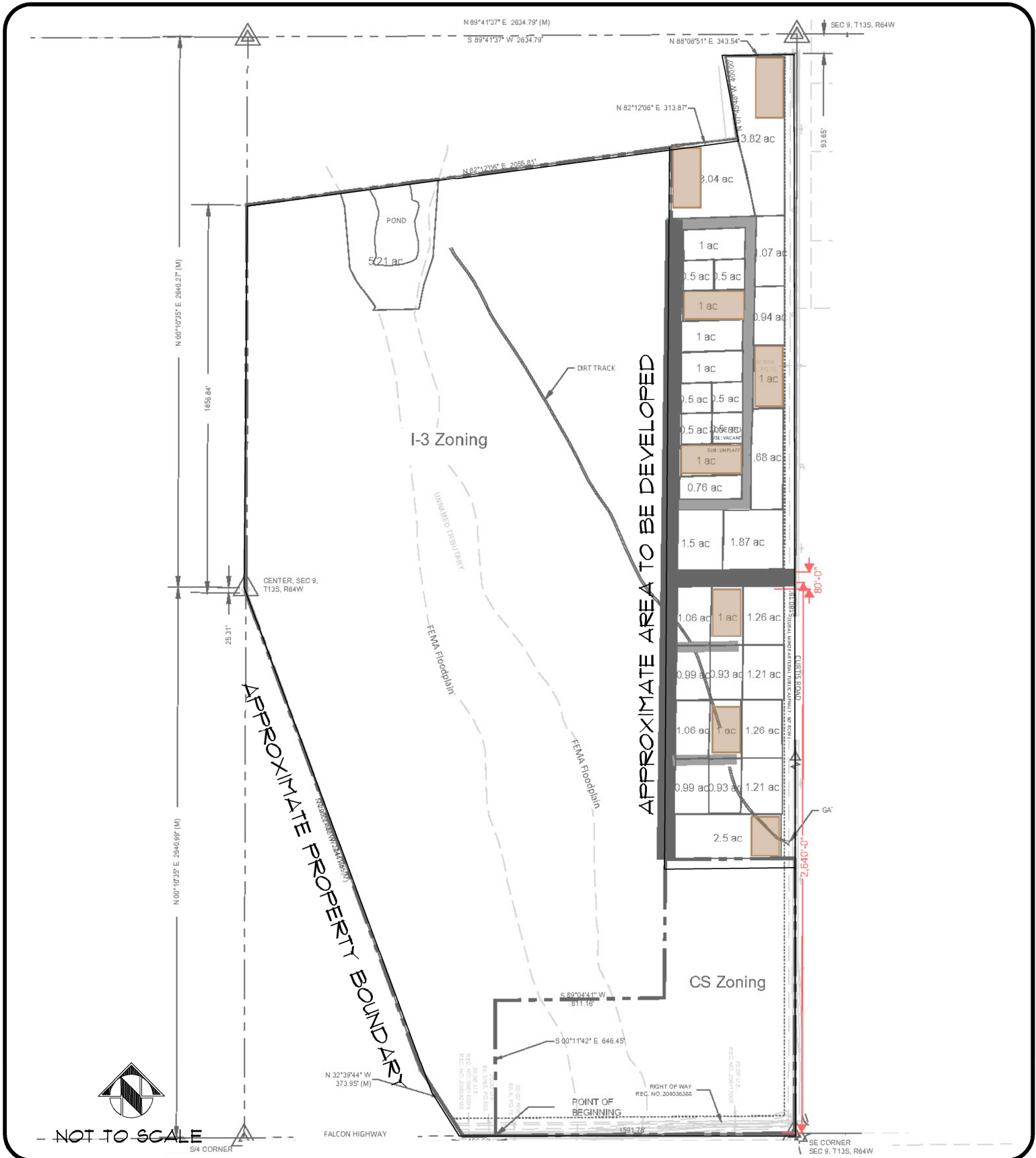
## SITE VICINITY MAP

MEADOW LAKE INDUSTRIAL  
FILING NO. 1  
EL PASO COUNTY, CO  
MEADOWLAKE DEVELOPMENTS, LLC

JOB No. 192628

FIG No. 1

DATE 7-13-2023



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Architecture  
Structural  
Geotechnical



**Engineers / Architects**

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Materials Testing  
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# PROPOSED SITE PLAN

MEADOW LAKE INDUSTRIAL  
FILING NO. 1

EL PASO COUNTY, CO  
MEADOWLAKE DEVELOPMENTS, LLC

JOB No. 192628

FIG No. 2

DATE 7-13-2023



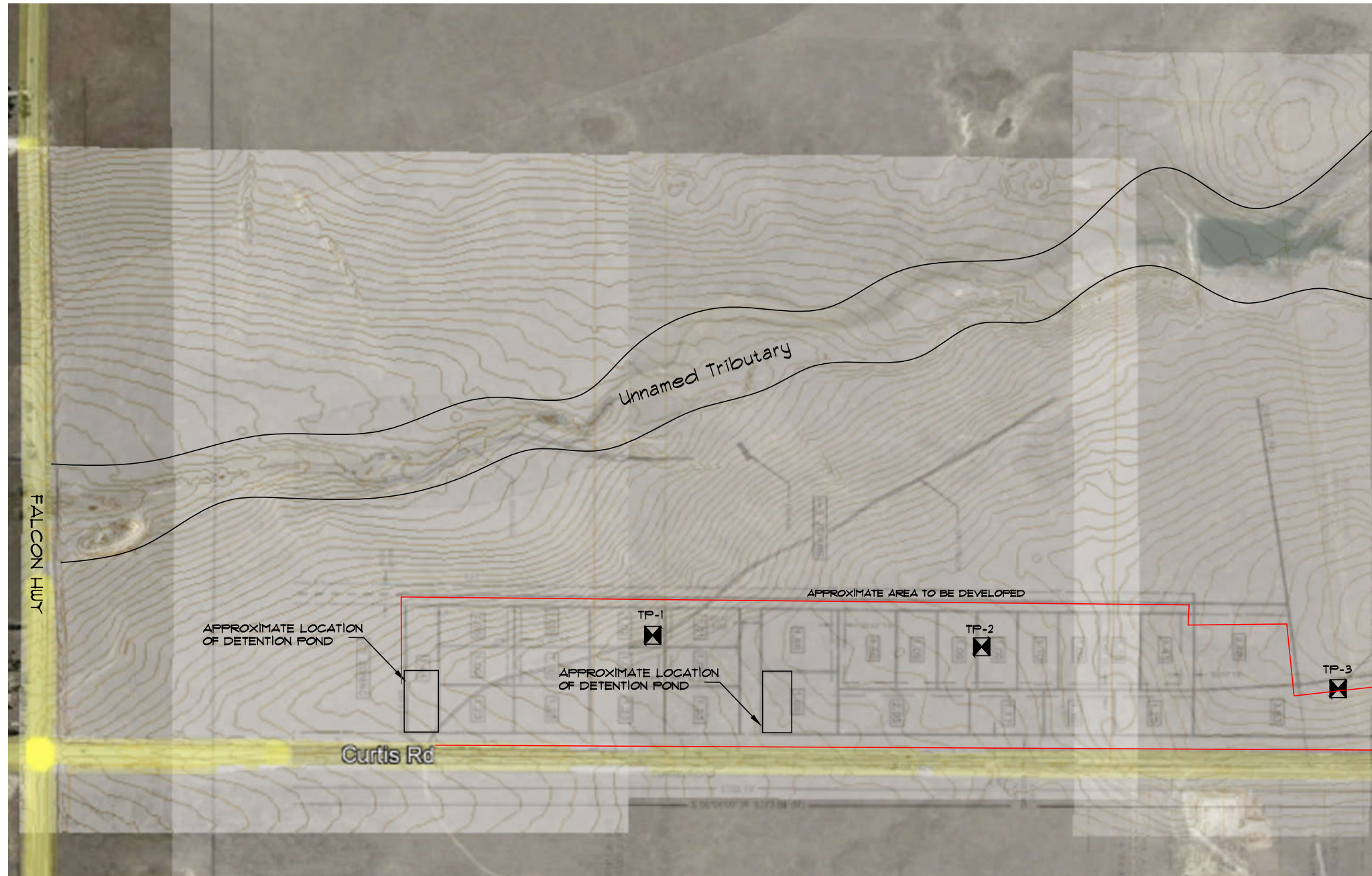
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Architecture  
Structural  
Geotechnical



  
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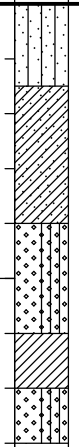
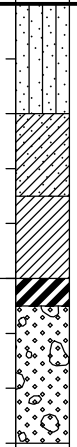
 DENOTES APPROXIMATE  
LOCATION OF TEST PITS

MEADOW LAKE INDUSTRIAL  
FILING NO. 1  
EL PASO COUNTY, CO  
MEADOWLAKE DEVELOPMENTS, LLC

ENGINEER: TM  
DRAWN BY: NM  
CHECKED BY: TM  
ISSUED: 1-13-2023

TEST PIT  
LOCATION PLAN

SHEET No.  
**FIG-3**

TEST BORING: TP-1  DATE DRILLED: 3/29/23 NO GROUNDWATER ON 3/29/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %	TEST BORING: TP-2  DATE DRILLED: 3/29/23 NO GROUNDWATER ON 3/29/23	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
0-1.5 FT: LOAMY SAND STRUCTURE-GRADE: SINGLE GRAIN STRUCTURE-SHAPE: STRUCTURLESS SOIL TYPE: 1  1.5 TO 4.0 FT: SANDY CLAY STRUCTURE-GRADE: BLOCKY STRUCTURE-SHAPE: MODERATE SOIL TYPE: R-1  4.0 TO 6.0 FT: SANDY LOAM STRUCTURE-GRADE: BLOCKY STRUCTURE-SHAPE: STRONG SOIL TYPE: 2  6.0 TO 7.0 FT: SANDY CLAY LOAM STRUCTURE-GRADE: BLOCKY STRUCTURE SHAPE: MODERATE SOIL TYPE: 2  7.0 TO 8.0 FT: SANDY LOAM STRUCTURE-GRADE: BLOCKY STRUCTURE-SHAPE: STRONG SOIL TYPE: 2  NO GROUNDWATER OR LIMITING LAYERS	5					0-2.0 FT: LOAMY SAND STRUCTURE-GRADE: SINGLE GRAIN STRUCTURE-SHAPE: STRUCTURLESS SOIL TYPE: 1  2.0 TO 3.5 FT: SANDY CLAY STRUCTURE-GRADE: BLOCKY STRUCTURE-SHAPE: MODERATE SOIL TYPE: R-1  3.5 TO 5.0 FT: SANDY CLAY LOAM STRUCTURE-GRADE: BLOCKY STRUCTURE SHAPE: STRONG SOIL TYPE: 3  5.0 TO 5.5 FT: CLAY STRUCTURE-GRADE: BLOCKY STRUCTURE-SHAPE: MODERATE SOIL TYPE: 4  5.5 TO 8.0 FT: LOAMY SAND STRUCTURE-GRADE: STRUCTURLESS STRUCTURE-SHAPE: GRANULAR SOIL TYPE: R-0 (MORE THAN 35% ROCK >2mm)  NO GROUNDWATER OR LIMITING LAYER	5				

ROCKY MOUNTAIN GROUP

Architectural  
Structural  
Forensics



Engineers / Architects

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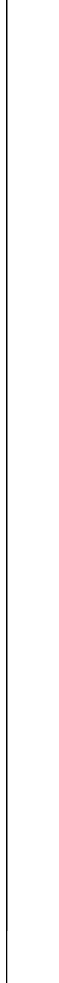
Geotechnical  
Materials Testing  
Civil, Planning

## TEST BORING LOG

JOB No. 192628

FIGURE No. 4

DATE Jul/14/2023

<p>TEST BORING: TP-3</p> <p>DATE DRILLED: 3/29/23</p> <p>NO GROUNDWATER ON 3/29/23</p>	DEPTH (FT)	SYMBOL	SAMPLES	BLOWS PER FT.	WATER CONTENT %
<p>0-2.0 FT: LOAMY SAND STRUCTURE-GRADE: SINGLE GRAIN STRUCTURE-SHAPE: STRUCTURLESS SOIL TYPE: 1</p>					
<p>2.0 TO 8.0 FT: LOAMY SAND STRUCTURE-GRADE: SINGLE GRAIN STRUCTURE-SHAPE: STRUCTURLESS SOIL TYPE: R-0 (MORE THAN 35% ROCK &gt;2mm)</p>	5				
<p>NO GROUNDWATER OR LIMITING LAYER</p>					

ROCKY MOUNTAIN GROUP

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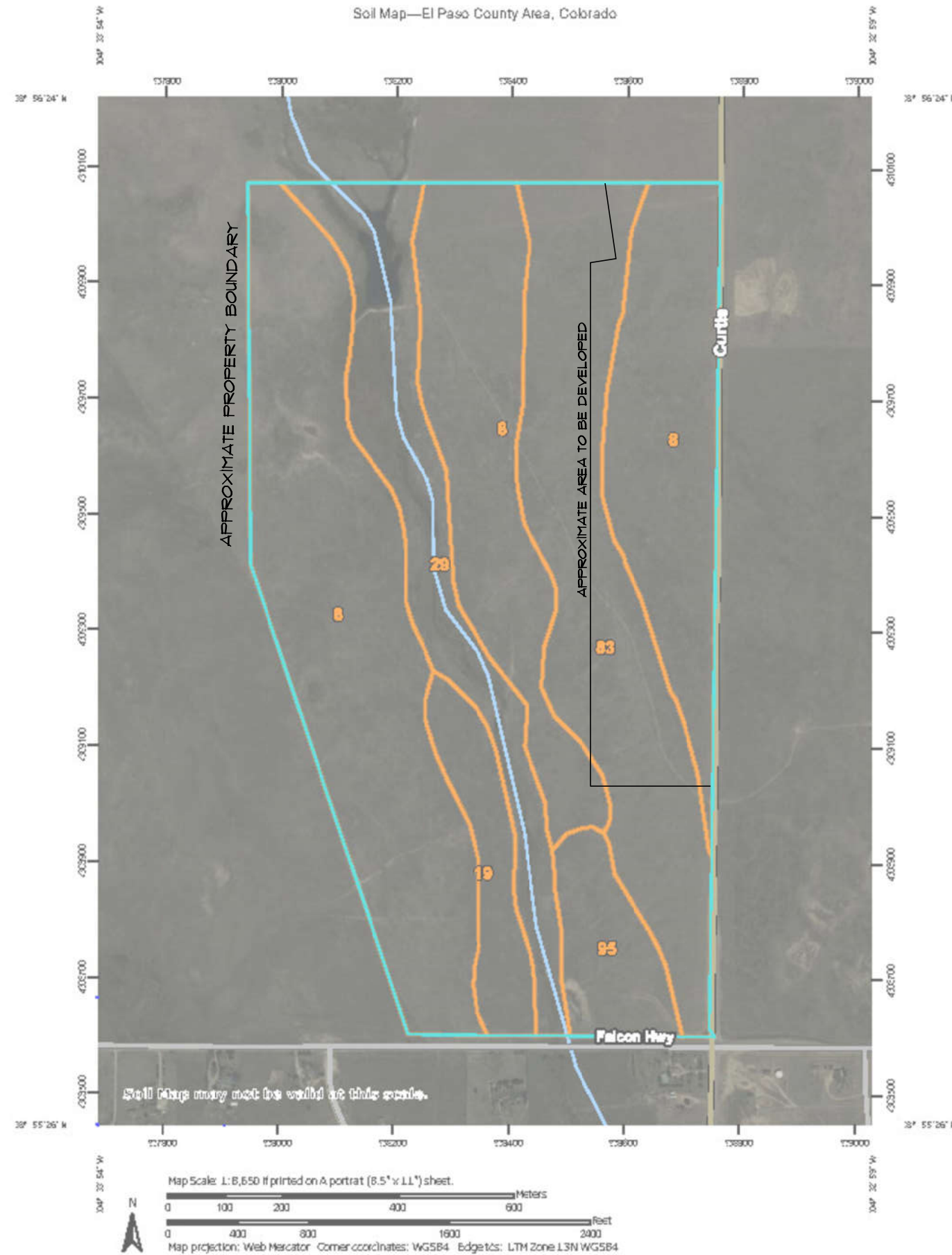
Geotechnical  
Materials Testing  
Civil, Planning

## TEST BORING LOG

JOB No. 192628

FIGURE No. 5

DATE Jul/14/2023



8 - Blakeland Loamy Sand, 1 to 9 percent slopes

83 - Stapleton sandy loam, 3 to 8 percent slopes



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Materials Testing  
Forensics  
Civil / Planning

**RMG**

Architecture  
Structural  
Geotechnical

Engineers / Architects

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FILING NO. 1  
EL PASO COUNTY, CO  
MEADOWLAKE DEVELOPMENTS, LLC

ENGINEER:	TM
DRAWN BY:	NM
CHECKED BY:	TM
ISSUED:	7-13-2023

USDA SOIL  
SURVEY MAP

SHEET No.

FIG-6