ENTECH
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September 22, 2021
Revised November 16, 2023

Vertex Consulting
455 East Pikes Peak Avenue, Suite 101
Colorado Springs, Colorado 80903

Attn: Nina Ruiz

Re: Soil, Geology and Geologic Hazard Evaluation
Joyful View Subdivision
Joyful View & Peyton Highway
Schedule Nos. 33000-00-466 & 33000-00-467
El Paso County, Colorado

PCD File # SF-22-31

Dear Ms. Ruiz:

The project consists of subdividing 70.19-acres; nine (9) residential lots are proposed as part of the subdivision. southeast of Joyful View and Peyton Highway in El Paso County, Colorado. The report was revised to address El Paso County review comments and update site maps with the latest plat.

GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The site is located in a portion SW¼ of Section 33, Township 13 South, Range 63 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately 8¾ miles southeast of Falcon, Colorado, southeast of Joyful View and Peyton Highway in El Paso County, Colorado. The location of the site is as shown on the Vicinity Map, Figure 1.

The topography of the site is gradually sloping to the southeast with moderate slopes the along the drainage in the southeastern portion of the site. A drainage is located along the southern side of the site and minor drainage swales are located in the northern and central portions of the site. The drainage flows in a southeasterly direction. Water was not observed in the drainages at the time of this investigation. The site boundaries are indicated on the USGS Map, Figure 2. Previous land uses have included agricultural grazing and undeveloped land. The site contains primarily field grasses, weeds, yucca and cacti. Site photographs, taken February 23, 2021, are included in Appendix A.

Total acreage involved in the proposed subdivision is 70.19-acres. Nine residential lots are proposed as part of the replat. The proposed lot sizes of 5.1 to 18.6-acres. The lots will be serviced by individual water wells and on-site wastewater treatment systems. The Site Plan is presented in Figure 3.

LAND USE AND ENGINEERING GEOLOGY

This site was found to be suitable for the proposed development, which will consist of residential lots and associated site improvements. Areas were encountered where the geologic conditions will impose some constraints on development and land use. These include areas of artificial fill, potentially expansive soils, hydrocompactive soils, potentially seasonal shallow groundwater areas, and floodplains. Based on the proposed development plan, it appears that these areas will have some impacts on the development. These conditions will be discussed in greater detail in the report.

In general, it is our opinion that the development can be achieved if the observed geologic conditions on site are either avoided or properly mitigated. All recommendations are subject to the limitations discussed in the report.

SCOPE OF THE REPORT

The scope of the report will include the following:

- A general geologic analysis utilizing published geologic data. Detailed site-specific mapping will be conducted to obtain general information in respect to major geographic and geologic features, geologic descriptions and their effects on the development of the property.

PREVIOUS INVESTIGATIONS

The site was previously investigated by Kumar and Associates, Inc., with the results presented in the *Geology and Soils Report,* dated June 6, 2017 (Reference 1, Appendix B). Subsurface soils information from the report was used in preparing this Soil, Geology, and Geologic Hazard Evaluation. Five test borings were drilled across the site. The Test Boring Logs, and Lab Summary from the Kumar investigation are included in Appendix B.

FIELD INVESTIGATION

Our field investigation consisted of the preparation of a geologic map of bedrock features and significant surficial deposits. The Natural Resource Conservation Service (NRCS) (Reference 2), previously the Soil Conservation Service (SCS) survey was also reviewed to evaluate the site (Reference 3). The position of mappable units within the subject site are shown on the Geologic Map Figure, 6. Our mapping procedures involved both field reconnaissance and measurements, and aerial photo reconnaissance and interpretation. The field mapping was performed by personnel of Entech Engineering, Inc. on February 23, 2021. The proposed grading and erosion control plan shown on Figure 6A.

Three test pits were excavated on the site to determine general suitability of the soil characteristics for residential construction and on-site wastewater treatment systems. The locations of the test pits are indicated on the Site Plan/Test Boring Location Map, Figure 3. The Test Pit Logs are presented in Appendix C, and Laboratory Testing results are included in Appendix D.

SOIL AND GEOLOGIC CONDITIONS

Soil Survey

The Natural Resource Conservation Service (NRCS) (Reference 2, Figure 4), previously the Soil Conservation Service (Reference 3) has mapped three soil types on the site. Complete descriptions of the soils are presented in Appendix E. In general, the soils consist of sandy loam. The soils are described as follows:

Type	Description
8	Blakeland Loamy San, 1 – 9% Slopes
10	Blendon Sandy Loam, 0 – 3% Slopes
97	Truckton Sandy Loam, 3 – 9% Slopes

The soils have been described to have moderate to rapid permeabilities. The soils are described as well suited for use as home sites. Possible hazards with soils erosion are present on the site. The erosion potential can be controlled with vegetation. The soils have been described to have moderate erosion hazards (Reference 2).

Soils

Two soil types and one bedrock type were encountered in the test borings drilled by Kumar and Associates, Inc., on March 15, 2010 for the Geology and Soils Report (Reference 1, Appendix B): Type 1: clayey sand to sandy clay (SC, CL), Type 2: silty sand to well-graded sand with silt (SM, SW-SM), Type 3: medium to hard occasionally clayey sandstone. Bedrock was encountered at 12 to 13 feet bgs in test borings 3 and 5. Each soil and bedrock type were classified in accordance with the Unified Soil Classification System (USCS) using the laboratory testing results and the observations made during drilling.

Soils encountered in the test pits excavated by Entech Engineering, Inc. consisted of silty to clayey sand and sandy clay. Bedrock was not encountered in the test pits which were excavated to depths of 8 feet.

Groundwater

Groundwater was not encountered in the test pits or observed in the drainages at the time of our site investigation. It should be noted that fluctuation in groundwater levels could change due to seasonal variations, changes in land runoff characteristics and future development of nearby areas. Isolated sand layers within the soil profile can carry water in the subsurface. Contractors should be cognizant of the potential for the occurrence of subsurface water during construction.

Geology

Approximately 22 miles west of the site is a major structural feature known as the Rampart Range Fault. This fault marks the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. The site exists within a large structural feature known as the Denver Basin. Bedrock in the area is typically gently dipping in a northerly

direction (Reference 4). Overlying the Dawson Formation are deposits of man-made fill soils and alluvial deposited sands and clays.

The geology of the site was evaluated using the *Geologic Map of Pueblo 1-degree x 2degrees' quadrangle, South-Central Colorado,* by Scott, G.R., et.al. in 1976, (Reference 4). The Geology Map for the site is presented in Figure 6. Three mappable units were identified on this site which is described as follows:

Qaf **Artificial Fill of Holocene Age:** These consist of man-made fill deposits associated with the erosion berm along the drainage in the southeastern portion of the site.

Qes **Eolian Sands of Quaternary Age:** These are wind-blown sands deposited by the action of prevailing winds. The materials typically consist of silty sands and may contain sandy silt layers.

Qp **Piney Creek Alluvium of Quaternary Age:** This material is a water-deposited alluvium, typically classified as a silty to well-graded sand, brown to dark brown in color and of moderate density. The Piney Creek Alluvium can sometimes be very highly stratified containing thin layers of very silty and clayey soil.

The soils listed above were mapped from site-specific mapping, the *Geologic map of the Pueblo 1-degree x 2-degrees' quadrangle, south-central Colorado* published by the U.S. Geologic Survey in 1976 (Reference 4). The test pits were used in evaluating the site and are included in Appendix B. The Geology Map prepared for the site is presented in Figure 6.

ENGINEERING GEOLOGIC HAZARDS

Mapping has been performed on this site to identify areas where various geologic conditions exist of which developers should be cognizant during the planning, design and construction stages should new construction be proposed. The engineering geologic hazards identified on this site include artificial fill, potentially expansive soils, hydrocompactive soils, potentially seasonal shallow groundwater areas, and floodplains. Additionally, shallow groundwater may be encountered at variable depths across the site. These hazards and recommended mitigation techniques are discussed as follows:

Artificial Fill – Constraint

Fill associated with an existing fill stockpile and erosion berms were observed in the southeast portion of the site (Figure 5).

Mitigation: The berm on site does not add to the geologic concerns of this site. Areas of fill other than those encountered may be encountered. The fill piles are considered uncontrolled. Any uncontrolled fill encountered beneath foundations should be removed and recompacted at a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557.

Expansive Soils – Constraint

Expansive soils were not encountered in the test borings. However, highly expansive claystone and siltstone are commonly interbedded in the sandstone of the Dawson Formation. Expansive clays, if encountered beneath foundations, can cause differential movement in the structure foundation.

Mitigation: Should expansive soils be encountered beneath the foundation; mitigation will be necessary. Mitigation of expansive soils will require special foundation design. Overexcavation and replacement with non-expansive soils at a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557 is a suitable mitigation, which is common in the area. Floor slabs on expansive soils should be expected to experience movement. Overexcavation and replacement has been successful in minimizing slab movements.

Hydrocompaction and Collapsible Soils – Constraint

Areas in which hydrocompaction have been mapped in the northeastern portion of the site mapped as Eolian Sands of Quaternary Age (Qes). In areas identified for this hazard classification, however, we anticipate a potential for settlement movements upon saturation of these surficial soils. The low density, uniform grain sized, windblown sand deposits are particularly susceptible to this type of phenomenon. Additionally, loose or collapsible soils may be encountered in other areas on this site.

Mitigation: The potential for settlement movement is directly related to saturation of the soils below the foundation areas. Therefore, good surface and subsurface drainage is extremely critical in these areas in order to minimize the potential for saturation of these soils. The ground surface around all permanent structures should be positively sloped away from the structure to all points, and water must not be allowed to stand or pond anywhere on the site. We recommend that the ground surface within 10 feet of the structures be sloped away with a minimum gradient of five percent. If this is not possible on the upslope side of the structures, then a well-defined swale should be created to intercept the surface water and carry it quickly and safely around and away from the structures. Roof drains should be made to discharge well away from the structures and into areas of positive drainage. Where several structures are involved, the overall drainage design should be such that water directed away from one structure is not directed against an adjacent building. Planting and watering in the immediate vicinity of the structures, as well as general lawn irrigation, should be minimized.

Should loose or collapsible soils be encountered beneath foundations, removal and recompaction of the upper 2 feet with thorough moisture conditioning at 90% of Modified Proctor Dry Density, ASTM D-1557 will be necessary. **Specific recommendations should be made after additional investigation of each building site.**

Drainage Areas/Floodplains – Constraint

A drainage is located along the southern side of the site and a minor drainage swale is located in the central portion of the site. The drainage flow in a southeasterly direction, and water was not observed in the drainages at the time of this investigation. The drainages have been

mapped as potentially seasonal shallow groundwater areas. These areas are indicated in the Geology/Engineering Geology Map (Figure 6) and are discussed below. Due to the size of the proposed lots these areas can be avoided or redirected around proposed structures or proposed soil treatment areas. The proposed building areas are not affected by these areas.

The southern portion of the site lies within a mapped floodplain zone according to the FEMA Map No. 08041CO805G dated December 7, 2018 (Figure 7, Reference 7). The floodplains area located in no-build area and will be avoided by future development on the lots. Finished floor levels must be a minimum of one foot above the floodplain level. Exact locations of floodplain and specific drainage studies are beyond the scope of this report.

Potentially Seasonal Shallow Groundwater Area – Constraint

In these areas, we would anticipate the potential for periodically high subsurface moisture conditions, frost heave potential and highly organic soils. These areas lie within minor drainage swales in the northern and central portions of the site, and along the drainage in the southern portion of the site, and can be avoided by the proposed development. Construction in any portions of these areas, if required, or immediately adjacent to these areas should follow these precautions.

Mitigation: Foundations must have a minimum 30-inch depth for frost protection. In areas where high subsurface moisture conditions are anticipated periodically, subsurface perimeter drains are recommended to help prevent the intrusion of water into areas below grade. Typical drain details are presented in Figure 8. Any grading in these areas should be done to direct surface flow around construction to avoid areas of ponded water. All organic material would be completely removed prior to any fill placement. **Specific drainage studies are beyond the scope of this report.**

Based on the proposed grading and erosion control plan shown on Figure 6A, the majority of the potentially seasonal shallow groundwater areas will be mitigated with the anticipated drainage improvements and grading. However, there is an area in the northeast portion of Lot 3 that will still have the potential for seasonal shallow groundwater.

RELEVANCE OF GEOLOGIC CONDITIONS TO LAND USE PLANNING

The proposed development will consist of subdividing the parcels for rural residential lots, and associated site improvements. The existing geologic and engineering geologic conditions will impose constraints on development and construction. The geologic conditions on the site include artificial fill, potentially expansive soils, hydrocompactive soils, potentially seasonal shallow groundwater areas, and floodplains, which can be satisfactorily mitigated through proper engineering design and construction practices.

The upper granular soils in the borings drilled on the site were encountered at loose to medium dense states. Loose or collapsible soils, if encountered beneath foundation or floor slabs, will require recompaction. Expansive layers may also be encountered in the soil on this site. Expansive soils, if encountered, will require special foundation design. These soils will not prohibit development. Overexcavation and replacement with non-expansive soils at a minimum

of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557 is a suitable mitigation, which is common in the area. Floor slabs on expansive soils should be expected to experience movement.

Fill exists on this site that is associated with an earthen embankment in the southern portion of the site. Areas of fill, other than those mapped, may be encountered. If encountered all fill piles and debris within building areas should be completely removed prior to construction. Any uncontrolled fill encountered beneath new foundations and floor slabs will require removal and recompaction at a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557.

A drainage is located along the southern side of the site and a minor drainage swale is located in the central portion of the site. The drainage flow in a southeasterly direction, and water was not observed in the drainages at the time of this investigation. The drainages have been mapped as potentially seasonal shallow groundwater areas. These areas are indicated in the Geology/Engineering Geology Map (Figure 6) and are discussed below. Due to the size of the proposed lots these areas can be avoided or redirected around proposed structures or proposed soil treatment areas. The proposed building areas are not affected by these areas.

Based on the proposed grading and erosion control plan shown on Figure 6A, the majority of the potentially seasonal shallow groundwater areas will be mitigated with the anticipated drainage improvements and grading. However, there is an area in the northeast portion of Lot 3 that will still have the potential for seasonal shallow groundwater.

In summary, the granular soils will likely provide suitable support for shallow foundations. The geologic conditions encountered on site can be mitigated with avoidance or proper engineering and construction practices. **Individual investigations for new building sites and septic systems will be required prior to construction.**

EROSION CONTROL

The soil types observed on the site are mildly to highly susceptible to wind erosion, and moderately to highly susceptible to water erosion. A minor wind erosion and dust problem may be created for a short time during and immediately after construction. Should the problem be considered severe enough during this time, watering of the cut areas or the use of chemical palliative may be required to control dust. However, once construction has been completed and vegetation re-established, the potential for wind erosion should be considerably reduced.

With regard to water erosion, loosely compacted soils will be the most susceptible to water erosion, residually weathered soils and weathered bedrock materials become increasingly less susceptible to water erosion. For the typical soils observed on site, allowable velocities or unvegetated and unlined earth channels would be on the order of 3 to 4 feet/second, depending upon the sediment load carried by the water. Permissible velocities may be increased through the use of vegetation to something on the order of 4 to 7 feet/second, depending upon the type of vegetation established. Should the anticipated velocities exceed these values, some form of channel lining material may be required to reduce erosion potential. These might consist of

some of the synthetic channel lining materials on the market or conventional riprap. In cases where ditch-lining materials are still insufficient to control erosion, small check dams or sediment traps may be required. The check dams will serve to reduce flow velocities, as well as provide small traps for containing sediment. The determination of the amount, location and placement of ditch linings, check dams and of the special erosion control features should be performed by or in conjunction with the drainage engineer who is more familiar with the flow quantities and velocities.

Cut and fill slope areas will be subjected primarily to sheetwash and rill erosion. Unchecked rill erosion can eventually lead to concentrated flows of water and gully erosion. The best means to combat this type of erosion is, where possible, the adequate re-vegetation of cut and fill slopes. Cut and fill slopes having gradients more than three (3) horizontal to one (1) vertical become increasingly more difficult to revegetate successfully. Therefore, recommendations pertaining to the vegetation of the cut and fill slopes may require input from a qualified landscape architect and/or the Soil Conservation Service.

ECONOMIC MINERAL RESOURCES

Some of the sandy materials on-site could be considered a low-grade sand resource. According to the *El Paso County Aggregate Resource Evaluation Map* (Reference 6), the area is mapped as upland deposits. According to the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 7), surrounding areas to the site are mapped as A3 – Alluvial fan: sand resource. According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 8), the area of the site has been mapped as “Little or no potential” for industrial minerals. Generally, the Dawson formation does not contain significant industrial mineral resources. The sands associated with the eolian and alluvial deposits may be considered a sand resource. Considering the silty to clayey nature of much of these materials and abundance of similar materials through the region, they would be considered to have little significance as an economic resource.

According to *the Evaluation of Mineral and Mineral Fuel Potential of El Paso County State Mineral Lands* (Reference 8), the site is mapped within the Denver Basin Coal Region. However, the area of the site has been mapped as “Poor” for coal resources. No active or inactive mines have been mapped in the area of the site. The *El Paso County Aggregate Resource Map* (Reference 7) has mapped coal resources in the Falcon area approximately 13 miles southwest of the site; however, the coal resources are estimated at 1,500 feet below the surface (Reference 6). At this depth, mining the coal would not be economical at this time. No metallic mineral resources have been mapped on the site (Reference 8).

The site has been mapped as “Fair” for oil and gas resources (Reference 8). No oil or gas fields have been discovered in the area of the site. A well was drilled nearly 3 miles northeast of the site to 8,263 feet deep to the Jurassic Morrison Formation in 1955. No oil or gas was reported and it was plugged. The sedimentary rocks in the area may lack the geologic structure for trapping oil or gas; therefore, it would not be considered a significant resource.

ROADWAY AND EMBANKMENT CONSTRUCTION RECOMMENDATIONS

In general, the site soils are suitable for the proposed roadways and embankments. Groundwater should be expected to be encountered in deeper cuts and along drainages and low-lying areas. If excavations encroach on the groundwater level unstable soil conditions may be encountered. Excavation of saturated soils, if encountered, will be difficult with rubber-tired equipment. Stabilization using shot rock or geogrids may be necessary.

Any areas to receive fill should have all topsoil, organic material or debris removed. Prior to fill placement Entech should observe the subgrade. Fill must be properly benched and compacted to minimize potentially unstable conditions in slope areas. Fill slopes should be 3:1. The subgrade should be scarified and moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D-1557, prior to placing new fill. Areas receiving fill may require stabilization with rock or fabric if shallow groundwater conditions are encountered.

New fill should be placed in thin lifts not to exceed 6 inches after compaction while maintaining at least 95% of its maximum Modified Proctor Dry Density, ASTM D-1557. These materials should be placed at a moisture content conducive to compaction, usually 0 to ±2% of Proctor optimum moisture content. The placement and compaction of fill should be observed and tested by Entech during construction. Entech should approve any import materials prior to placing or hauling them to the site. Additional investigation will be required for pavement designs once roadway grading is completed and utilities are installed.

CLOSURE

It should be pointed out that because of the nature of data obtained by random sampling of such variable nonhomogeneous materials as soil and rock, it is important that we be informed of any differences observed between surface and subsurface conditions encountered in construction and those assumed in the body of this report. Any new construction considered on this site will require additional investigation. Construction and design personnel should be made familiar with the contents of this report. Specific construction and foundation recommendations will be provided when investigations are completed at each building site prior to new construction.

This report has been prepared for Vertex Consulting for application to the proposed development in accordance with generally accepted geologic, soil and engineering practices. No other warranty expresses or implied is made.

Vertex Consulting
Soil, Geology and Geologic Hazard Evaluation
Joyful View Subdivision
Peyton Highway and Joyful View
Schedule Nos. 33000-00-466 & 33000-00-467
El Paso County, Colorado

We trust that this report has provided you with all the information that you required. Should you have any questions or require additional information, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford, P.G.
Geologist

Reviewed by:

COLORADO REGISTERED
JOSEPH COLLIN GOODE JR.
23725
11-16-2023
PROFESSIONAL ENGINEER

Joseph C. Goode, Jr., P.E.
President

LLL

Encl.

Entech Job No. 210182
AAprojects/2020/210182 sg&ghs

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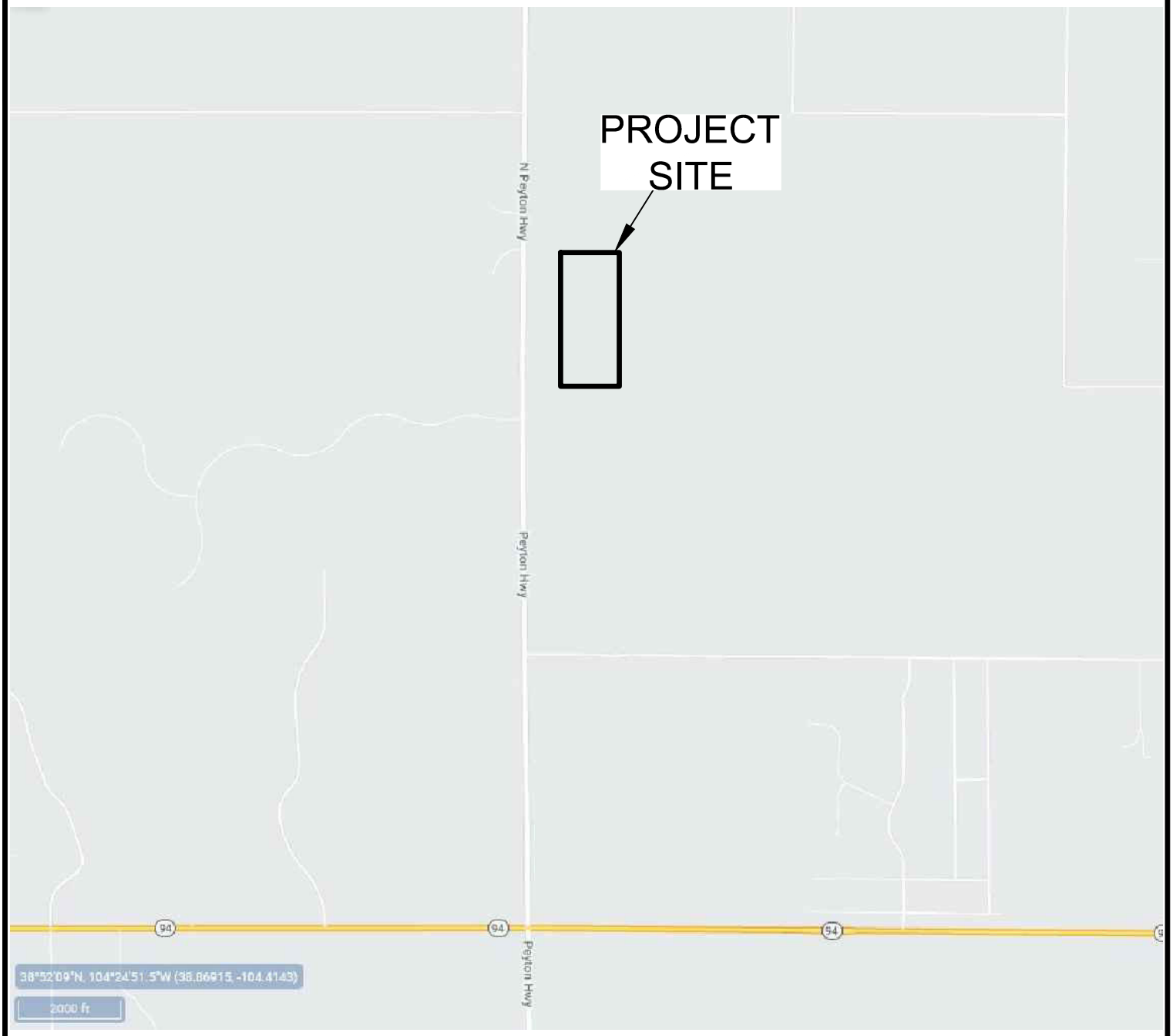
FIGURES



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ENTECH ENGINEERING, INC.

VICINITY MAP
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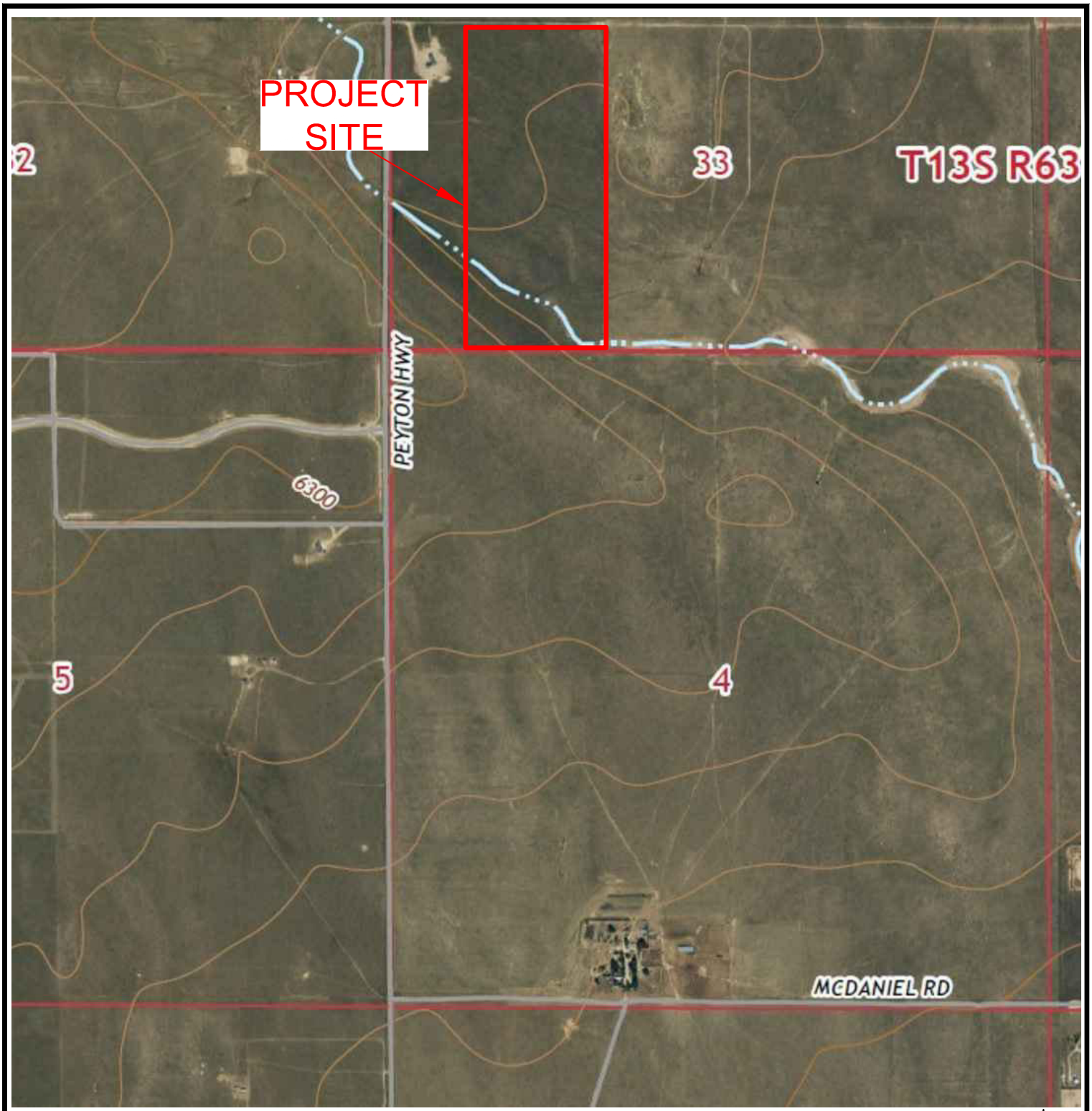
FIG. 1



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USGS TOPOGRAPHY MAP
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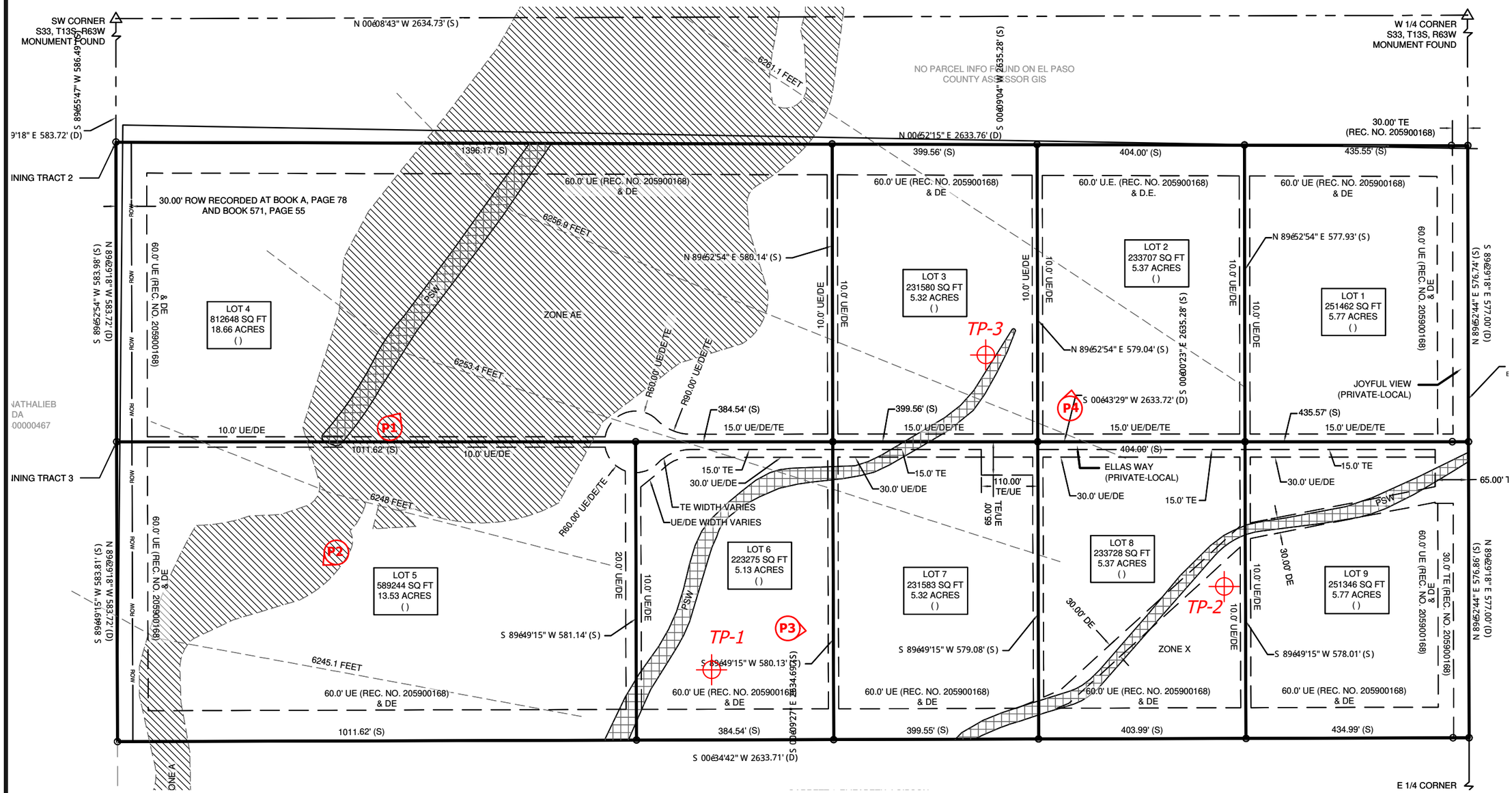
FIG. 2

Final Plat

JOYFUL VIEW SUBDIVISION

A PART OF SECTION 33, TOWNSHIP 13 SOUTH, RANGE 63 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO



- APPROXIMATE TEST BORING LOCATION AND NUMBER
- APPROXIMATE PHOTOGRAPH LOCATION AND NUMBER

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SITE PLAN/TESTING LOCATION MAP
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FIG. 3

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SOIL SURVEY MAP
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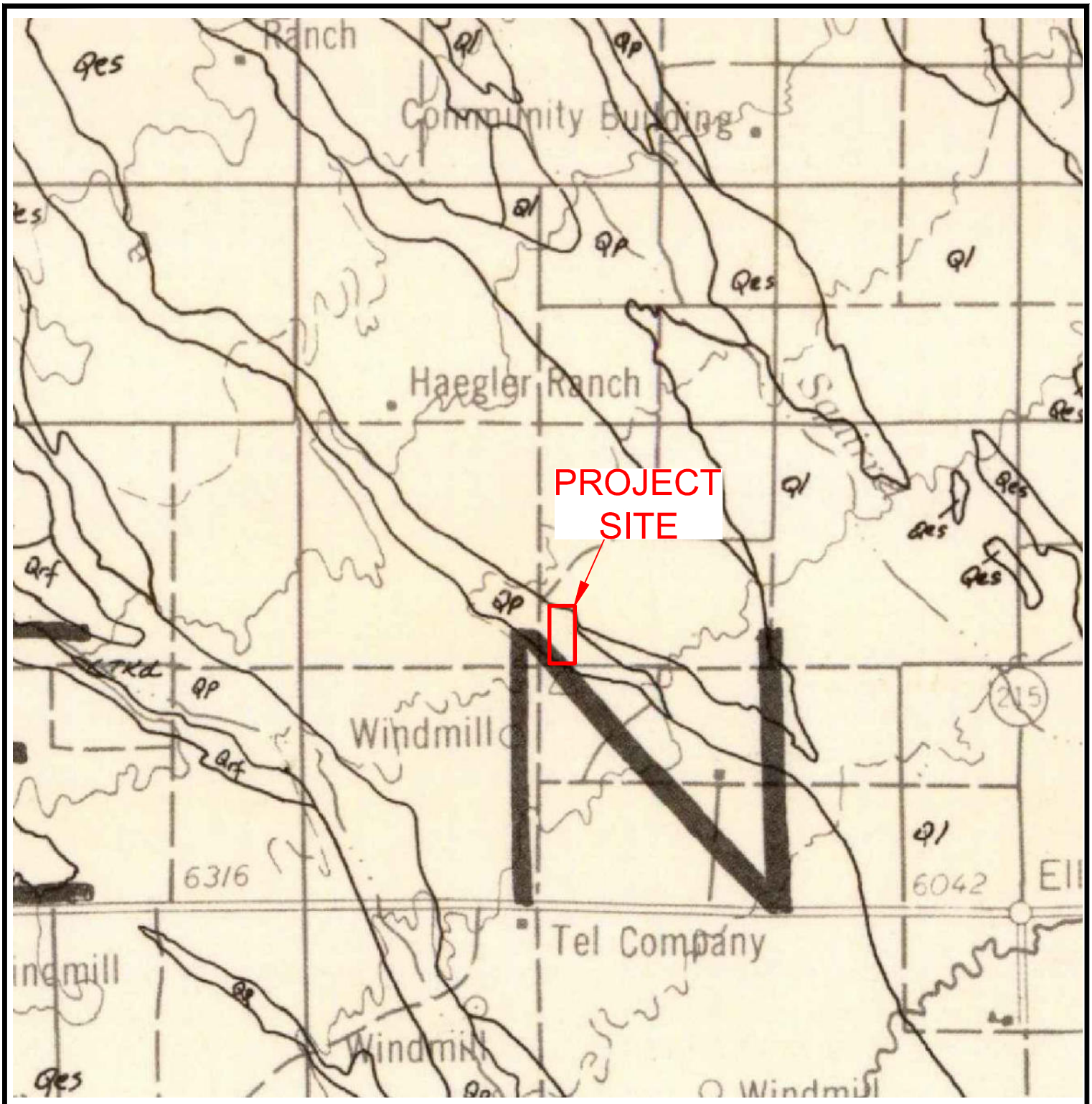
FIG. 4



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FALCON QUADRANGLE GEOLOGIC MAP
JOYFUL VIEW & PEYTON HIGHWAY
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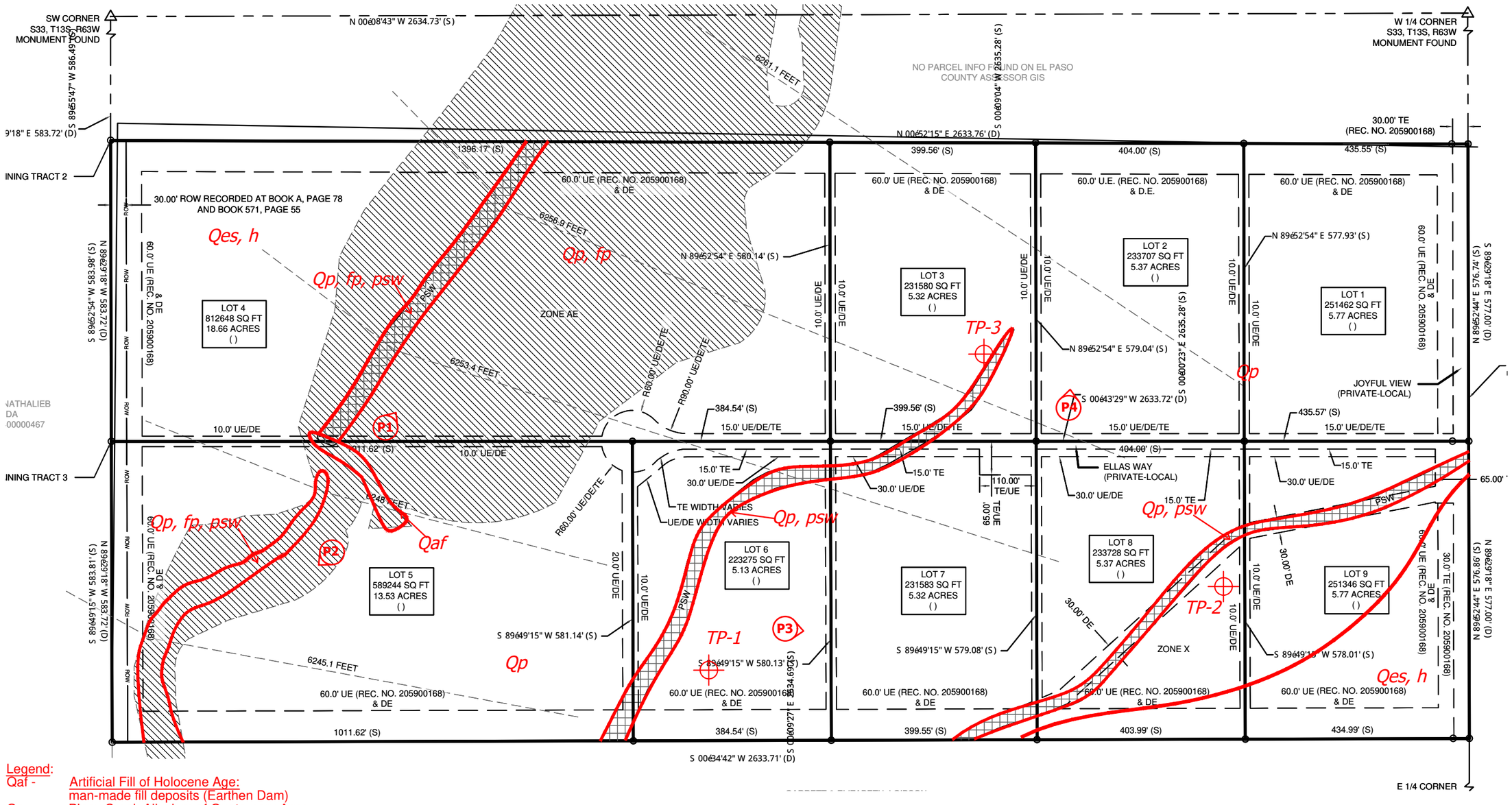
FIG. 5

JOYFUL VIEW SUBDIVISION

A PART OF SECTION 33, TOWNSHIP 13 SOUTH, RANGE 63 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF EL PASO, STATE OF COLORADO



Legend:

Qaf -	Artificial Fill of Holocene Age: man-made fill deposits (Earthen Dam)
Qp -	Piney Creek Alluvium of Quaternary Age: water deposited sands and clays
Qes -	Eolian Sands of Quaternary Age: wind blown sediments
psw -	potentially seasonally wet
fp -	floodplain
h -	hydrocompactive soil

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GEOLOGY/ENGINEERING GEOLOGY MAP
JOYFUL VIEW & PEYTON HIGHWAY
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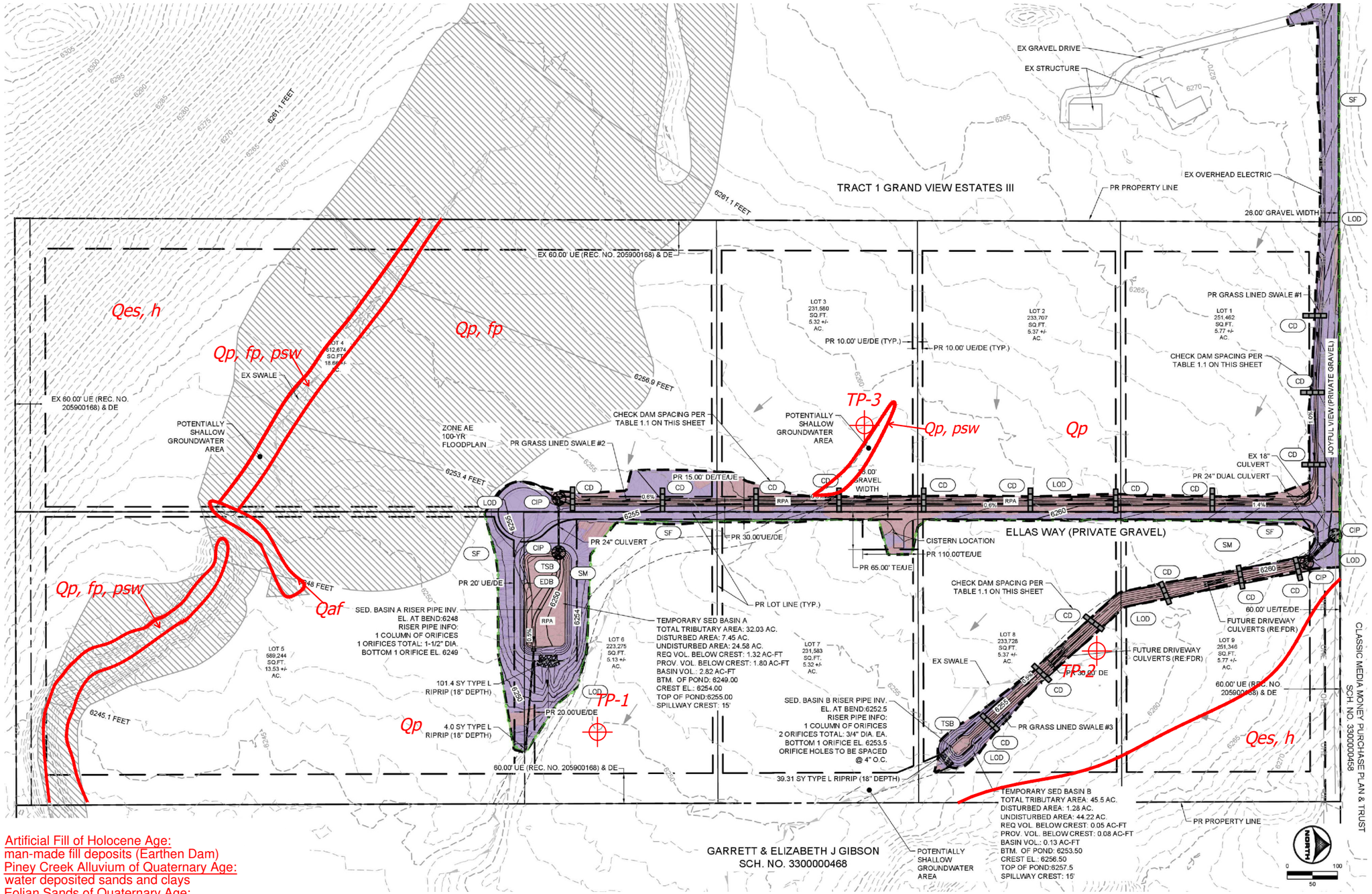
FIG. 6



Legend:

Qaf - Artificial Fill of Holocene Age:
man-made fill deposits (Earthen Dam)

Qp - Piney Creek Alluvium of Quaternary Age:
water deposited sands and clays

Qes - Eolian Sands of Quaternary Age:
wind blown sediments

psw - potentially seasonally wet
fp - floodplain
h - hydrocompactive soil

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GEOLOGY/ENGINEERING GEOLOGY MAP
JOYFUL VIEW & PEYTON HIGHWAY
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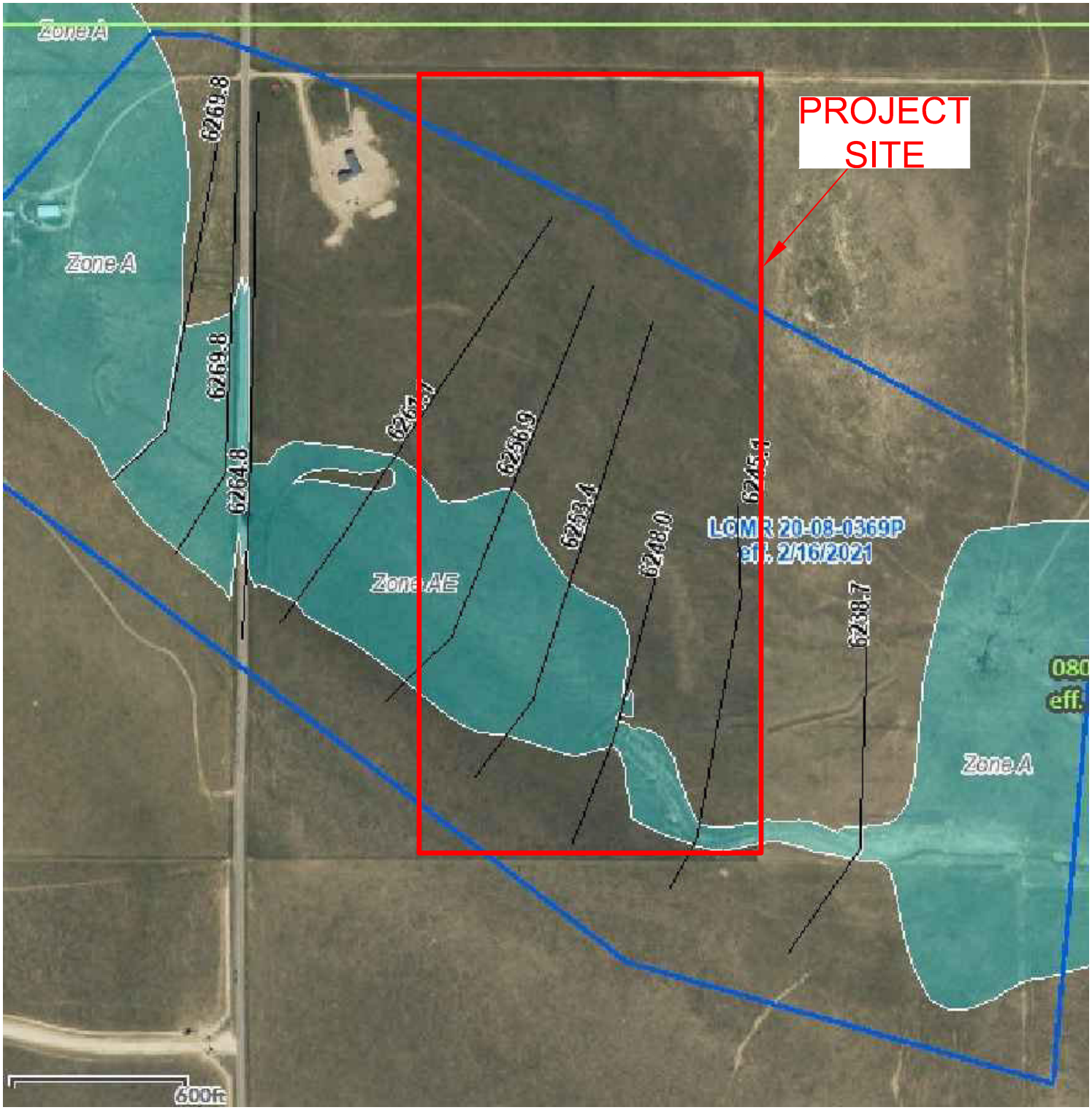
FIG. 6A



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FEMA FLOODPLAIN MAP
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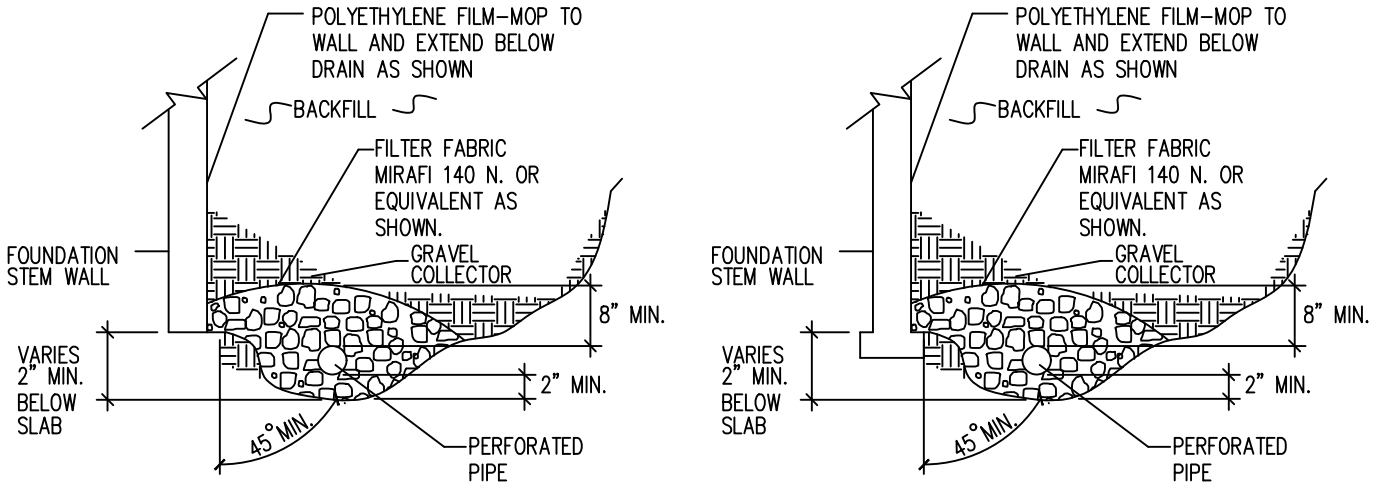
FIG. 7



NOTES:

–GRAVEL SIZE IS RELATED TO DIAMETER OF PIPE PERFORATIONS–85% GRAVEL GREATER THAN 2x PERFORATION DIAMETER.

–PIPE DIAMETER DEPENDS UPON EXPECTED SEEPAGE. 4–INCH DIAMETER IS MOST OFTEN USED.

–ALL PIPE SHALL BE PERFORATED PLASTIC. THE DISCHARGE PORTION OF THE PIPE SHOULD BE NON–PERFORATED PIPE.

–FLEXIBLE PIPE MAY BE USED UP TO 8 FEET IN DEPTH, IF SUCH PIPE IS DESIGNED TO WITHSTAND THE PRESSURES. RIGID PLASTIC PIPE WOULD OTHERWISE BE REQUIRED.

–MINIMUM GRADE FOR DRAIN PIPE TO BE 1% OR 3 INCHES OF FALL IN 25 FEET.

–DRAIN TO BE PROVIDED WITH A FREE GRAVITY OUTFALL, IF POSSIBLE. A SUMP AND PUMP MAY BE USED IF GRAVITY OUT FALL IS NOT AVAILABLE.

ENTECH ENGINEERING, INC.

PERIMETER DRAIN DETAIL
JOYFUL VIEW & PEYTON HIGHWAY
VERTEX CONSULTING

JOB NO. 210182

FIG. 8

APPENDIX A: Site Photographs

1

Looking northwest along drainage in the southeastern portion of the site.

February 23, 2021

2

Looking southeast along drainage in the southeastern portion of the site.

February 23, 2021

Job No. 210182

3

Looking north from the eastern side of the site.

February 23, 2021

4

Looking west from the central portion of the site.

February 23, 2021

Job No. 210182

APPENDIX B: Kumar and Associates, Inc. Geology and Soils Report Test Borings & Lab Summary, dated April 19, 2010

Kumar & Associates, Inc.

TABLE I

SUMMARY OF LABORATORY TEST RESULTS

Project No.: 10-2-118
Project Name: Grandview Properties
Date Sampled: 3/15/2010
Date Received: 3/16/2010

SAMPLE LOCATION		DATE TESTED	NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		SOIL OR BEDROCK TYPE (Unified Soil Classification)
BORING	DEPTH (ft)				GRAVEL (%)	SAND (%)		LIQUID LIMIT	PLASTICITY INDEX	
1	4	3/16/10	7.0	108.0			58	36	20	Sandy lean clay (CL)
2	2	3/16/10	5.4	117.9			43	27	13	Clayey sand (SC)
3	9	3/16/10	1.6	121.9	5	89	6		NP	Well-graded sand with silt (SW-SM)
4	0 - 5	3/18/10			0	87	13		NP	Silty Sand (SM)
	4	3/16/10	2.5	105.8						Silty Sand (SM)
5	14	3/16/10	4.9	121.6	3	83	14	24	8	Sandstone

Kumar & Associates, Inc.

TABLE II

PERCOLATION TEST RESULTS

Project No. 10-2-118

BORING NO./ LOCATION	PERC. HOLE	HOLE DEPTH (in.)	INTERVAL (min.)	WATER DEPTH (in.)	DROP IN WATER LEVEL (in.)	PERC. RATE (min./in.)
1 38° 52' 27.69" N 104° 27' 36.50" W	A	37		14 13/16		
			30	9 8/16	5 5/16	
			30	8 7/16	1 1/16	
			30	8 1/16	6/16	
			60	6 11/16	1 6/16	
				Bailed to 6		
			45	5 9/16	7/16	103
			60	5 1/16	8/16	120
			60	4 8/16	9/16	107
						Weighted Avg. 110
	B	45		14 6/16		
			30	12 1/16	2 5/16	
			30	11 9/16	8/16	
			30	10 8/16	1 1/16	
			60	9 8/16	1	
				Bailed to 6		
			45	5 11/16	5/16	144
			60	5 3/16	8/16	120
			60	4 9/16	10/16	96
						Weighted Avg. 115
	C	46		19 12/16		
			30	15 2/16	4 10/16	
			30	11 7/16	3 11/16	
			30	11 3/16	4/16	
			60	10 10/16	9/16	
				Bailed to 6		
			45	5 13/16	3/16	240
			60	5 7/16	6/16	160
			60	5 2/16	5/16	192
			30	4 15/16	3/16	160
						Weighted Avg. 184

Kumar & Associates, Inc.

TABLE II

PERCOLATION TEST RESULTS

Project No. 10-2-118

BORING NO./ LOCATION	PERC. HOLE	HOLE DEPTH (in.)	INTERVAL (min.)	WATER DEPTH	DROP IN WATER LEVEL (in.)	PERC. RATE (min./in.)
2 38° 52' 19.85" N 104° 27' 22.50" W	A	44		14 1/16		
			15	10 1/16	4	
			30	10	1/16	
			30	9 11/16	5/16	
			30	9	11/16	
			60	8 10/16	6/16	
				Bailed to 6		
			30	5 13/16	3/16	160
			60	5 9/16	4/16	240
			60	5 2/16	7/16	138
			60	4 8/16	10/16	96
						Weighted Avg. 140
	B	40		14 4/16		
			15	10 11/16	3 9/16	
			30	9 11/16	1	
			30	9 10/16	1/16	
			30	9 8/16	2/16	
			60	8 11/16	13/16	
				Bailed to 6		
			30	5 12/16	4/16	160
			60	5 9/16	3/16	320
			60	5 5/16	4/16	240
			60	4 11/16	10/16	96
						Weighted Avg. 160
	C	47		14 3/16		
			15	11 8/16	2 11/16	
			30	11 7/16	1/16	
			30	11 5/16	2/16	
			30	11 3/16	2/16	
			60	10 13/16	6/16	
				Bailed to 6		
			30	5 13/16	3/16	160
			60	5 10/16	3/16	320
			60	5 6/16	4/16	240
			60	5	6/16	160
						Weighted Avg. 210

Kumar & Associates, Inc.

T A B L E II

PERCOLATION TEST RESULTS

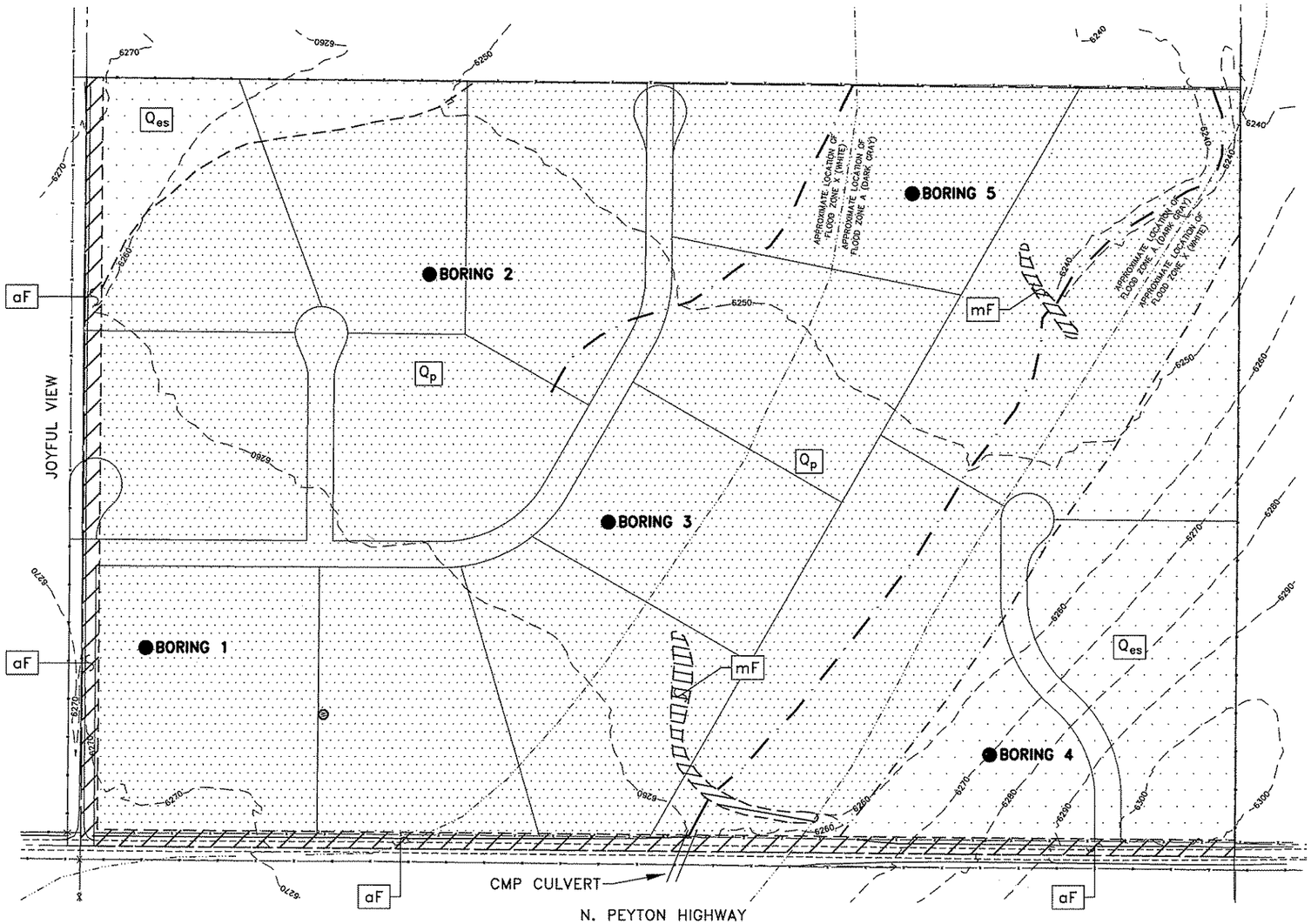
BORING NO./ LOCATION	PERC. HOLE	HOLE DEPTH (in.)	INTERVAL (min.)	WATER DEPTH (in.)	DROP IN WATER LEVEL (in.)	PERC. RATE (min./in.)
3 38° 52' 16.73" N 104° 27' 30.88" W	A	41		14 8/16		
			30	13 12/16	12/16	
			30	12 9/16	1 3/16	
			60	12	9/16	
			35	11 11/16	5/16	
				Bailed to 6		
			60	5 10/16	6/16	160
			60	5 3/16	7/16	138
			20	4 15/16	4/16	80
						Weighted Avg. 132
	B	43		14 3/16		
			30	12	2 3/16	
			30	11 9/16	7/16	
			60	11 7/16	2/16	
			35	11 5/16	2/16	
				Bailed to 6		
			60	5 9/16	7/16	138
			60	4 13/16	12/16	80
			20	4 10/16	3/16	107
						Weighted Avg. 102
	C	48		15 1/16		
			30	12 7/16	2 10/16	
			30	11 12/16	11/16	
			60	9 8/16	2 4/16	
			35	8 4/16	1 4/16	
				Bailed to 6		
			60	5 11/16	5/16	192
			60	3 9/16	2 2/16	28
			20	2 13/16	12/16	27
						Weighted Avg. 44

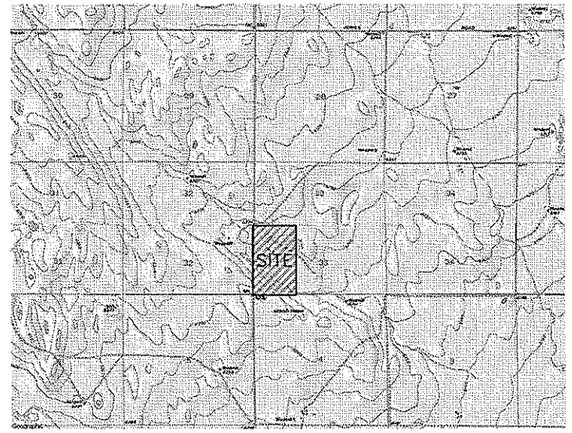
Kumar & Associates, Inc.

TABLE II

PERCOLATION TEST RESULTS

BORING NO./ LOCATION	PERC. HOLE	HOLE DEPTH (in.)	INTERVAL (min.)	WATER DEPTH (in.)	DROP IN WATER LEVEL (in.)	PERC. RATE (min./in.)
4 38° 52' 07.97" N 104° 27' 39.78" W	A	48		19		
			15	11 12/16	7 4/16	
			15	11 10/16	2/16	
			15	10 1/16	1 9/16	
			15	9	1 1/16	
			15	8 2/16	14/16	
			15	7 10/16	8/16	
			30	6 1/16	1 9/16	
			30	5 6/16	11/16	44
			15	4 15/16	7/16	35
			15	3 12/16	1 3/16	13
			15	3 5/16	7/16	35
			15	2 3/16	1 2/16	13
			15	2 2/16	1/16	240
			15	2	2/16	120
						Weighted Avg. 30
	B	46		15 4/16		
			15	9 7/16	5 13/16	
			15	7 14/16	1 9/16	
			15	7 10/16	4/16	
			30	6 10/16	1	
			15	6 4/16	6/16	
			30	5 14/16	6/16	
			30	5 13/16	1/16	480
			15	5 8/16	5/16	48
			15	4 9/16	15/16	16
			15	4 7/16	2/16	120
			30	4 5/16	2/16	240
			15	4 4/16	1/16	240
						Weighted Avg. 74
	C	47		18 2/16		
			15	12 5/16	5 13/16	
			15	11 8/16	13/16	
			15	10 4/16	1 4/16	
			15	9 10/16	10/16	
			15	8 8/16	1 2/16	
			15	7 7/16	1 1/16	
			30	5 10/16	1 13/16	
			30	4 8/16	1 2/16	27
			15	4	8/16	30
			15	3 13/16	3/16	80
			15	3 6/16	7/16	35
			15	3 1/16	5/16	48
			15	2 14/16	3/16	80
			15	2 11/16	3/16	80
						Weighted Avg. 41





VICINITY MAP
NOT TO SCALE

LEGEND:

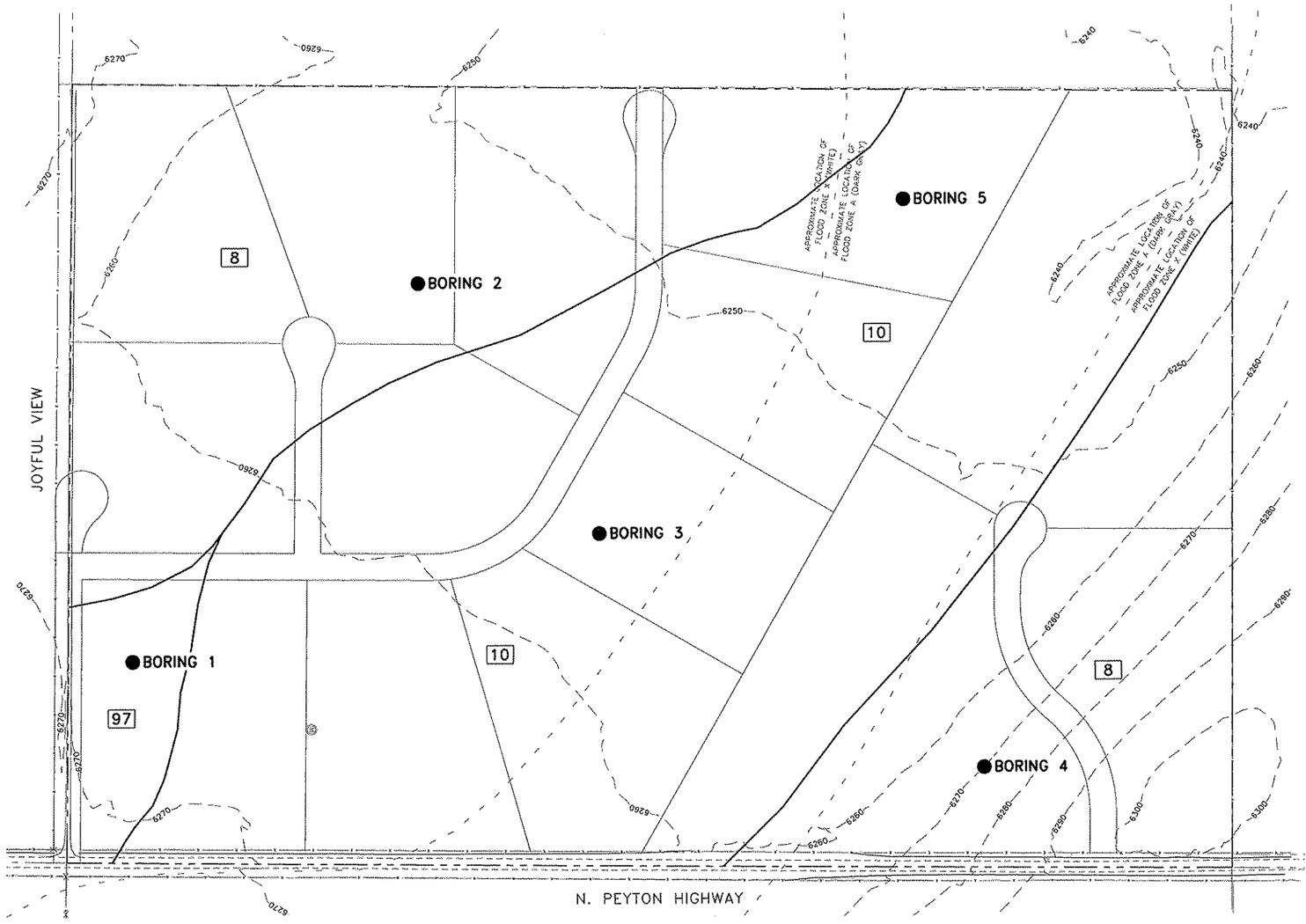
- aF — ARTIFICIAL FILL ASSOCIATED WITH GRADING FOR N. PAYTON HIGHWAY AND JOYFUL VIEW.
- mF — MANPLACED FILL. REWORKED NATIVE SOILS PLACED IN APPARENT EROSION CONTROL SWALE/BERMS.
- Q_p — PINEY CREEK ALLUVIUM (HOLOCENE). INTERBEDDED SILTY SAND, CLAYEY SAND AND SANDY LEAN CLAY ALLUVIAL DEPOSITS.
- Q_{es} — EOLIAN (WINDBLOWN) DEPOSITS, (HOLOCENE TO LATE PLEISTOCENE), FINE TO COARSE WINDBLOWN SAND AND SILT.
- – – – – APPROXIMATE GEOLOGIC UNIT BOUNDARY
- — · — APPROXIMATE MIDDLE OF SHALLOW, POORLY DEFINED EPHEMERAL CREEKS. CREEK IS ERODED AND BETTER DEFINED AT SOUTHEAST CORNER OF SITE.
- ● BORING 1 — EXPLORATORY BORING (PROFILE HOLE). THREE PERCOLATION TEST HOLES WERE DRILLED ADJACENT TO BORINGS 1–4 IN A TRIANGULAR PATTERN.

NOTES:

1. BASE MAP, TOPOGRAPHY AND FLOODPLAIN BOUNDARIES PROVIDED BY LDC, INC.
2. GEOLOGIC MAP BASED ON OUR INTERPRETATION OF PREVIOUS MAPPING BY SCOTT, TAYLOR, EPIS AND WOBUS (1978) AND OUR OBSERVATIONS OF THE GEOLOGIC CONDITIONS DURING THE SITE RECONNAISSANCE.

150 0 150 300
APPROXIMATE SCALE–FEET

10–2–118	Kumar & Associates	GRANDVIEW PROPERTIES DEVELOPMENT	GEOLOGIC MAP	Fig. 1



SOIL CONSERVATION SERVICE SOIL UNITS

- 8 — BLAKELAND LOAMY SAND, 1% TO 9% SLOPES. SOIL FORMED IN ALLUVIAL OR EOLIAN DEPOSITS ON UPLANDS.
- 10 — BLENDON SANDY LOAM, 0% TO 3% SLOPES. SOIL FORMED IN SANDY ARKOSIC ALLUVIUM.
- 97 — TRUCKTON SANDY LOAM, 3% TO 9% SLOPES. SOIL FORMED IN ALLUVIUM OR RESIDIUM DERIVED FROM ARKOSIC SEDIMENTARY ROCK ON UPLANDS.
- ● BORING 4 — EXPLORATORY BORING (PROFILE HOLE). THREE PERCOLATION TEST HOLES WERE DRILLED ADJACENT TO BORINGS 1-4 IN A TRIANGULAR PATTERN.
- ——— APPROXIMATE CONTACT BETWEEN SOIL UNITS.

NOTES:

1. BASE MAP, TOPOGRAPHY AND FLOODPLAIN BOUNDARIES PROVIDED BY LDC, INC.
2. SOIL UNIT BOUNDARIES ARE APPROXIMATE AND ARE BASED ON OUR INTERPRETATION OF THE SOIL UNITS PRESENTED ON PLATE 19 OF THE UNITED STATES DEPARTMENT OF AGRICULTURE (1981), SOIL CONSERVATION SERVICE MAP.

150 0 150 300
APPROXIMATE SCALE-FEET

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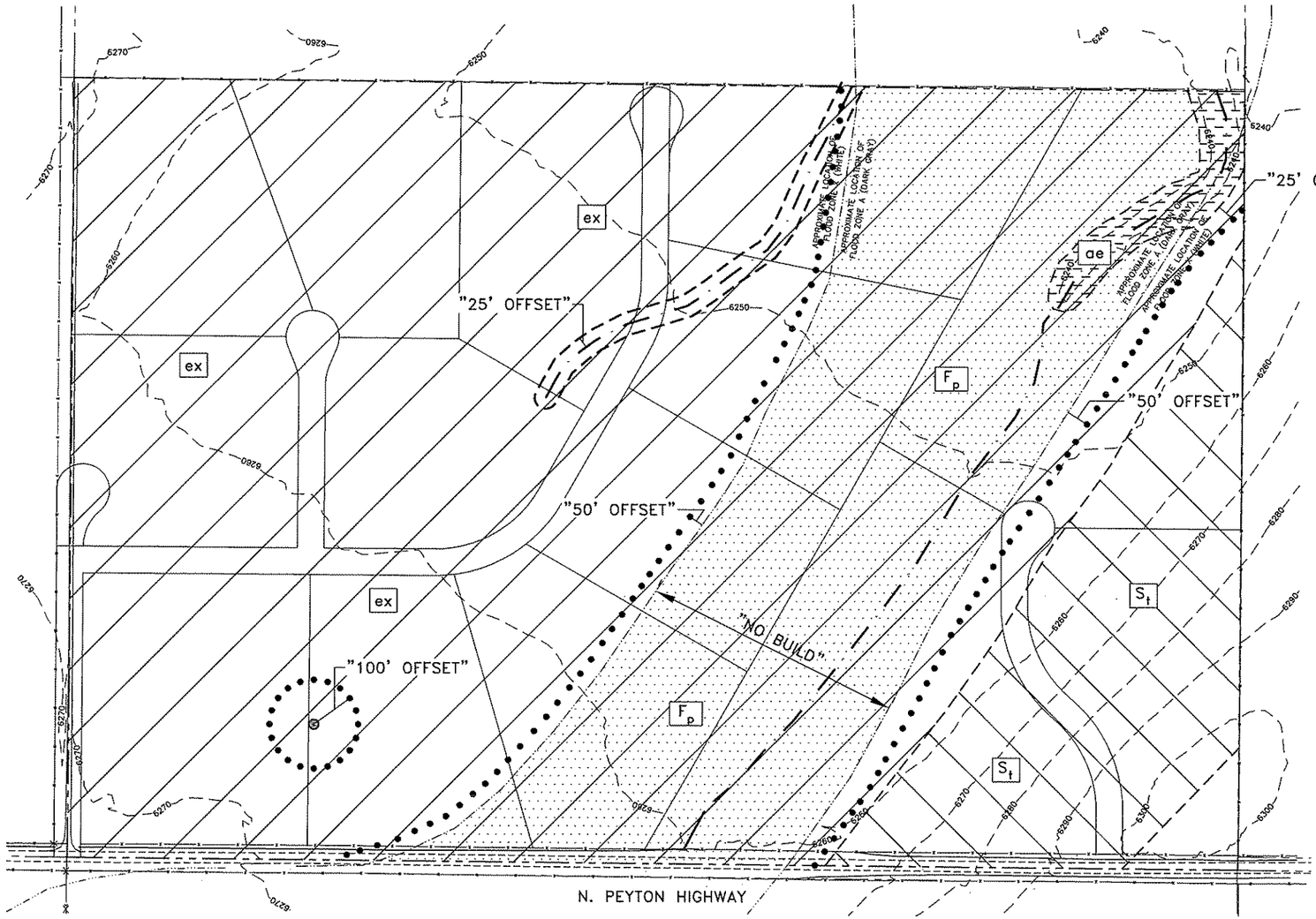
10-2-118	Kumar & Associates	GRANDVIEW PROPERTIES DEVELOPMENT	SOILS MAP	Fig. 2



150 0 150 300

APPROXIMATE SCALE–FEET

LEGEND:

F_p — 100–YEAR FLOODPLAIN AND ARE PRONE TO EROSION OR SEDIMENTATION. SHOULD BE CONSIDERED A NO BUILD AREA UNLESS ADDITIONAL STUDY DETERMINES THIS AREA IS OUTSIDE OF THE 100–YEAR FLOODPLAIN OR METHODS TO MITIGATE FLOOD, EROSION AND SEDIMENTATION HAZARDS ARE PROVIDED. THE FLOODPLAIN IS CONSIDERED A WATER COURSE FOR PURPOSE OF ABSORPTION FIELDS.

ae — ACCELERATED EROSION. AREA OF ACCELERATED EROSION ASSOCIATED WITH THE HEADWARD ERODING GULLY.

ex — EXPANSIVE SOILS. SOILS WITH A MODERATE SWELL POTENTIAL MAY BE PRESENT, TYPICALLY IN THE UPPER SEVERAL FEET OF THE SOIL PROFILE.

S_t — MODERATELY STEEP SLOPES. THIS ZONE WILL LIKELY REQUIRE THE USE OF SERIAL DISTRIBUTION SYSTEMS FOR THE ABSORPTION FIELDS.

– – – – – APPROXIMATE UNIT BOUNDARY.

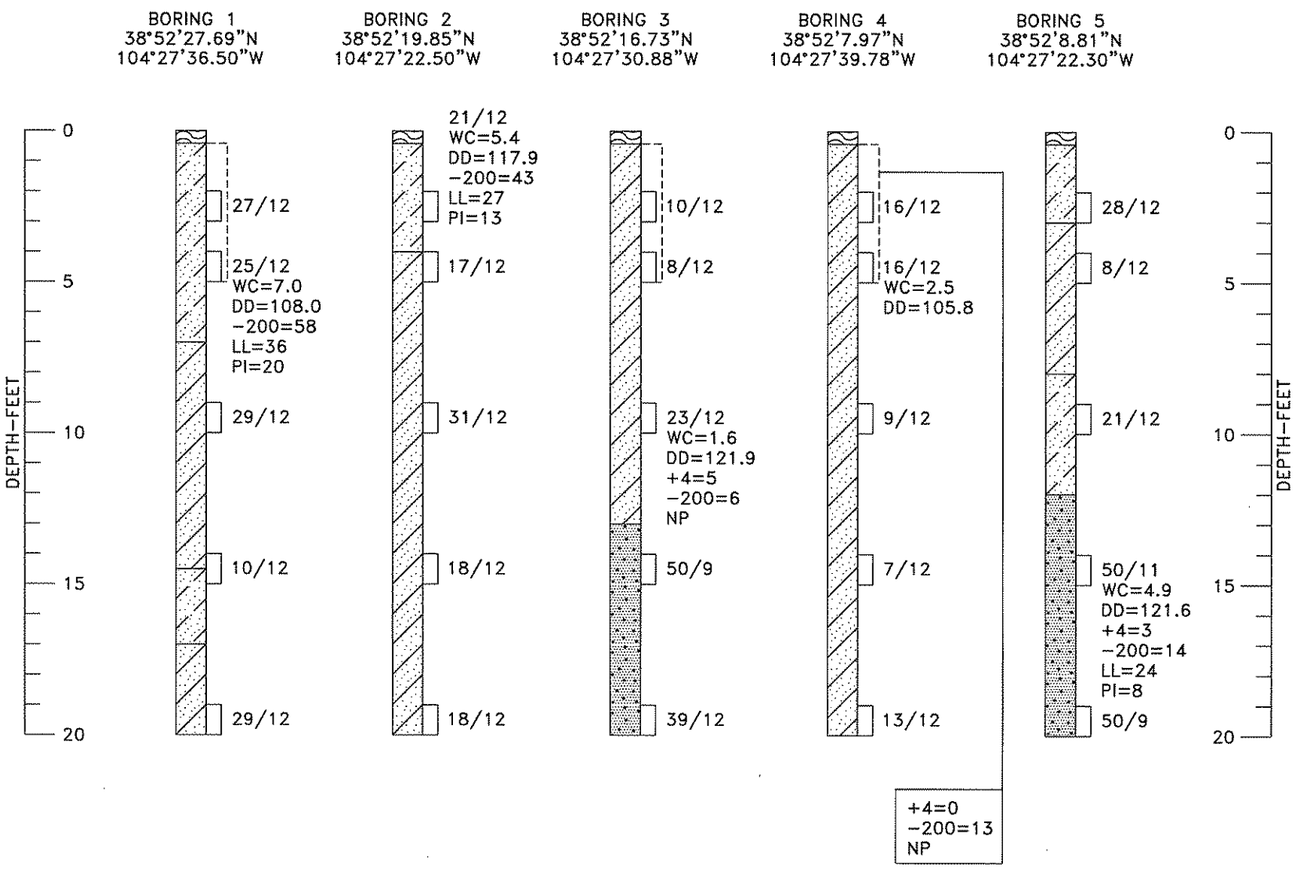
•••••••• MINIMUM OFFSET BOUNDARY FOR ABSORPTION FIELDS BASE ON TABLE IN SECTION 8.5 OF THE EL PASO COUNTY ONSITE WASTEWATER SEWAGE REGULATIONS.

— · — EPHEMERAL CREEKS. CONSIDERED A DRY GULCH FOR PURPOSE OF ABSORPTION FIELDS. VICINITY OF EPHEMERAL CREEKS PRONE TO SEDIMENTATION AND/OR EROSION.

NOTES:

1. BASE MAP, TOPOGRAPHY AND FLOODPLAIN BOUNDARIES PROVIDED BY LDC, INC.
2. GEOLOGIC HAZARDS ARE BASED ON OUR INTERPRATATION OF THE SURFACE AND SUBSURFACE CONDITIONS AND THE PROVIDED LIMITS OF THE 100–YEAR FLOODPLAIN.

10–2–118	Kumar & Associates	GRANDVIEW PROPERTIES DEVELOPMENT	GEOLOGIC HAZARD MAP	Fig. 3



LEGEND

- TOPSOIL.
- CLAYEY SAND (SC), OCCASIONAL THIN LAYERS OR LENSES OF SANDY LEAN CLAY (CL), OCCASIONALLY POROUS, STIFF TO VERY STIFF, DRY TO SLIGHTLY MOIST, BROWN.
- SILTY SAND (SM) AND WELL-GRADED SAND WITH SILT (SW-SM), LOOSE TO DENSE, DRY TO SLIGHTLY MOIST, LIGHT BROWN TO BROWN.
- SANDSTONE, MEDIUM HARD TO HARD, OCCASIONALLY CLAYEY, NON CEMENTED, SLIGHTLY MOIST, GRAYISH BROWN, OCCASIONAL IRON STAINING.
- DRIVE SAMPLE, 2-INCH I.D. CALIFORNIA LINER SAMPLE.
- 27/12 DRIVE SAMPLE BLOW COUNT. INDICATES THAT 27 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE THE SAMPLER 12 INCHES.
- DISTURBED BULK SAMPLE.

LABORATORY TEST RESULTS

WC = WATER CONTENT (%) (ASTM D 2216);
DD = DRY DENSITY (pcf) (ASTM D 2216);
+4 = PERCENTAGE RETAINED ON NO. 4 SIEVE (ASTM D 422);
-200 = PERCENTAGE PASSING NO. 200 SIEVE (ASTM D 1140);
LL = LIQUID LIMIT (ASTM D 4318);
PI = PLASTICITY INDEX (ASTM D 4318);
NP = NON-PLASTIC (ASTM D 4318).

NOTES

1. THE EXPLORATORY BORINGS WERE DRILLED ON MARCH 15, 2010 WITH A 4-INCH DIAMETER CONTINUOUS FLIGHT POWER AUGER.
2. THE LOCATIONS OF THE EXPLORATORY BORINGS WERE MEASURED APPROXIMATELY BY PACING FROM FEATURES SHOWN ON THE SITE PLAN PROVIDED AND SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED. A HAND HELD GARMIN ETRAX LEGEND GPS WAS USED TO RECORD THE LONGITUDE AND LATITUDE FOR EACH BORING. POSITION BASED ON THE WGS-84 (NAD27) DATUM.
3. THE ELEVATIONS OF THE EXPLORATORY BORINGS WERE NOT MEASURED AND THE LOGS OF THE EXPLORATORY BORINGS ARE PLOTTED TO DEPTH.
4. THE LINES BETWEEN MATERIALS SHOWN ON THE EXPLORATORY BORING LOGS REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN MATERIAL TYPES AND THE TRANSITIONS MAY BE GRADUAL.
5. GROUND WATER WAS NOT ENCOUNTERED IN THE BORINGS AT THE TIME OF DRILLING OR WHEN CHECKED 9 DAYS LATER. FLUCTUATIONS IN THE WATER LEVEL MAY OCCUR WITH TIME.

10-2-118	Kumar & Associates	GRANDVIEW PROPERTIES DEVELOPMENT	LOGS OF EXPLORATORY BORINGS	Fig. 4

APPENDIX C: Test Pit Logs

TEST BORING 1
DATE DRILLED 2/23/2021

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
TOPSOIL, SANDY CLAY LOAM, BROWN, MOIST	1					
SANDY CLAY LOAM, FINE TO COARSE GRAINED, DARK BROWN, MOIST	2			ma		3A
SANDY CLAY, FINE TO COARSE GRAINED, DARK BROWN, MOIST	3			bl	m	2
	4					
SANDY LAM, FINE TO COARSE GRAINED, BROWN, M OIST	5					
	6			gr	m	2
	7					
	8					
	9					
	10					

TEST BORING 2
DATE DRILLED 2/23/2021

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
TOPSOIL, SANDY CLAY LOAM, BROWN, MOIST	1					
SANDY CLAY LOAM, FINE TO COARSE GRAINED, LIGHT BROWN, MOIST	2			gr	m	3
CLAY, FINE TO MEDIUM GRAINED, BROWN, MOIST	3					
	4			bl	s	4
SANDY LOAM, FINE TO COARSE GRAINED, TAN, MOIST	5					
	6			gr	w	2
	7					
	8					
	9					
	10					

Soil Structure Shape
granular - gr
platy - pl
blocky - bl
prismatic - pr
single grain - sg
massive - ma

Soil Structure Grade
weak - w
moderate - m
strong - s
loose - l

ENTECH ENGINEERING, INC.

TEST BORING LOGS

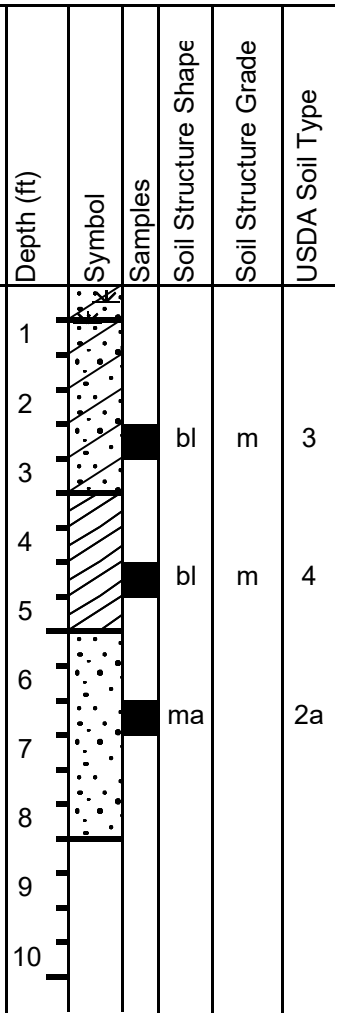
JOYFUL VIEW & PEYTON HIGHWAY
VERTEX CONSULTING

JOB NO. 210182

FIG. C-1

TEST BORING 3
DATE DRILLED 2/23/2021

REMARKS



Soil Structure Shape
granular - gr
platy - pl
blocky - bl
prismatic - pr
single grain - sg
massive - ma

Soil Structure Grade
weak - w
moderate - m
strong - s
loose - l

ENTECH ENGINEERING, INC.

TEST BORING LOGS

JOYFUL VIEW & PEYTON HIGHWAY
VERTEX CONSULTING

JOB NO. 210182

FIG. C-2

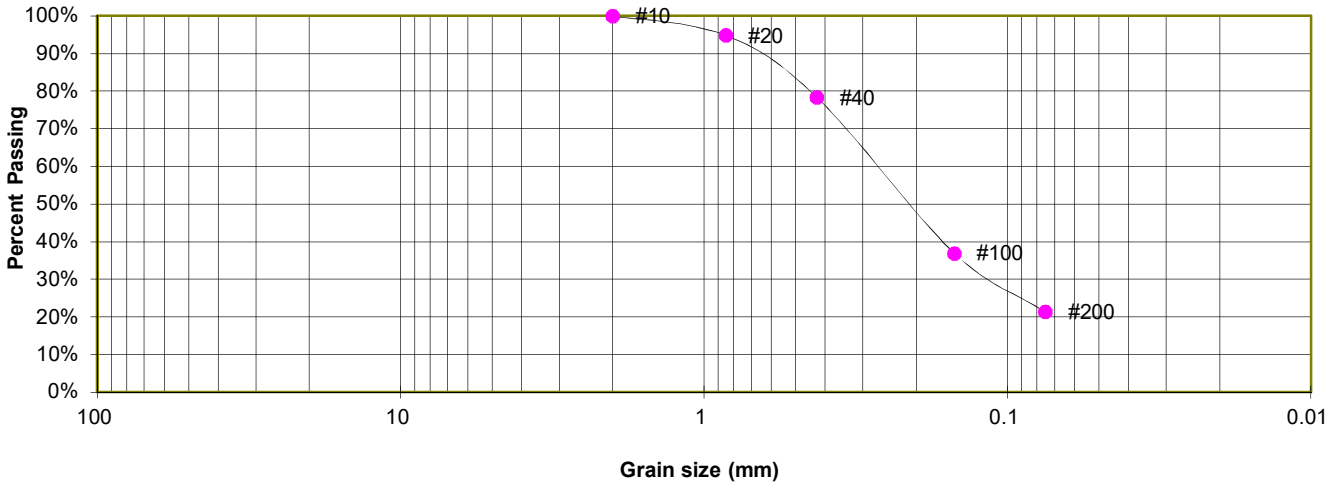
APPENDIX D: Laboratory Testing Results

ENTECH ENGINEERING, INC.

TABLE D-1
SUMMARY OF LABORATORY TEST RESULTS

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	SULFATE (WT %)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	USCS	SOIL DESCRIPTION
	TP-1	30"			28.4							SM	SAND, SILTY
	TP-1	14"			21.4								SAND, SILTY
	TP-3	6-7			2.7							SW	SAND, SLIGHTLY SILTY
	TP-3	4-4.5			70.1							CL	CLAY, WITH SAND
	TP-3	24-30"			28.4								SAND, SILTY
	TP-2	5-6			7.9							SM-SW	SAND, WITH SILT
	TP-2	3-4			60.5							CL	CLAY, SANDY
	TP-1	72"			21.0							SM	SAND, SILTY

TEST BORING	TP-1	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	14"		



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	100.0%
20	94.9%
40	78.4%
100	37.0%
200	21.4%

SOIL CLASSIFICATION

USCS CLASSIFICATION:

ENTECH ENGINEERING, INC.

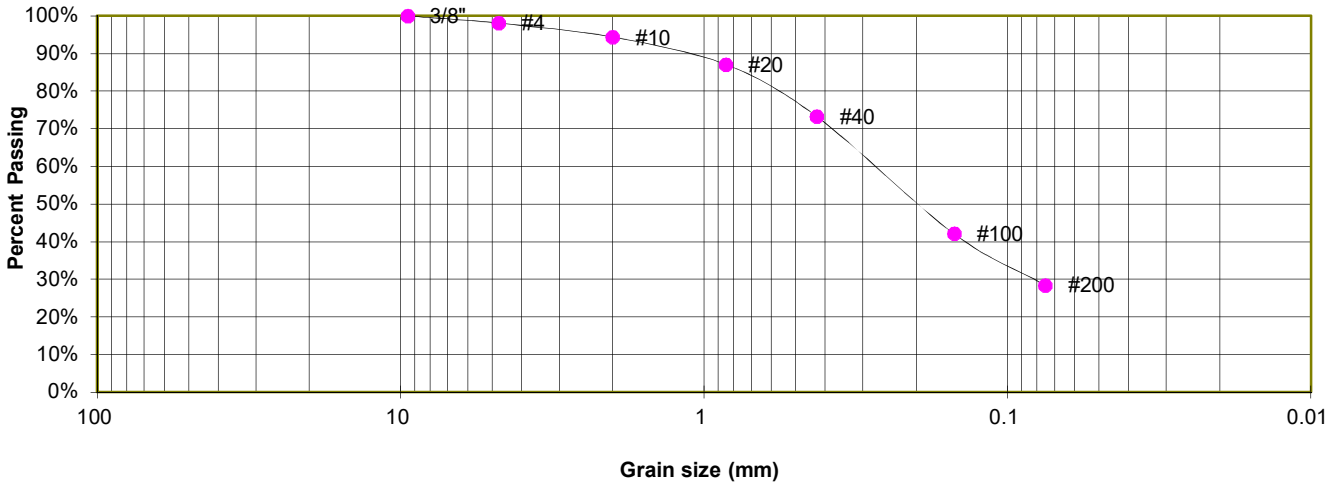
LABORATORY TEST RESULTS

JOYFUL VIEW & PEYTON HIGHWAY
VERTEX CONSULTING

JOB NO. 210182

FIG. D-1

TEST BORING	TP-1	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	30"		



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.1%
10	94.3%
20	87.1%
40	73.2%
100	42.1%
200	28.4%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

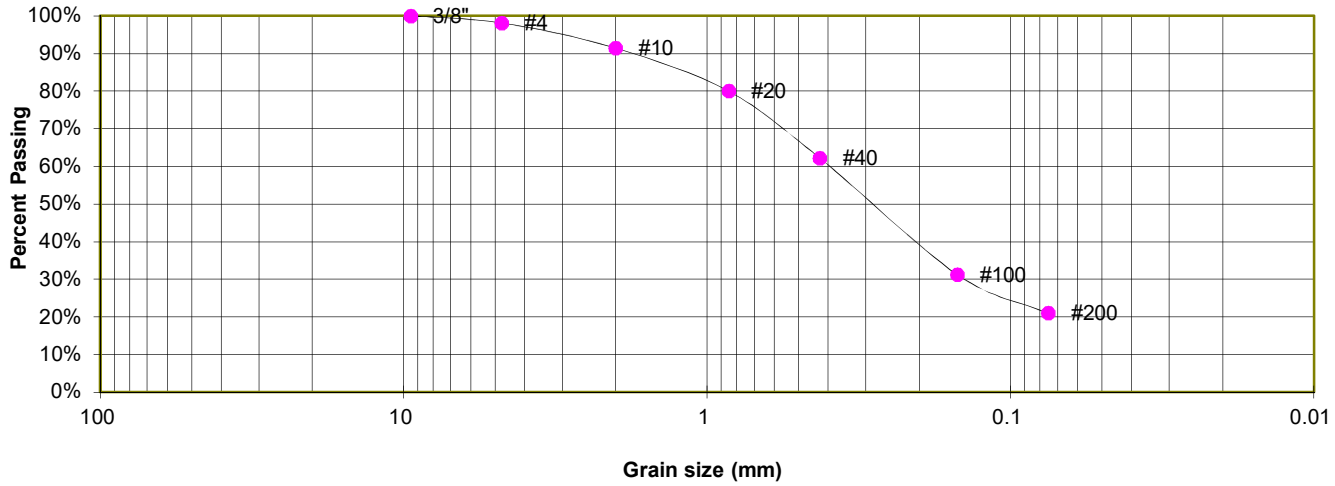
LABORATORY TEST RESULTS

JOYFUL VIEW & PEYTON HIGHWAY
VERTEX CONSULTING

JOB NO. 210182

FIG. D-2

TEST BORING	TP-1	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	72"		



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.1%
10	91.5%
20	80.0%
40	62.2%
100	31.3%
200	21.0%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

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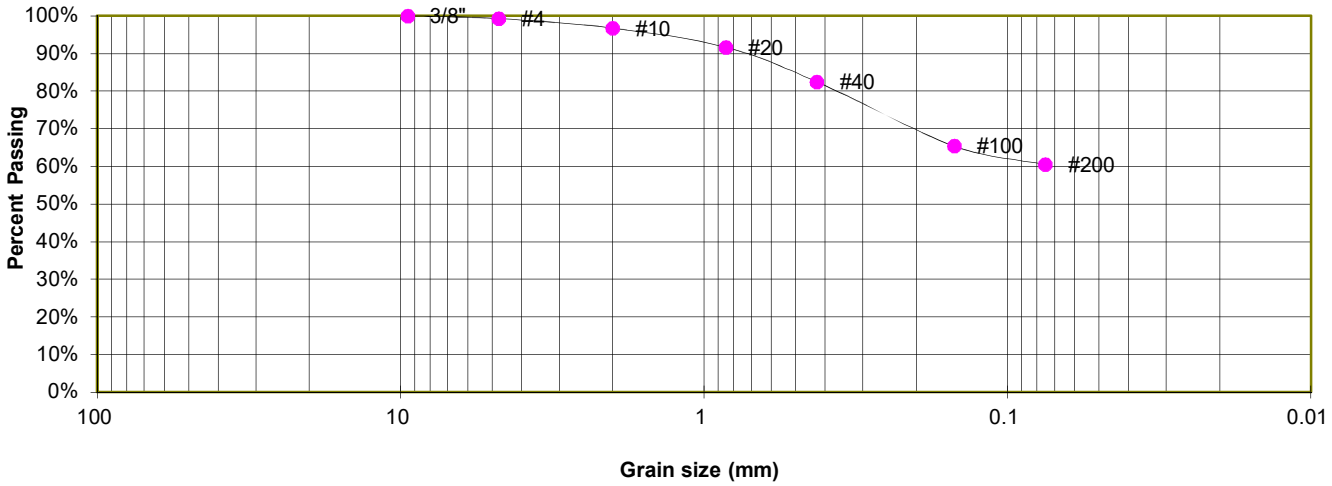
FIG. D-3

TEST BORING	TP-2	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	3-4		



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.3%
10	96.8%
20	91.7%
40	82.5%
100	65.4%
200	60.5%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

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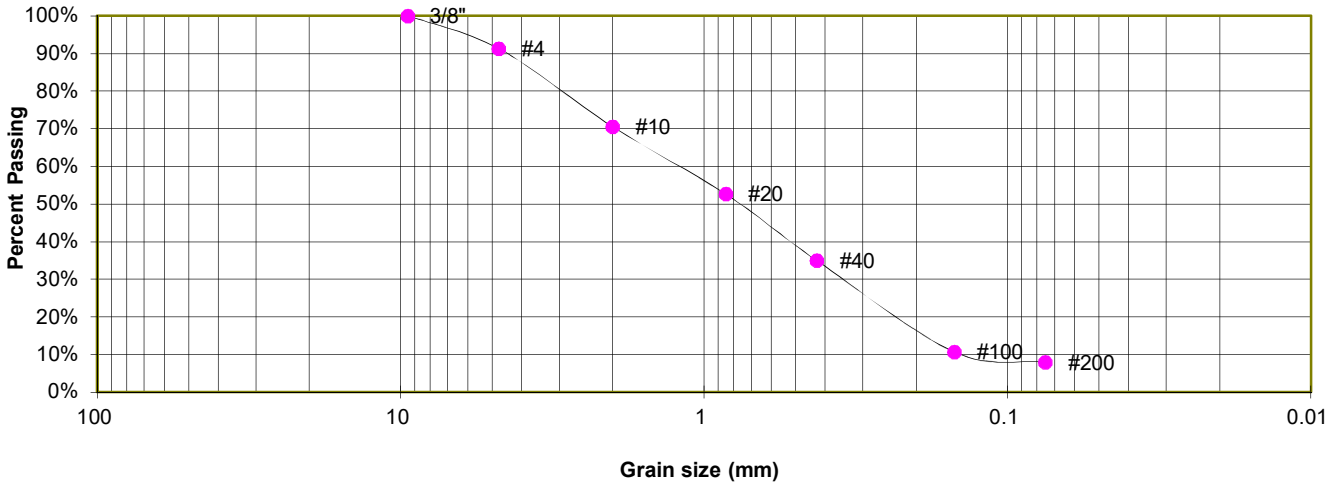
FIG. D-4

TEST BORING	TP-2	SOIL DESCRIPTION	SAND, WITH SILT
DEPTH (FT)	5-6		



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	91.3%
10	70.5%
20	52.7%
40	35.0%
100	10.7%
200	7.9%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM-SW

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

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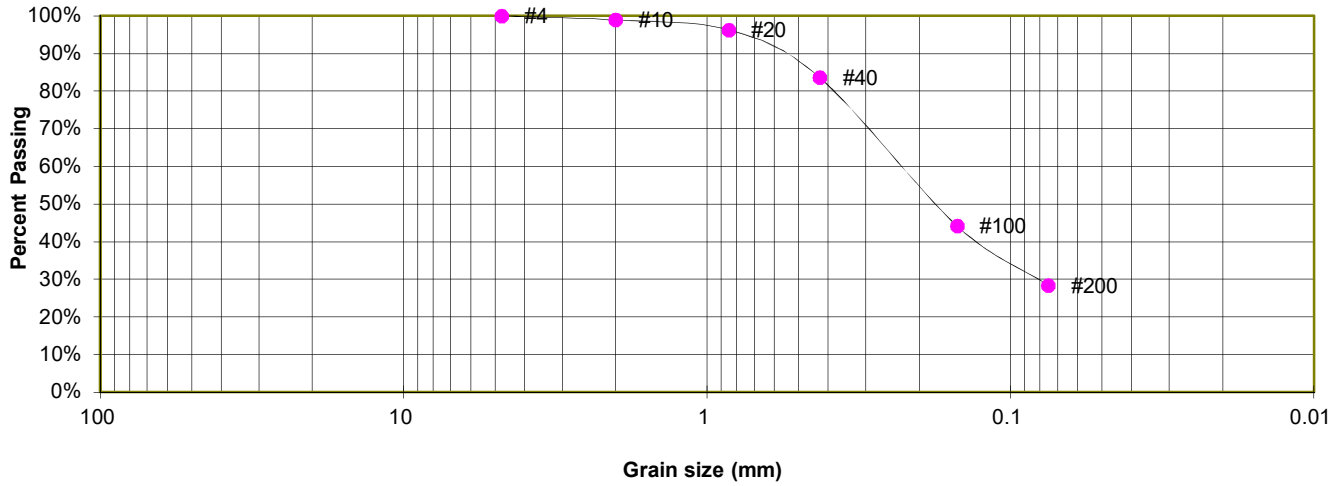
FIG. D-5

TEST BORING	TP-3	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	24-30"		



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	98.9%
20	96.3%
40	83.6%
100	44.2%
200	28.4%

SOIL CLASSIFICATION

USCS CLASSIFICATION:

ENTECH ENGINEERING, INC.

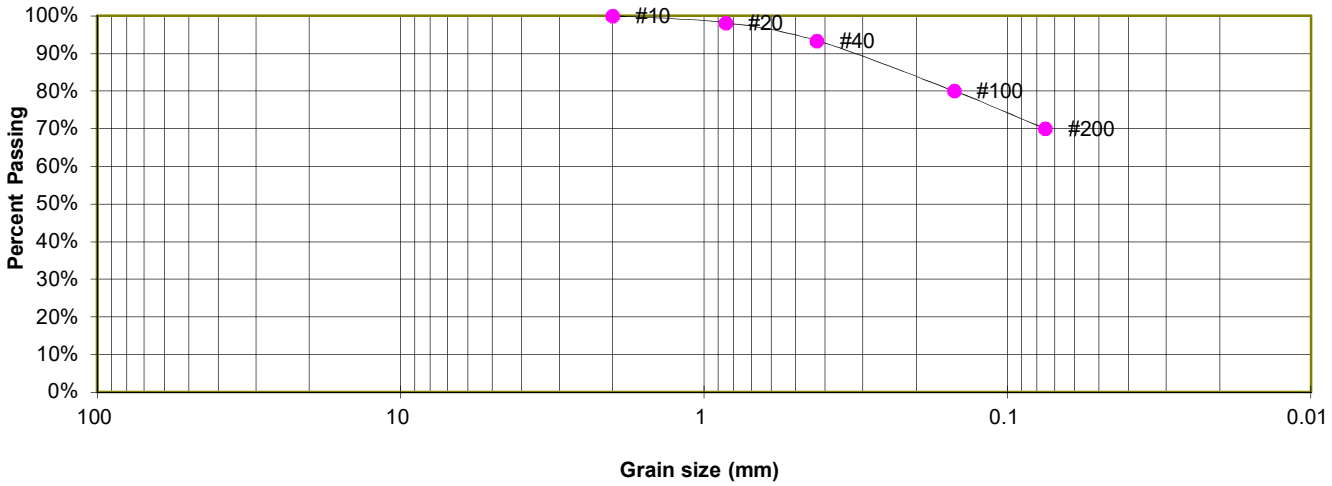
LABORATORY TEST RESULTS

JOYFUL VIEW & PEYTON HIGHWAY
VERTEX CONSULTING

JOB NO. 210182

FIG. D-6

TEST BORING	TP-3	SOIL DESCRIPTION	CLAY, WITH SAND
DEPTH (FT)	4-4.5		



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	100.0%
20	98.2%
40	93.4%
100	80.1%
200	70.1%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

JOYFUL VIEW & PEYTON HIGHWAY
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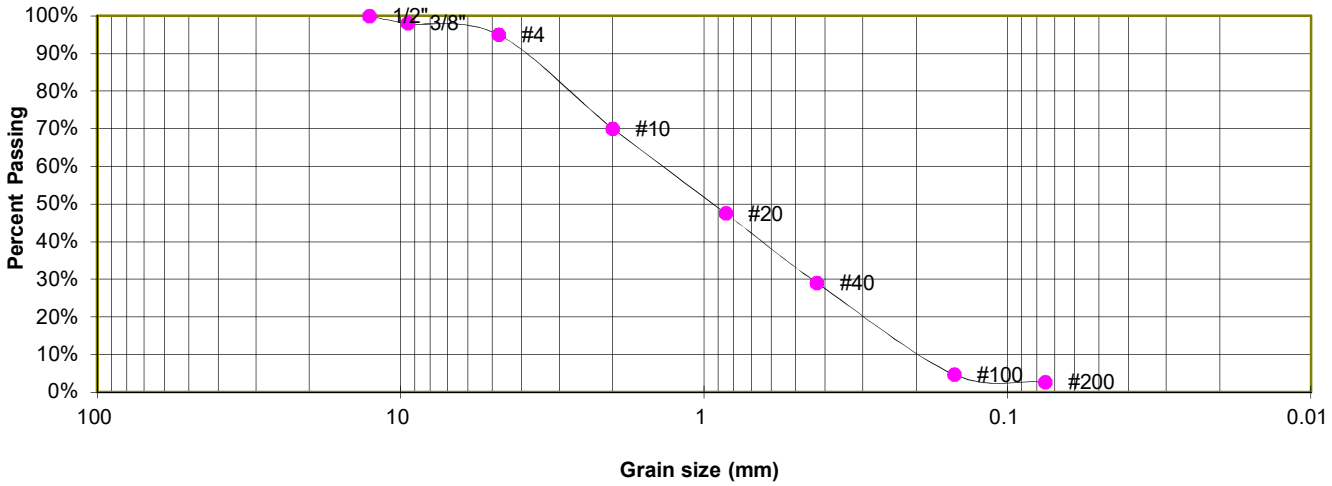
FIG. D-7

TEST BORING	TP-3	SOIL DESCRIPTION	SAND, SLIGHTLY SILTY
DEPTH (FT)	6-7		



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.0%
4	95.0%
10	70.1%
20	47.6%
40	29.1%
100	4.7%
200	2.7%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

JOYFUL VIEW & PEYTON HIGHWAY
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FIG. D-8

APPENDIX E: Soil Survey Descriptions