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**SOILS AND GEOLOGY STUDY
NORTH PARK SUBDIVISION
PARCEL NO. 61000-00-369
EL PASO COUNTY, COLORADO**



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June 16, 2026

Respectfully Submitted,

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Entech Job No. 260494
LLL/JCG

PCD No.

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1 SUMMARY

Project Location

The project site is located within the SE¼ of Section 11, Township 12 South, Range 65 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located approximately 4 miles east of the town of Monument, Colorado on the eastern side of Highway 83 between Hodgen Road and Walker Road. The location of the site is as shown in the Vicinity Map (Figure 1).

Project Description

A fifteen-lot rural residential subdivision is proposed for the approximate 48-acre parcel. Two residences (Lots 4 and 9) with existing water wells and on-site wastewater systems (OWTS) and a barn (Lot 7) are currently located on the property. These structures are expected to remain. The lots will be 2.5 to 3.65 acres and will be serviced by individual water wells and on-site wastewater treatment systems (OWTS). The lots will be accessed by an extension of the existing Needles Drive from the southern side of the site. A detention pond is proposed in the northwestern portion of the site.

Scope of Report

This report presents the results of our geologic evaluation and treatment of engineering geologic hazard study with respect to the proposed subdivision.

Land Use and Engineering Geology

This site was found to be suitable for the proposed development; however, geologic conditions in certain areas will impose some minor constraints on development and land use. These include areas of artificial fill, potentially expansive soils, potential seasonally shallow groundwater areas, and the potential for elevated radon levels. These conditions are discussed in greater detail in this report.

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

2 GENERAL SITE CONDITIONS AND PROJECT DESCRIPTION

The topography of the site is generally gradually to moderately sloping to the west, with several minor drainages in the eastern and southern portions of the site. The drainages were dry at the time of our site observations. A tributary of West Cherry Creek is located in the southern extent of the site. West Cherry Creek which flows north is located on the west side of Highway 83. The site boundaries are indicated in the USGS Map (Figure 2). Previous land uses have included rural residential. Vegetation observed on the site includes field grasses, weeds, and Ponderosa Pines with landscaped areas around the existing residences. Site photographs are included in Appendix A.

The project consists subdividing of the 48-acres into fifteen rural residential lots. The lots will be 2.5 to 3.65 acres and will be serviced by individual water wells and OTWS. The proposed lot configuration is shown in the Site and Exploration Plan (Figure 3). Grading plans were not available at the time of this investigation, however, grading is anticipated to be minimal, limited to road grading associated with the extension of Needles Drive, and the construction of the proposed detention pond.

3 SCOPE OF THE REPORT

The scope of this report includes a general geologic analysis utilizing published geologic data. Detailed site-specific mapping was conducted to obtain general information with respect to major geographic and geologic features, geologic descriptions, and their effects on the development of the property in accordance with the El Paso Land Development Code.

4 FIELD INVESTIGATION

Our field investigation consisted of the preparation of a geologic map of any bedrock features and significant surficial deposits. The site was also evaluated using the Web Soil Survey from the Natural Resource Conservation Service (NRCS), formerly known as the Soil Conservation Service (SCS). The position of mappable units within the subject property is shown on the Geologic Map. Our mapping procedures involved both field reconnaissance and measurements and air photo reconnaissance and interpretation. The same mapping procedures have also been utilized to produce the Geology/Engineering Geology Map, which identified pertinent geologic conditions affecting development. The field mapping was performed by personnel of Entech on April 29, 2026. Site photographs are included in Appendix A.

Six (6) test borings were drilled and Six (6) tactile test pits were excavated on the site to evaluate the soil conditions and to determine the classification and engineering characteristics of the soils. The borings were drilled to depths of 20 feet using a truck-mounted, continuous flight auger drilling rig supplied and operated by Entech. The test pits were excavated with a mini-excavator operated by Entech to depths of 4 to 8 feet.

The locations of the test boring and test pits are indicated on the Site and Exploration Plan (Figure 3). The Test Boring and Test Pit Logs are included in Appendix B, and Laboratory Test Results are included in Appendix C. The results of the testing will be discussed later in this report.

Laboratory testing was performed to classify and determine the engineering characteristics of the soils. Laboratory tests included moisture content testing (ASTM D2216), grain-size analysis (ASTM D6913), and Atterberg Limits testing (ASTM D4318). Results of the laboratory testing are included in Appendix C.

5 SOIL, GEOLOGY, AND ENGINEERING GEOLOGY

5.1 General Geology

The site lies in the western portion of the Great Plains Physiographic Province just north of the Palmer Divide. A major structural feature known as the Rampart Range Fault lies approximately 8 miles to the west. This fault marks the boundary between the Great Plains Physiographic Province and the Southern Rocky Mountain Province. The site exists within the southwestern edge of a large structural feature known as the Denver Basin. Bedrock in the area tends to be very gently dipping in a northeasterly direction (Reference 1). The rocks in the area of the site are sedimentary in nature and typically Tertiary to Cretaceous in age. The bedrock underlying the site consists of the Dawson Arkose Formation of Tertiary to Cretaceous Age. Overlying this formation are unconsolidated deposits of colluvium, sheetwash, and residual soils of Quaternary Age. The residual soils are produced by the in-situ action of weathering of the bedrock on site. Some colluvial soils deposited by gravity and sheetwash exist. The site's stratigraphy will be discussed in more detail in Section 5.3.

5.2 Soil Conservation Survey

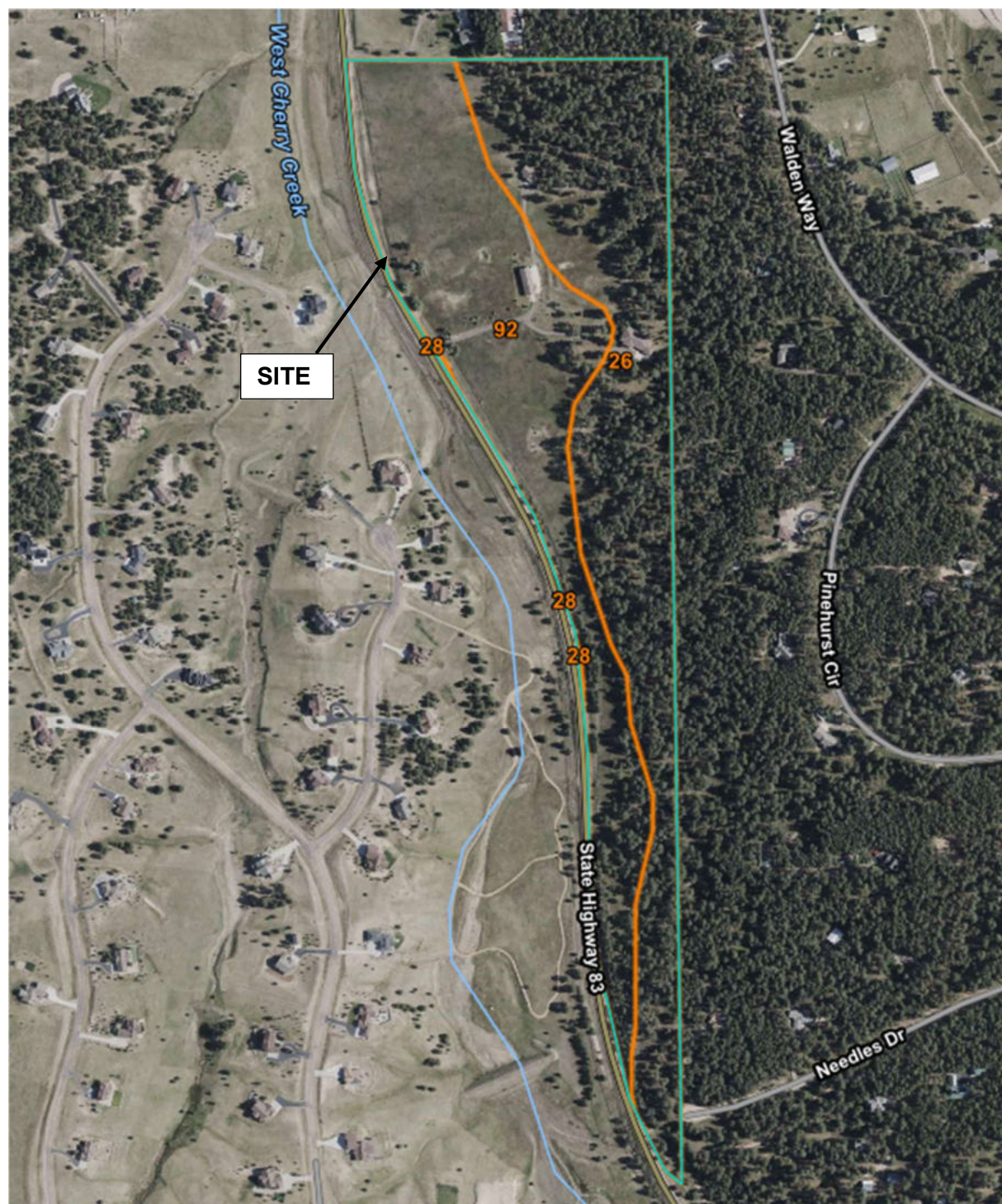
The Natural Resource Conservation Service (Reference 2), previously the Soil Conservation Service (Reference 3), has mapped three soil types on the site. In general, they are loamy sands. The soils are described in Exhibit 1, and shown in Exhibit 2.

Exhibit 1: Soil Survey Description

Type	Description
26	Elbeth sandy loam, 8 to 15% slopes
28	Ellicott loamy coarse sand, 0 to 5% slopes
92	Tomah-Crowfoot loamy sands, 3 to 8% slopes

Exhibit 2: USDA – Web Soil Survey

Soil Map – El Paso County Area, Colorado



Complete descriptions of each soil type are presented in Appendix D. The soils have generally been described as having moderately high to high permeabilities. Limitations on development include limited ability to support a load, shrink-swell potential, slopes, and frost action potential. Possible hazards with soil erosion are present on the site. The erosion potential can be controlled with vegetation. The soils have been described to have moderate erosion hazards.

5.3 Site Stratigraphy

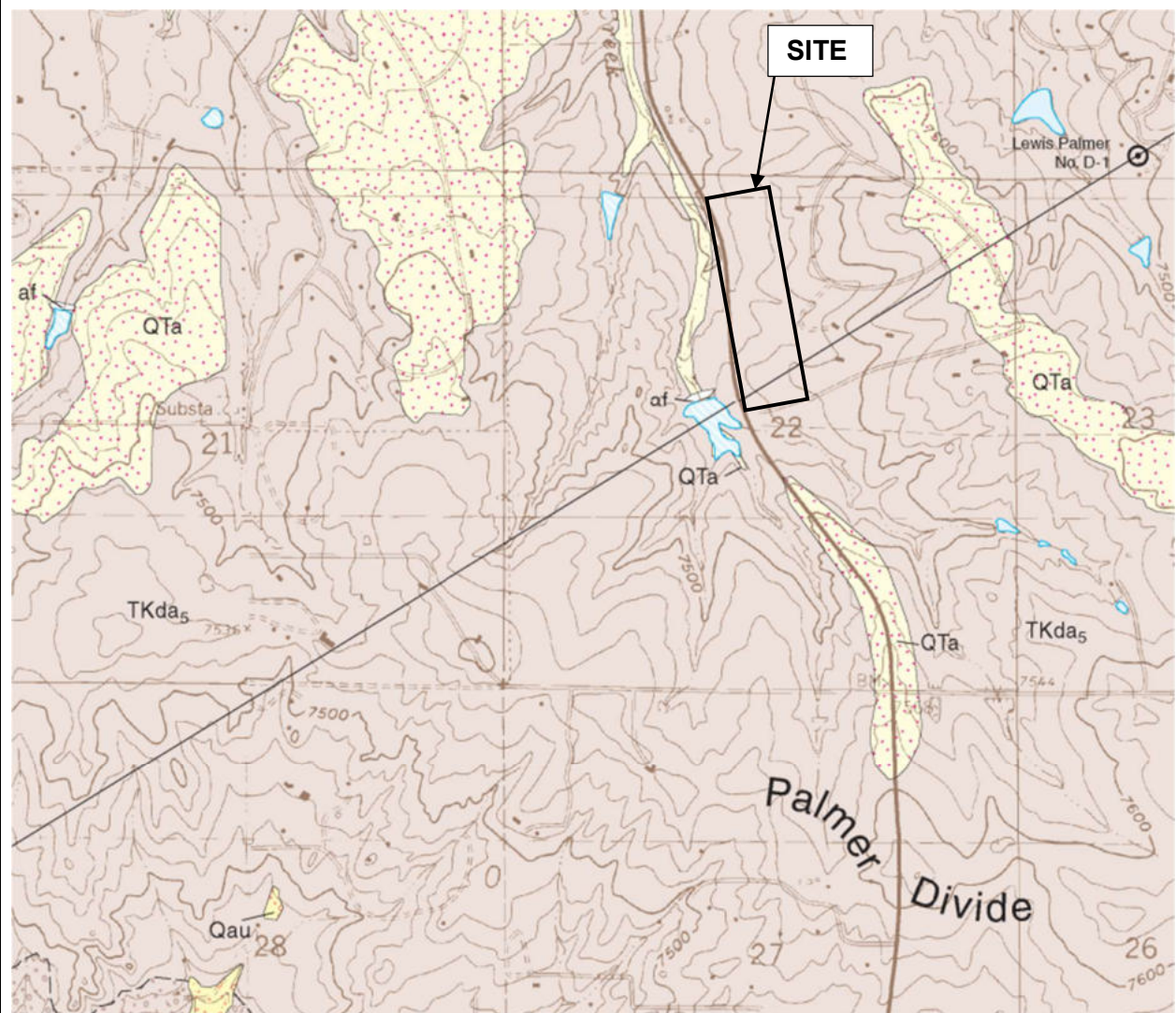
The Geologic Map of the Monument Quadrangle showing the site is presented in Exhibit 4 below (Reference 4). The Geology/Engineering Geology Map prepared for the site is presented in Figure 4. One mappable unit was identified on this site that are described as follows:

Qc/Tkd Colluvium of Quaternary Age overlying Dawson Formation of Tertiary to Cretaceous Age: The Dawson Formation typically consists of arkosic sandstone with interbedded fine-grained sandstone, siltstone, and claystone. Overlying this formation is a variable layer of colluvium and residual soils. The residual soils were derived from the in-situ weathering of the bedrock materials on-site. These soils consist of clayey sands and sandy clays. The colluvial materials are derived from the bedrock materials and have been re-deposited by the action of sheetwash and gravity.

The soils listed above were mapped from site-specific mapping, the *Geologic Map of the Black Forest Quadrangle* distributed by the Colorado Geological Survey in 2003 (Reference 4), the *Geologic Map of the Colorado Springs-Castle Rock Area*, distributed by the US Geological Survey in 1979 (Reference 5), and the *Geologic Map of the Denver 1° x 2° Quadrangle*, distributed by the US Geological Survey in 1981 (Reference 6). The Test Borings and Test Pit Logs used in evaluating the site are included in Appendix B. The Geology/Engineering Geology Map prepared for the site is presented in Figure 4.

Exhibit 3: Geologic Map of the Monument Quadrangle

Colorado Geological Survey – OF-02-04



5.4 Soil Conditions

The soils encountered in the test borings drilled on the site can be grouped into three general soil and rock types. The soils were classified using the Unified Soil Classification System (USCS).

Soil Type 1 classified as a silty to clayey sand (SM, SC). The sand was encountered in all test borings at the existing surface and extending to depths of 1 foot to 17 feet below the existing grade surface (bgs) and to the termination depth of TB-3 and TB-6 (20 feet). The sand was encountered at loose to dense states and moist conditions.

Soil Type 2 classified as a sandy silt (ML). The silt was encountered in TB-5 at the existing surface extending to 12 feet bgs. The silt was encountered at stiff to very stiff states and moist conditions.

Soil Type 3 classified as highly weathered sandstone or silty sand when classified as a soil (SM). The sandstone was encountered in all test borings at depths of 1 foot to 7 feet bgs and extending to the termination depth of the borings (20 feet). The sandstone was encountered at very dense to dense states and moist conditions.

Although clays, claystone, or siltstone were not encountered in the test borings, they are common in the area of the project site. Claystone and siltstone are commonly interbedded in the Dawson Formation. Clays, claystone, and siltstone in the project area are typically expansive.

The test boring logs and laboratory test results pertaining to this investigation are included in Appendix B.

5.5 Groundwater

Groundwater was not encountered in the test borings during or subsequent to drilling. Redoximorphic features were only encountered in TP-6 at a depth of 6 feet during excavation. Areas of potentially seasonal shallow groundwater have been mapped in the drainages and some low-lying areas on the site. These areas are discussed in the following section. Fluctuation in groundwater conditions may occur due to variations in rainfall and other factors including development of the site and surrounding areas.

For the sandy materials on site, it should be noted that some groundwater conditions might be encountered due to the variability in the soil profile. Isolated sand and gravel layers within the soils, sometimes only a few feet in thickness and width, can carry water in the subsurface. Groundwater may also flow on top of the underlying bedrock or clays. Builders and planners should monitor potential occurrences of such subsurface water features during construction on-site and mitigate as necessary at the time of construction.

6 ENGINEERING GEOLOGY – IDENTIFICATION AND MITIGATION OF GEOLOGIC HAZARDS

Detailed mapping has been performed on this site to produce a Geology/Engineering Geology Map (Figure 6). This map shows the location of various geologic conditions the developers should monitor during the planning, design, and construction stages of the project. No significant geologic hazards were identified on the site; however, the following constraints have been identified on the site: artificial fill, potentially expansive soils, potentially shallow and seasonally shallow groundwater areas, drainage areas, downslope creep, potentially unstable slopes, and the potential for elevated radon levels. These constraints and the recommended mitigation techniques are discussed below.

Artificial Fill – Constraint

These are areas of man-placed fill associated with the existing road/drive on the site. Other areas of fill may exist on the site other than those mapped.

Mitigation: The fill on this site is not located within any potential building areas. Any uncontrolled fill encountered beneath foundations will require removal and recompaction at a minimum of 95% of the Modified Procter (ASTM D1557) maximum dry density.

Collapsible Soils – Constraint

The majority of the soils encountered on site do not exhibit collapsible characteristics, however, areas of very silty and/or loose soils were encountered in TB-5.

Mitigation: Should loose or collapsible soils be encountered beneath foundations, recompaction of the upper 2 feet of soil at a minimum of 95% of the Modified Procter (ASTM D1557) maximum dry density may be necessary. Exterior flatwork and driveway areas may also experience movement. Proofrolling and recompaction of soft areas should be performed during site work.

Potentially Expansive Soils – Constraint

The site is classified in an area of low swell potential according to the *Map of Potentially Swelling Soil and Rock in the Front Range Urban Corridor, Colorado* by Hart, 1974 (Reference 7). Expansive clays and claystone bedrock are commonly interbedded in the Dawson Formation. These occurrences are typically sporadic; therefore, none have been indicated on the maps. These clays, if encountered beneath foundations, can cause differential movement in the structure foundation. The sand and sandstone soils are anticipated to exhibit low expansion

potentials. If potentially expansive materials are found during excavation, they will need to be mitigated. Expansive soils were not encountered in the test borings. Expansive soils should be identified and mitigated on an individual basis.

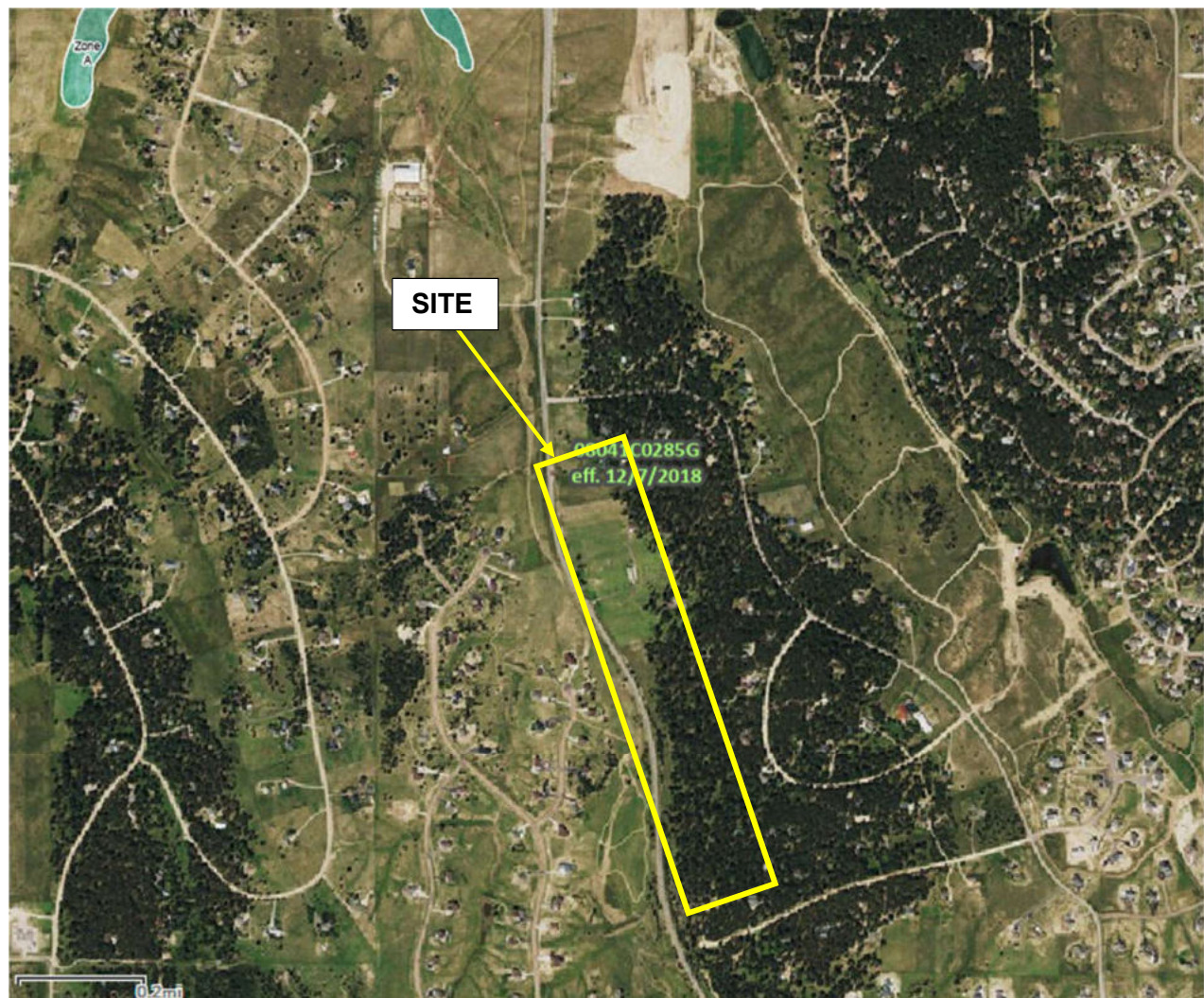
Mitigation: Should expansive soils be encountered beneath foundations; mitigation will be necessary. Mitigation of expansive soils will require special foundation design. Overexcavation and replacement with non-expansive soils at a minimum of 95% of the Modified Proctor (ASTM D1557) maximum dry density is a suitable mitigation, which is common in the area. Overexcavation depths of 3 to 5 feet may be necessary depending on soil conditions. Another alternative in areas of highly expansive soils is the use of drilled pier foundation systems. Typical minimum pier depths are on the order of 25 feet or more and require penetration into the bedrock material a minimum of 4 to 6 feet, depending upon building loads. Floor slabs on expansive soils should be expected to experience movement. Overexcavation and replacement have been successful in minimizing slab movements. The use of structural floors should be considered for basement construction on highly expansive clays. Final recommendations should be made after additional investigation of each building site.

Drainage and Floodplain Areas – Constraint

The site is not located within any mapped floodplains according to FEMA Map No. 08041C0285G (Figure 6, Reference 8). West Cherry Creek which flows north is located on the west side of Highway 83. Several minor drainage swales were observed on the site, located in the northeastern and southern portions of the site. A tributary of West Cherry Creek is located in the southern extent of the site. The drainages onsite were dry at the time of our site observations, however, the potential for seasonal shallow groundwater exists in these areas. These areas are discussed further below. Specific drainage studies and floodplain locations are beyond the scope of this report.

Exhibit 4: FEMA Flood Map

FEMA Map No. 08041C0285G, eff. 12/7/2018



Potentially Seasonal Shallow Groundwater Areas – Constraint

In these areas, we would anticipate periodic high subsurface moisture conditions and frost heave potential on a seasonal basis. Groundwater was not encountered in the test borings during or subsequent to drilling. Redoximorphic features were encountered in TP-6 at a depth of 6 feet during excavation, but were not encountered in the remaining test pits. Any structures in or adjacent to potentially shallow groundwater areas should follow the mitigation discussed below.

Mitigation: Foundations on this site must have a minimum 30-inch depth for frost protection. Buildings should typically be set a minimum of 3 feet above groundwater levels if possible. Subsurface perimeter drains are recommended for any usable below-grade. If groundwater is

encountered within 3 feet of foundation grade, additional drains that may include but are not limited to interceptor drains, underslab drains (capillary break) may be required. Overexcavation drains may be needed in areas of expansive soils. Typical drain details are presented in Figures 5 through 7. Any grading in these areas should be done to direct surface flows around structures to avoid areas of ponded water. Structures should not block drainages. All organic material should be completely removed prior to any fill placement.

Slope Stability and Landslide Susceptibility – Hazard

The majority of the slopes on the site are gradually to moderately sloping and do not exhibit any past or potential unstable slopes or landslides. Any future site grading should be no steeper than 3:1 unless specifically analyzed.

Debris Flow Susceptibility – Hazard

The site is not located within an area of debris flow susceptibility according to the *Debris Flow Susceptibility Map of El Paso County, Colorado* by McCoy et al. in 2018 (Reference 10).

Radon – Hazard

Radon is a colorless, tasteless radioactive gas with a United States Environmental Protection Agency (EPA) specified action level of 4.0 picocuries per liter (pCi/L) of air. Radon gas has a very short half-life of 3.8 days. Radon levels for the area have been reported by the Colorado Geologic Survey in the open file, Report No. 91-4 (Reference 11). The average radon level for the 80908 zip code is 3.40 pCi/l. The average radon levels are presented in Exhibit 2 below.

Exhibit 5: Average Radon Levels

Average Radon Levels for the 80908 Zip Code	
0 < 4 pCi/L	50.00%
4 < 10 pCi/L	50.00%
10 < 20 pCi/L	0.00%
> 20 pCi/L	0.00%

Mitigation: The potential for high radon levels is present for the site. Build-up of radon gas can usually be mitigated by providing increased ventilation of basement and crawlspace and sealing joints. **Specific requirements for mitigation should be based on site specific testing.**

6.1 Relevance of Geologic Conditions to Land Use Planning

We understand that the development will be rural residential. Fifteen lots 2.5 to 3.65-acres in size are proposed. Two residences (Lots 4 and 9) with existing water wells and on-site wastewater systems (OWTS) and a barn (Lot 7) currently located on the property and are expected to remain. Records for the existing OWTS located on the property are included in Appendix E. It is our opinion that the existing geologic and engineering geologic conditions will impose some minor constraints on the proposed development. The most significant constraints will be those associated with the potentially collapsible, potentially seasonal shallow groundwater in minor swales, and the potential for elevated radon levels. The constraints/hazards on the site may be satisfactorily mitigated through proper engineering design and construction practices.

The granular soils were generally encountered at medium dense to very dense states. The granular soils encountered in the upper soil profiles of the test boring should provide good support for foundations. Foundations anticipated for the site are standard spread footings on the medium dense granular soils or sandstone bedrock.

Expansive layers may also be encountered in the soil and bedrock on this site. Areas of expansive soils on site are expected to be sporadic; therefore, none have been indicated on the maps. Expansive soils, if encountered, will require special foundation design and/or overexcavation. These soils will not prohibit development. Overexcavation and replacement with non-expansive soils is a suitable mitigation. Site-specific subsurface investigations will need to be conducted.

In summary, development of the site can be achieved if the items mentioned above are mitigated. These items can be mitigated through proper design and construction or through avoidance. Investigation of the individual lots and building sites is required prior to construction.

7 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 12), the site is not mapped within any aggregate resources. According to the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 13), areas of the site are not mapped with any resources. According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 14), the area of the site has been mapped as "Little or No Potential" for industrial minerals. It is possible that sand materials on site could be an aggregate resource. However, considering the silty to clayey nature of many of these materials,

the abundance of similar materials throughout the region, shallow bedrock, and the proximity to developed land, 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 14), 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 near the site. No metallic mineral resources have been mapped on the site (Reference 14).

The site has been mapped as “Fair” for oil and gas resources (Reference 14). No oil or gas fields have been discovered near the site. The sedimentary rocks in the area may lack the geologic structure for trapping oil or gas; therefore, they may not be considered a significant resource. Hydraulic fracturing is a new method used to extract oil and gas from rocks. It utilizes pressurized fluid to extract oil and gas from rocks that would not normally be productive. The area of the site has not been explored to determine if the rocks underlying the site would be commercially viable utilizing hydraulic fracturing. The practice of hydraulic fracturing has come under review due to concerns about environmental impacts, health, and safety.

8 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.

Regarding 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 synthetic channel lining materials available 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 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.

9 PRIVATE DRIVEWAY AND ROADWAY CONSTRUCTION RECOMMENDATIONS

The site soils encountered in the test boring are suitable for the proposed embankments, driveways and roads. 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 or flatter unless specifically analyzed. The subgrade should be scarified and moisture conditioned to within 2% of optimum moisture content and compacted to a minimum of 95% of the Modified Proctor (ASTM D1557) maximum dry density 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 the Modified Proctor (ASTM D1557) maximum dry density. These materials should be placed at a moisture content conducive to compaction, usually 0 to +/-2% of the Proctor optimum moisture content. The placement and compaction of fill should be observed and tested by Entech during construction. Entech should approve any imported materials prior to placing or hauling them to the site. Additional investigation will be required for roadway improvements.

10 CLOSURE

It is our opinion that the existing geologic engineering and geologic conditions will impose some minor constraints on the proposed development and construction. The site conditions can be mitigated through proper engineering design and construction practices. The proposed development and use are consistent with anticipated geologic and engineering geologic conditions.

It should be pointed out that because of the nature of data obtained by random sampling of such variable and non-homogeneous 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. Construction and design personnel should be made familiar with the contents of this report. Additional investigation is recommended on each lot as plans are generated prior to construction.

This report has been prepared for North Park, LLC for application to the proposed project in accordance with generally accepted geologic soil and engineering practices. No other warranty, expressed or implied, is made.

We trust that this report has provided you with all the information that you require. Should you require additional information, please do not hesitate to contact Entech Engineering, Inc.

11 REFERENCES

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FIGURES



VICINITY MAP

NORTH PARK SUBDIVISION
NORTH PARK, LLC

JOB NO.
260494

FIG. 1

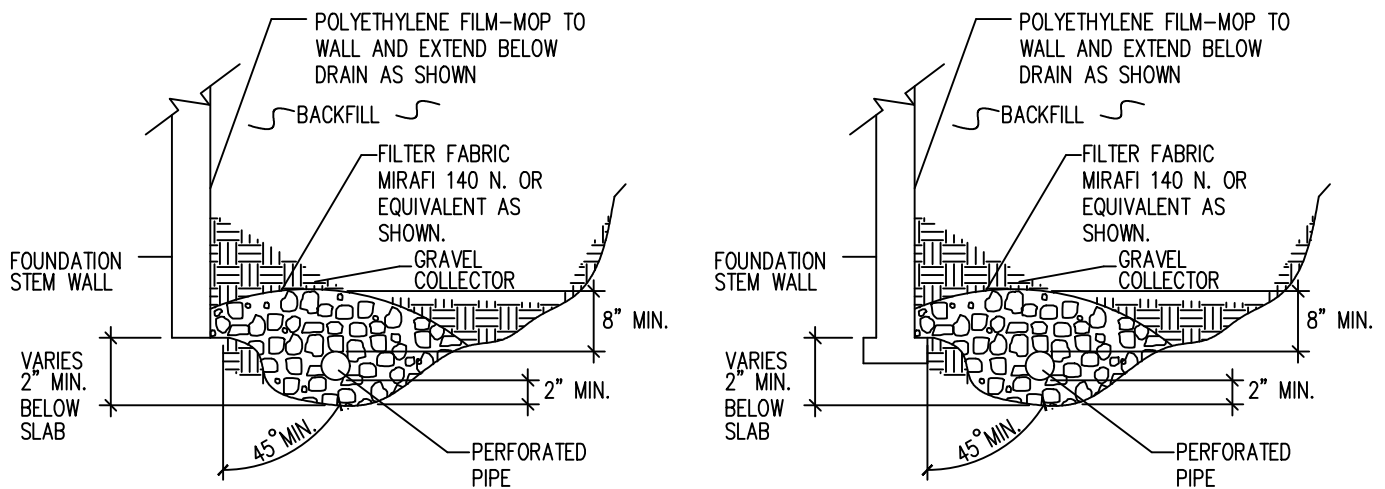


USGS TOPOGRAPHY MAP

NORTH PARK SUBDIVISION
NORTH PARK, LLC

JOB NO.
260494

FIG. 2



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.

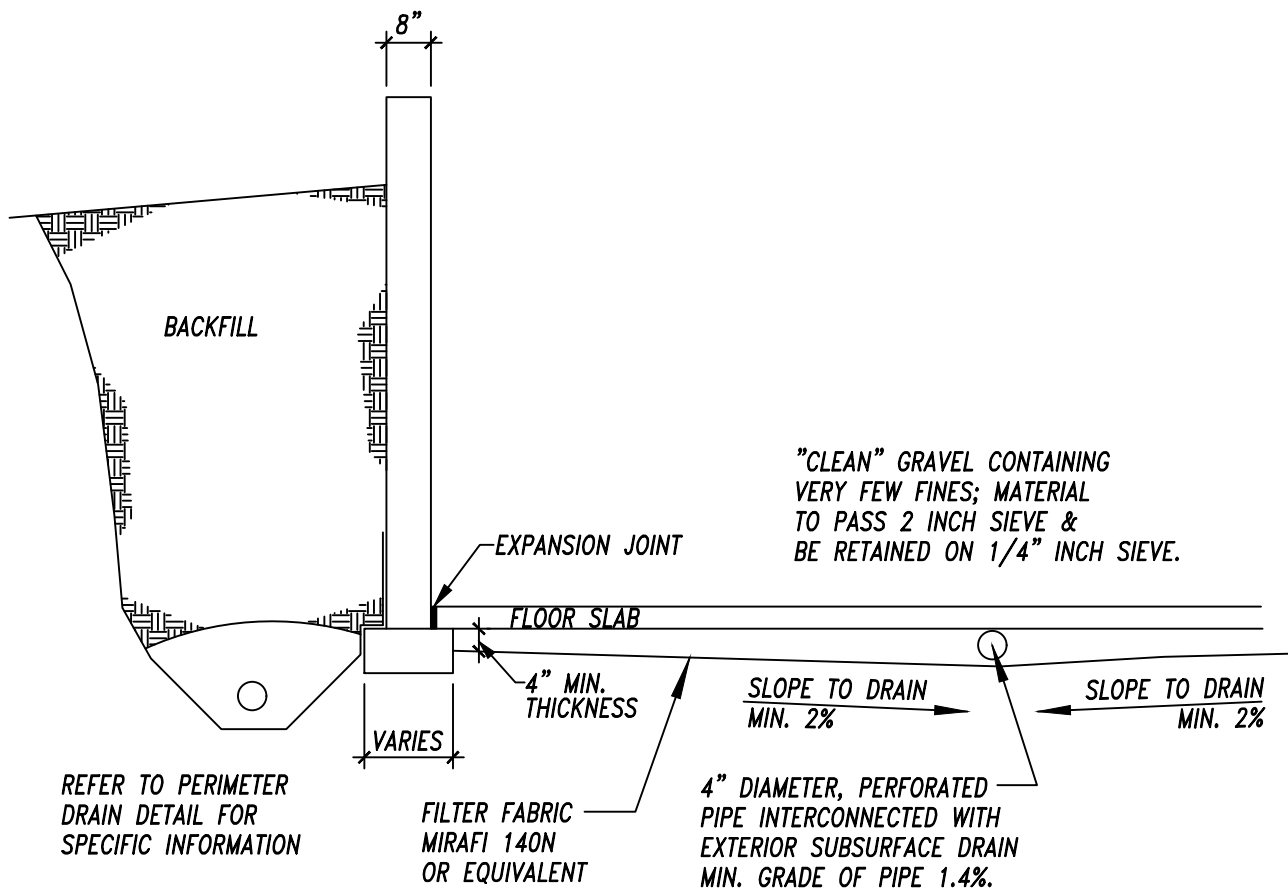


PERIMETER DRAIN DETAIL

NORTH PARK SUBDIVISION
NORTH PARK, LLC

JOB NO.
260494

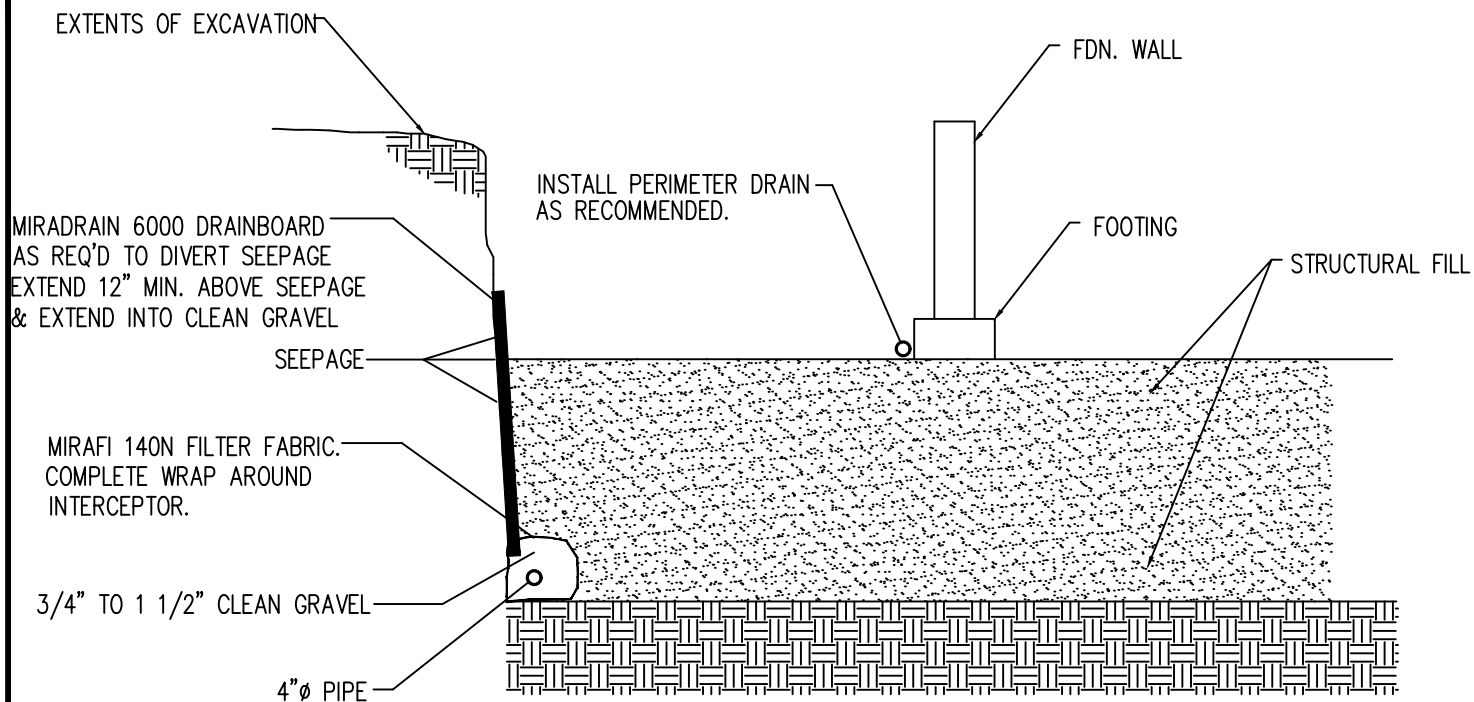
FIG. 5



**TYP. UNDERSLAB DRAINAGE LAYER
(CAPILLARY BREAK)**
NORTH PARK SUBDIVISION
NORTH PARK, LLC

JOB NO.
260494

FIG. 6



NOTE:
EXTEND INTERCEPTOR DRAIN TO UNDERDRAIN OR TO SUMP.
BENCH DRAIN INTO NATIVE SOILS 12 INCHES MINIMUM.

INTERCEPTOR DRAIN DETAIL

N.T.S.



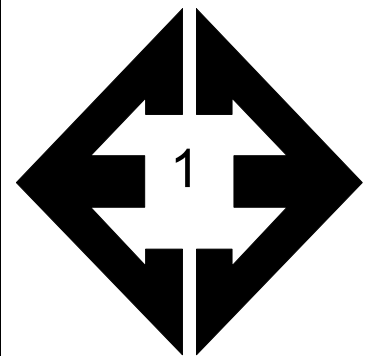
INTERCEPTOR DRAIN DETAIL

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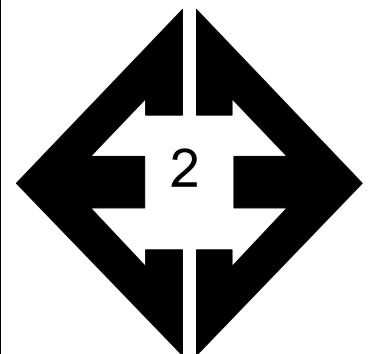
FIG. 7

APPENDIX A: Site Photographs



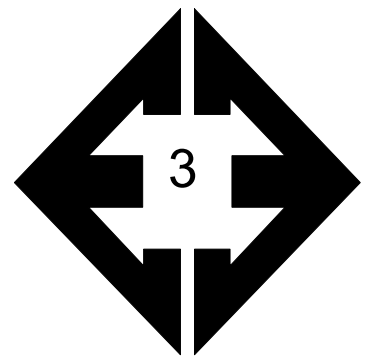
**Looking south from
the northern portion of
the site.**

April 8, 2026



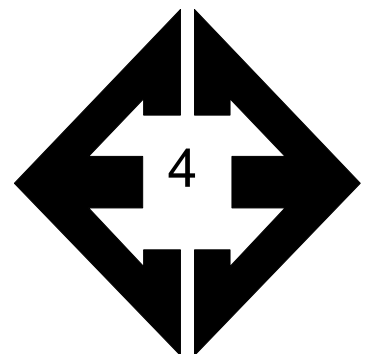
**Looking north from the
northern portion of the
site.**

April 8, 2026



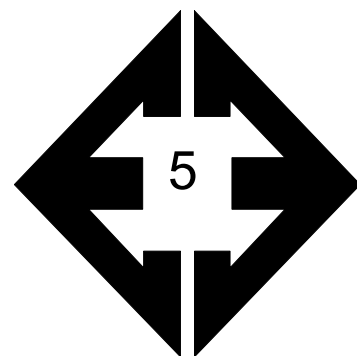
**Looking west towards
proposed detention
pond area in the
northern portion of the
site.**

April 8, 2026



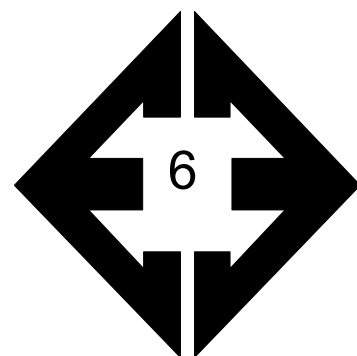
**Looking east along
minor drainage swale
Lot 3.**

April 8, 2026



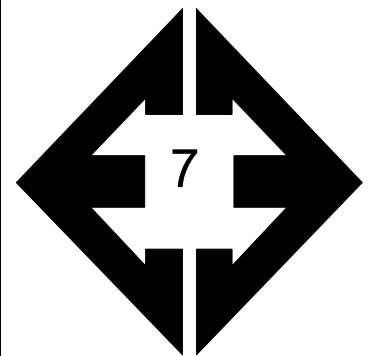
**Looking northeast
towards existing
residence on Lot 8.**

April 8, 2026



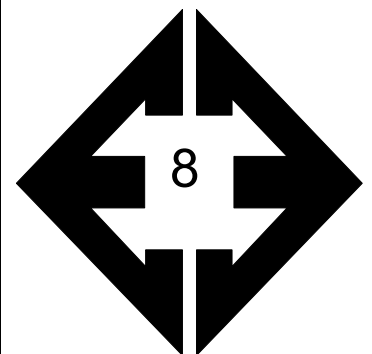
**Looking north from the
southern portion of the
site.**

April 8, 2026



**Looking east from the
southern portion of the
site.**

April 8, 2026



**Looking southeast
along minor drainage
swale Lot 14**

April 8, 2026

APPENDIX B: Test Boring and Test Pit Logs

TEST BORING 1
DATE DRILLED 3/26/2026
REMARKS

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 4/15/26					
6" TOPSOIL					
SAND, SILTY, BROWN to TAN, DENSE to LOOSE, MOIST to DRY			17	4.6	1
5			31	2.5	1
10			22	2.2	1
15			9	6.9	1
SANDSTONE, EXTREMELY WEAK, LIGHT RED, HIGHLY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)			50 10"	9.4	3

TEST BORING 2
DATE DRILLED 3/26/2026
REMARKS

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 4/15/26					
6" TOPSOIL					
SAND, SILTY, TAN			50 9"	3.1	3
SANDSTONE, EXTREMELY WEAK, TAN, HIGHLY WEATHERED (SAND, WITH SILT, VERY DENSE, MOIST)			50 5"	3.6	3
5					
10			50 7"	7.6	3
15			50 8"	6.4	3
20			50 6"	4.2	3



TEST BORING LOGS

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FIG. B-1

TEST BORING 3
DATE DRILLED 3/26/2026
REMARKS

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 4/15/26					
6" TOPSOIL					
SAND, CLAYEY, LIGHT BROWN, MEDIUM DENSE to DENSE, DRY to MOIST			20	1.8	1
			41	5.3	1
SAND, SILTY, TAN, DENSE to MEDIUM DENSE, MOIST			32	6.3	1
			23	7.1	1
			33	11.5	1

TEST BORING 4
DATE DRILLED 3/26/2026
REMARKS

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 20', 4/15/26					
9" TOPSOIL					
SAND, SILTY, TAN, MEDIUM DENSE, DRY			10	1.4	1
			12	1.5	1
SANDSTONE, EXTREMELY WEAK, TAN, HIGHLY WEATHERED (SAND, WITH SILT, VERY DENSE, MOIST)			50 9"	5.8	3
			50 7"	5.8	3
			38	10.5	3



TEST BORING LOGS

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FIG. B-2

TEST BORING 5
DATE DRILLED 3/26/2026
REMARKS

DRY TO 20', 4/15/26

6" TOPSOIL

SILT, SANDY, BROWN, VERY STIFF
to STIFF, MOIST

SANDSTONE, EXTREMELY WEAK,
TAN, HIGHLY WEATHERED (SAND,
WITH SILT, VERY DENSE, MOIST)

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			22	8.0	2
5			13	3.5	2
10			23	10.0	1
15			50 9"	5.9	3
20			50 7"	8.5	3

TEST BORING 6
DATE DRILLED 3/26/2026
REMARKS

DRY TO 20', 4/15/26

6" TOPSOIL

SAND, SILTY, TAN, MEDIUM
DENSE to DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			23	3.5	1
5			35	3.5	1
10			20	4.4	1
15			20	5.4	1
20			11	7.6	1



TEST BORING LOGS

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260494

FIG. B-3

TABLE B-1
DEPTH TO BEDROCK

TEST BORING	DEPTH TO BEDROCK (ft.)
1	17
2	1
3	>20
4	9
5	12
6	>20

TEST PIT 1
DATE EXCAVATED 4/15/2026

REMARKS

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil 0-24", sandy loam, dark brown, moist	1					
	2					
sandy loam, fine to coarse grained with gravel, light brown, moist	3			gr	w	2A
	4					
	5					
sandy loam, fine to medium grained, light brown, moist	6			gr	w	2A
	7					
	8					
	9					
	10					

TEST PIT 2
DATE EXCAVATED 4/15/2026

REMARKS

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
refusal at 4'	1					
topsoil 0-6", sandy loam, dark brown, moist	2					
sandy loam, fine to medium grained, light brown, moist	3			gr	w	2A
	4			ma		3A R1
very gravelly, sandy clay, fine to coarse grained, light brown, moist (residually weathered sandstone)	5					
	6					
	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
structureless - sl



TEST PIT LOGS

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FIG. B-4

TEST PIT 3
DATE EXCAVATED 4/15/2026
REMARKS

refusal @ 5.5'

topsoil 0-6", sandy loam, dark brown, moist

sandy loam, fine to coarse grained, light brown, moist

gravelly, sandy clay loam, fine to coarse grained, light brown, moist (redissually weathered sandstone)

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
1			gr	w	2A
2					
3					
4			ma		3A R1
5					
6					
7					
8					
9					
10					

TEST PIT 4
DATE EXCAVATED 4/15/2026
REMARKS

refusal @ 5'

topsoil 0-12", sandy clay loam, dark brown, moist

gravelly, sandy loam, fine to coarse grained, tan, moist

gravelly, sandy clay, fine to coarse grained, light brown, moist (redissually weathered sandstone)

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
1					
2					
3			gr	m	2
4			ma		3A R1
5					
6					
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



TEST PIT LOGS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
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FIG. B-5

TEST BORING 5
DATE DRILLED 4/15/2026

REMARKS

refusal @ 5'

topsoil 0-18", sandy clay, dark brown, moist

sandy loam, fine to coarse grained, light brown, moist

gravelly, sandy clay loam, fine to coarse grained, light brown, moist (redissually weathered sandstone)

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
1					
2			gr	w	2A
3					
4			ma		3A R1
5					
6					
7					
8					
9					
10					

TEST BORING 6
DATE DRILLED 4/15/2026

REMARKS

topsoil 0-12", sandy clay loam, dark brown, moist

sandy clay loam, fine to coarse grained, brown to light brown, moist

gravelly, sandy clay, fine to coarse grained, light brown, moist (redissually weathered clayey sandstone)
*redoximorphic features at 6'

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
1					
2			gr	w	3A
3					
4					
5					
6			bl	m	4A R1
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



TEST PIT LOGS

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NORTH PARK, LLC

JOB NO.
260494

FIG. B-6

APPENDIX C: Laboratory Test Results

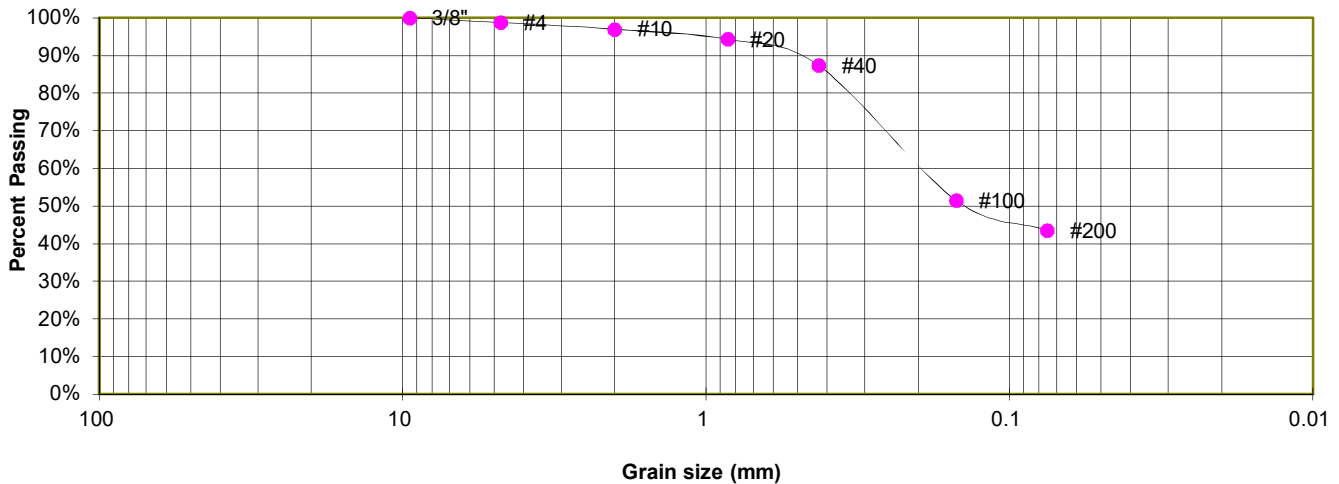
TABLE C-1
SUMMARY OF LABORATORY TEST RESULTS

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	SULFATE (WT %)	FHA SWELL (PSF)	USCS	SOIL DESCRIPTION
1	1	2-3	43.6	NV	NP	NP		160	SM	SAND, SILTY
1	3	5	22.7	28	19	9	<0.01		SC	SAND, CLAYEY
1	4	2-3	13.4						SM	SAND, SILTY
1	6	5	29.9						SM	SAND, SILTY
2	5	10	53.4						ML	SILT, SANDY
3	2	10	11.4	NV	NP	NP	0.00		SW-SM	SANDSTONE (SAND, WITH SILT)

TEST BORING	1
DEPTH (FT)	2-3

SOIL DESCRIPTION SAND, SILTY
SOIL TYPE 1

Sieve Analysis Grain Size Distribution



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.8%
10	97.0%
20	94.3%
40	87.3%
100	51.5%
200	43.6%

ATTERBERG LIMITS

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

FHA SWELL

Moisture at start	14.0%
Moisture at finish	17.5%
Moisture increase	3.4%
Initial dry density (pcf)	102
Swell (psf)	160

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



LABORATORY TEST RESULTS

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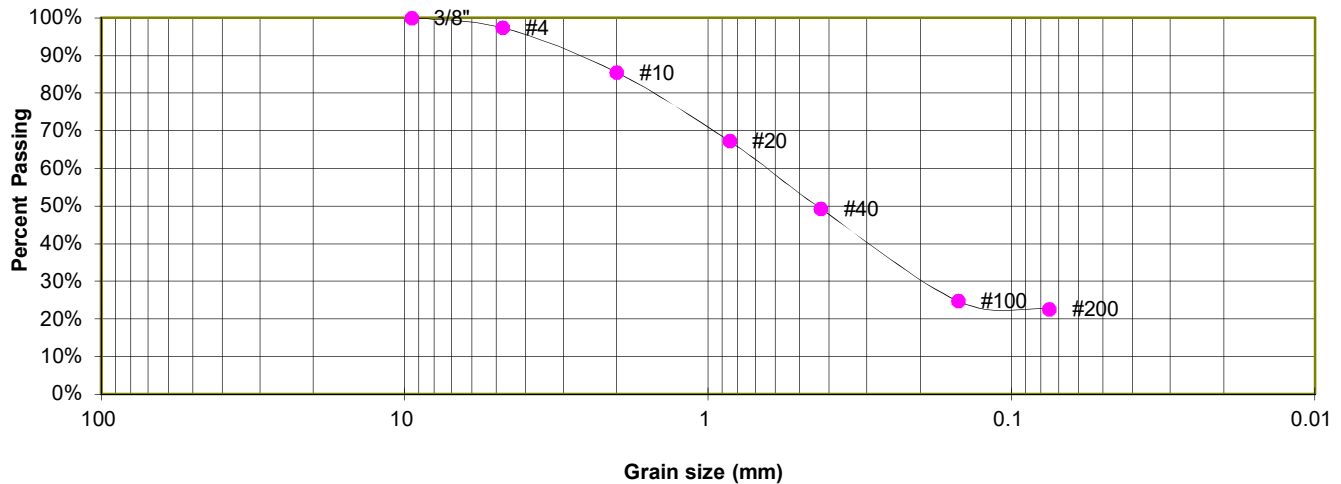
JOB NO.
260494

FIG. C-1

TEST BORING	3
DEPTH (FT)	5

SOIL DESCRIPTION SAND, CLAYEY
SOIL TYPE 1

Sieve Analysis Grain Size Distribution



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.4%
10	85.5%
20	67.3%
40	49.3%
100	24.7%
200	22.7%

ATTERBERG LIMITS

Plastic Limit	19
Liquid Limit	28
Plastic Index	9

SOIL CLASSIFICATION

USCS CLASSIFICATION: SC



LABORATORY TEST RESULTS

17675 HIGHWAY 83
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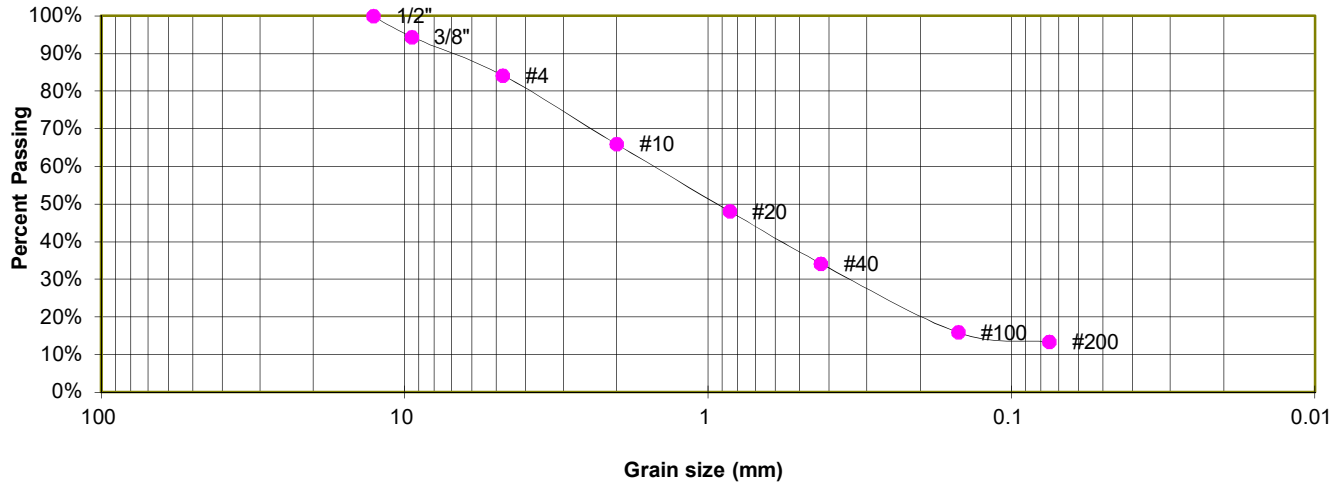
JOB NO.
260494

FIG. C-2

TEST BORING 4
DEPTH (FT) 2-3

SOIL DESCRIPTION SAND, SILTY
SOIL TYPE 1

Sieve Analysis Grain Size Distribution



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	94.4%
4	84.2%
10	65.9%
20	48.1%
40	34.2%
100	15.9%
200	13.4%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

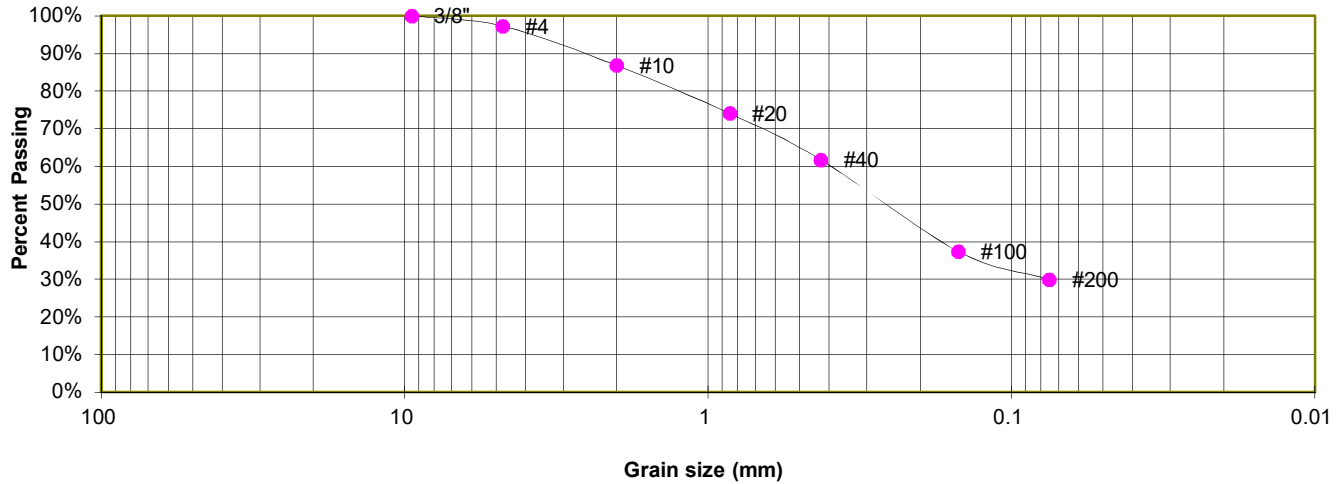
JOB NO.
260494

FIG. C-3

TEST BORING 6
DEPTH (FT) 5

SOIL DESCRIPTION SAND, SILTY
SOIL TYPE 1

Sieve Analysis Grain Size Distribution



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.3%
10	86.8%
20	74.1%
40	61.8%
100	37.4%
200	29.9%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



LABORATORY TEST RESULTS

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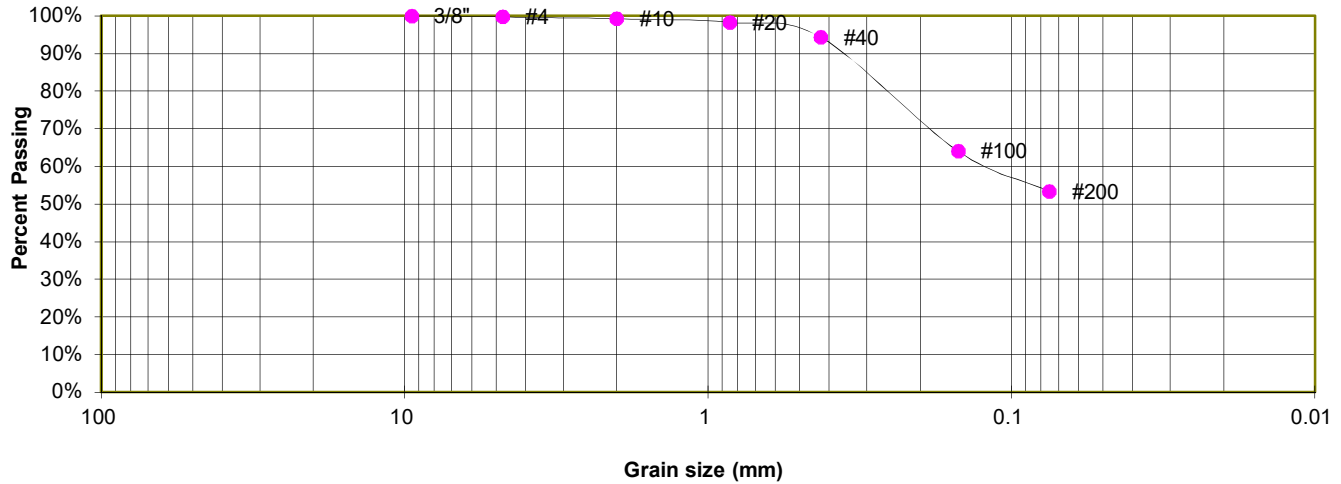
JOB NO.
260494

FIG. C-4

TEST BORING 5
DEPTH (FT) 10

SOIL DESCRIPTION SILT, SANDY
SOIL TYPE 2

**Sieve Analysis
Grain Size Distribution**



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.8%
10	99.2%
20	98.3%
40	94.3%
100	64.0%
200	53.4%

SOIL CLASSIFICATION

USCS CLASSIFICATION: ML



LABORATORY TEST RESULTS

17675 HIGHWAY 83
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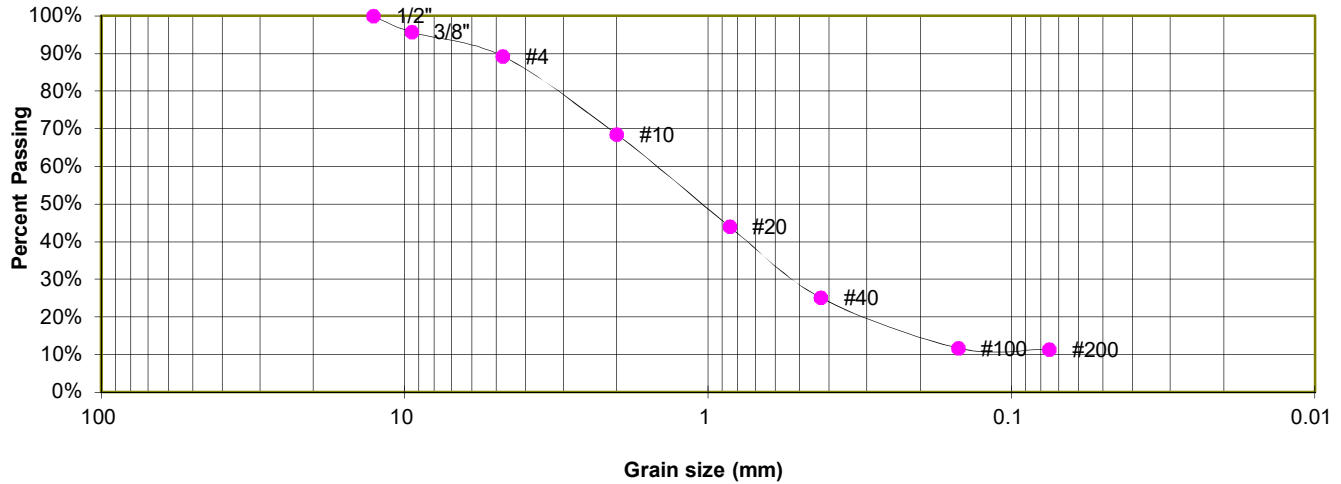
JOB NO.
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FIG. C-5

TEST BORING	2
DEPTH (FT)	10

SOIL DESCRIPTION SANDSTONE (SAND, WITH SILT)
SOIL TYPE 3

Sieve Analysis Grain Size Distribution



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	95.7%
4	89.3%
10	68.6%
20	44.0%
40	25.1%
100	11.7%
200	11.4%

ATTERBERG LIMITS

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM



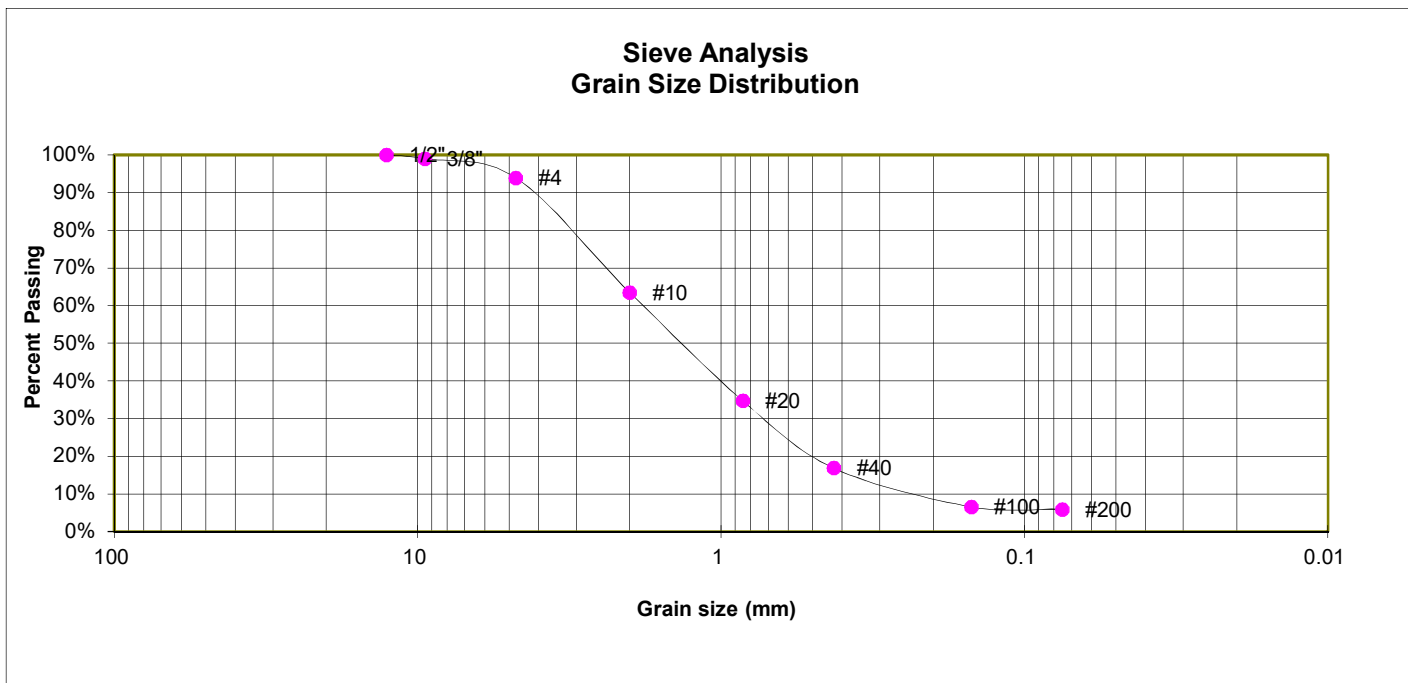
LABORATORY TEST RESULTS

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NORTH PARK, LLC

JOB NO.
260494

FIG. C-6

TEST PIT	TP-1	SOIL DESCRIPTION SAND, WITH SILT
DEPTH (FT)	24-36"	SOIL TYPE # 1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	99.0%
4	94.0%
10	63.5%
20	34.8%
40	16.8%
100	6.6%
200	5.9%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM



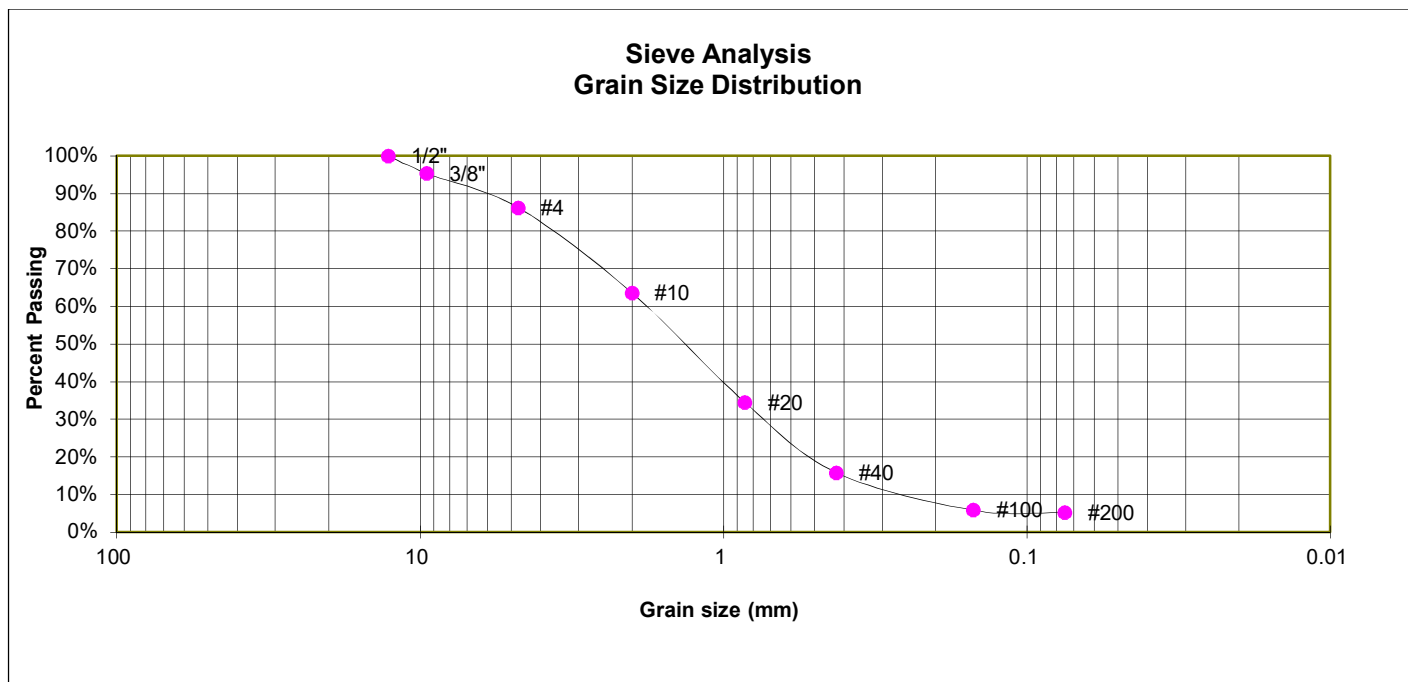
LABORATORY TEST RESULTS

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260494

FIG. C-7

TEST PIT	TP-1	SOIL DESCRIPTION SAND, GRAVELLY, WITH SILT
DEPTH (FT)	36-60"	SOIL TYPE # 1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	95.3%
4	86.2%
10	63.6%
20	34.5%
40	15.8%
100	5.8%
200	5.2%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM



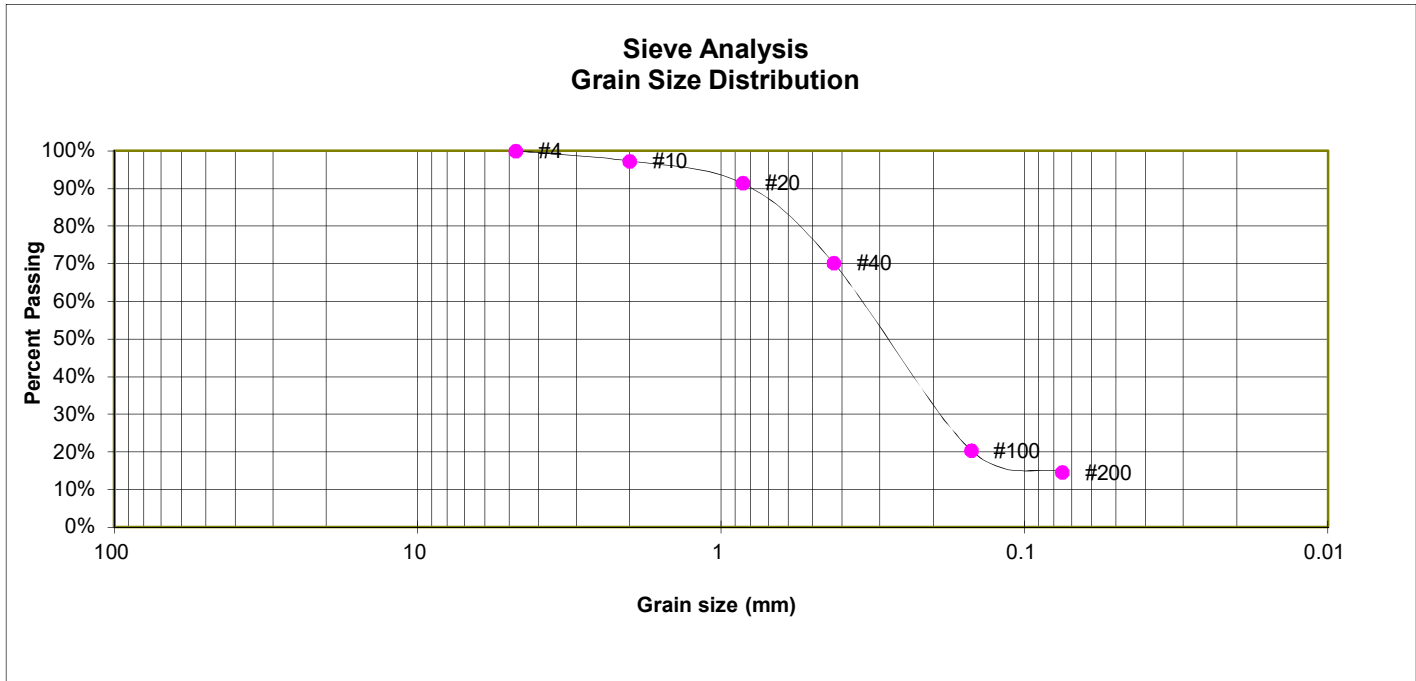
LABORATORY TEST RESULTS

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260494

FIG. C-8

TEST PIT	TP-1	SOIL DESCRIPTION SAND, SILTY
DEPTH (FT)	78-96"	SOIL TYPE # 1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	97.3%
20	91.4%
40	70.1%
100	20.4%
200	14.6%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



LABORATORY TEST RESULTS

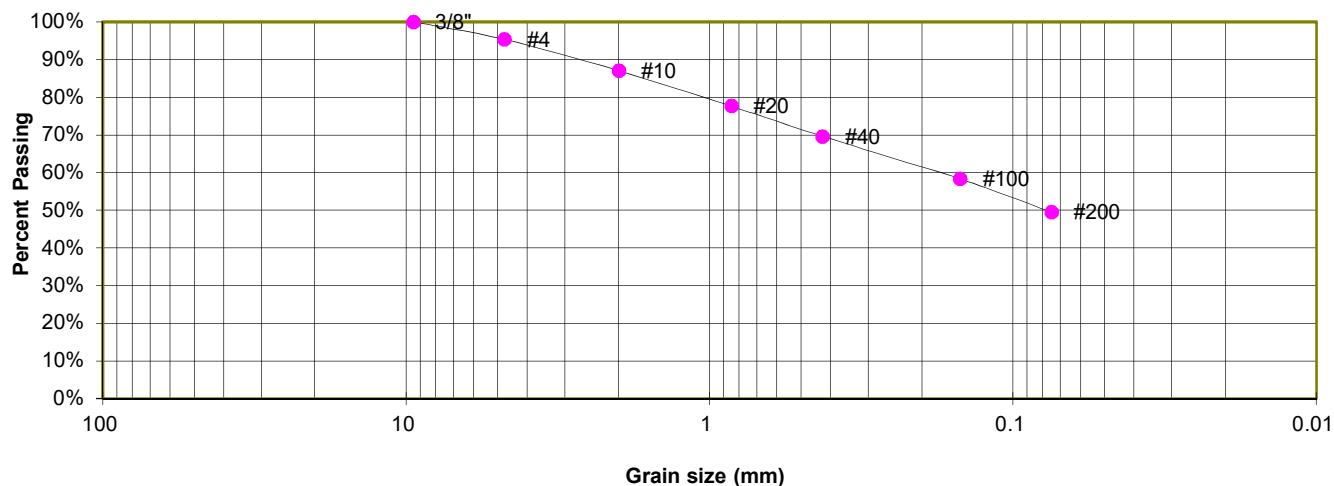
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NORTH PARK, LLC

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260494

FIG. C-9

TEST PIT	TP-2	SOIL DESCRIPTION SAND, CLAYEY
DEPTH (FT)	6-18"	SOIL TYPE # 2A

**Sieve Analysis
Grain Size Distribution**



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.4%
10	87.1%
20	77.7%
40	69.6%
100	58.3%
200	49.5%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SC



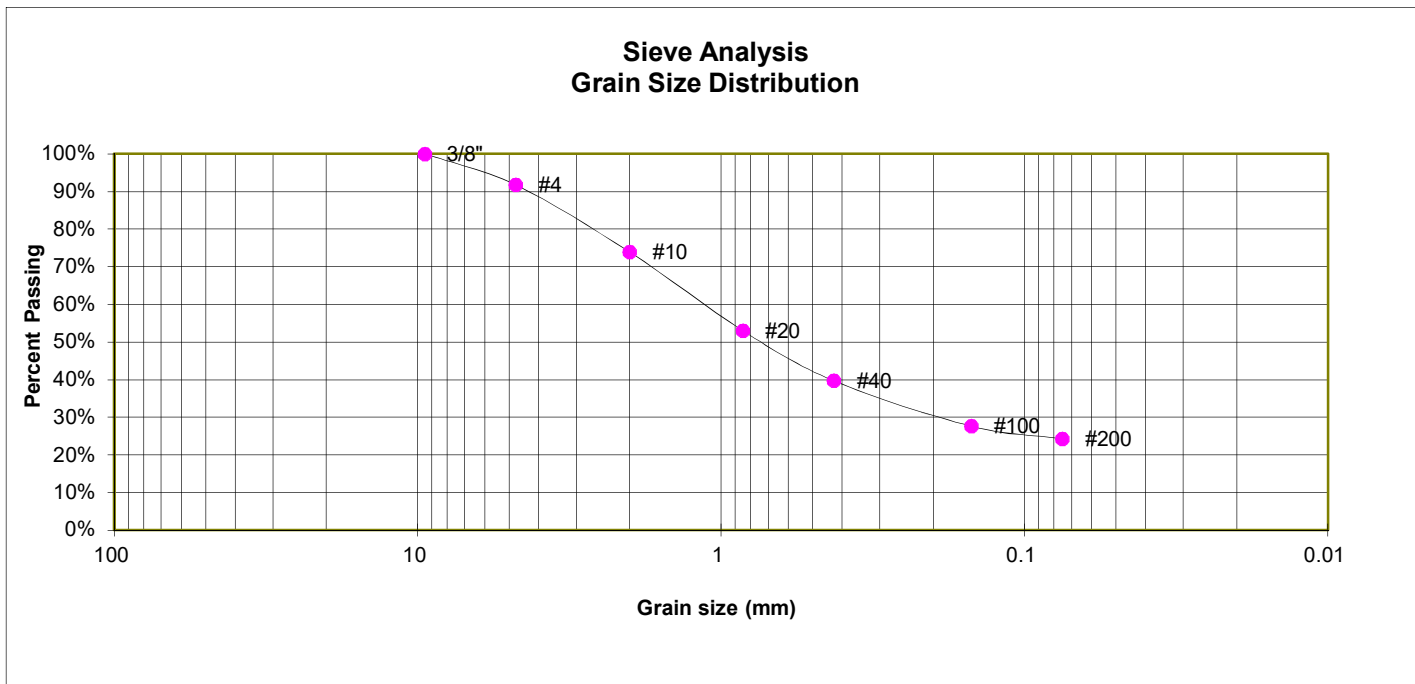
LABORATORY TEST RESULTS

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JOB NO.
260494

FIG. C-10

TEST PIT	TP-2	SOIL DESCRIPTION SAND, CLAYEY
DEPTH (FT)	12-48"	SOIL TYPE # 2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	91.7%
10	73.9%
20	53.1%
40	39.7%
100	27.6%
200	24.3%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SC



LABORATORY TEST RESULTS

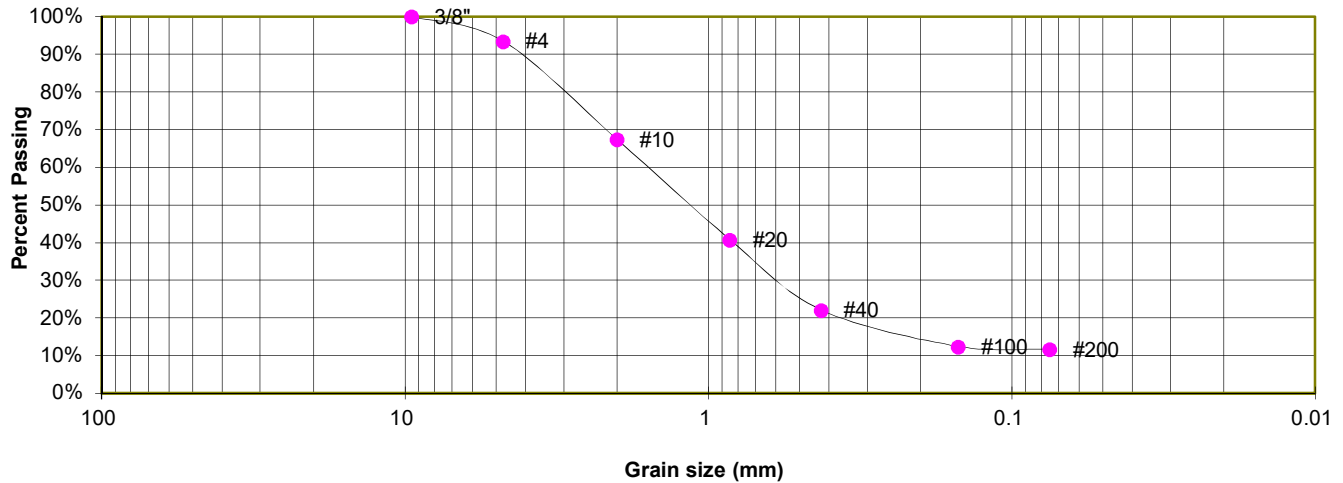
17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

FIG. C-11

TEST PIT	TP-3	SOIL DESCRIPTION SAND, WITH SILT
DEPTH (FT)	6-18"	SOIL TYPE # 1

**Sieve Analysis
Grain Size Distribution**



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	93.5%
10	67.4%
20	40.8%
40	22.1%
100	12.5%
200	11.7%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM



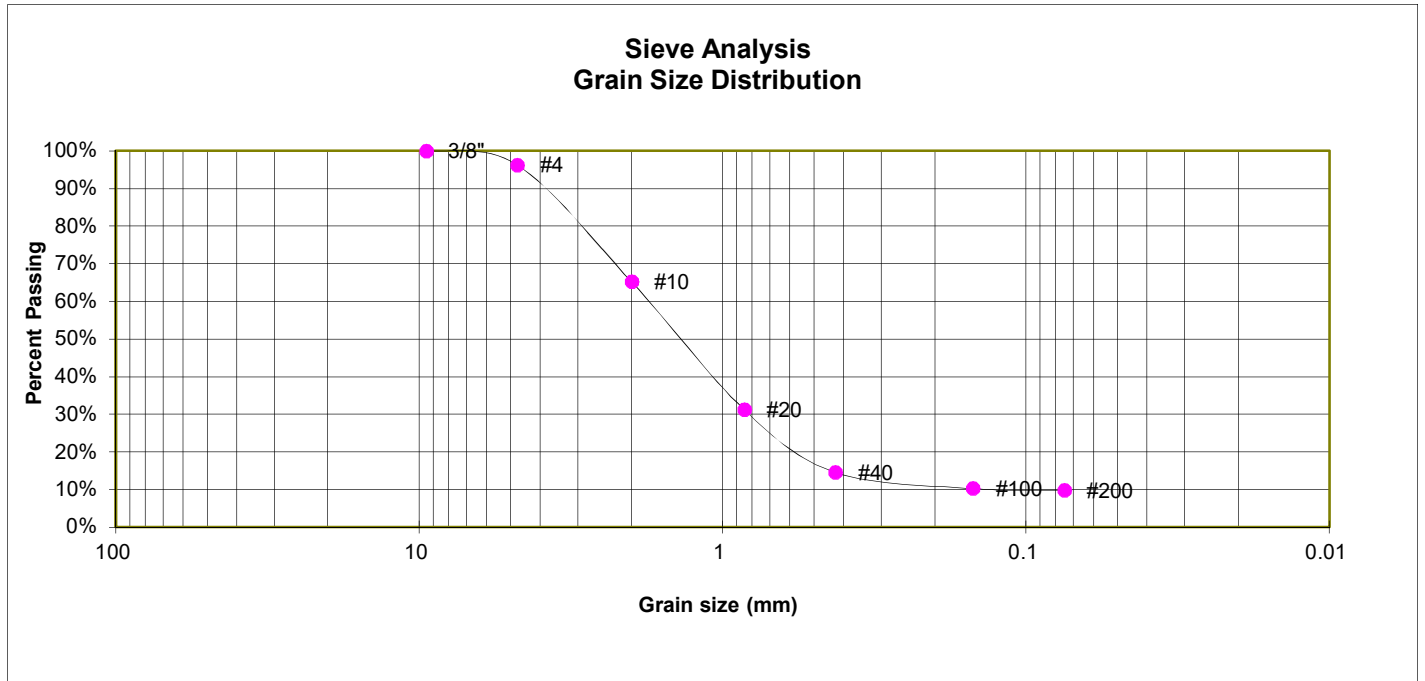
LABORATORY TEST RESULTS

17675 HIGHWAY 83
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JOB NO.
260494

FIG. C-12

TEST PIT	TP-3	SOIL DESCRIPTION SAND, WITH SILT
DEPTH (FT)	18-36"	SOIL TYPE # 1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.3%
10	65.3%
20	31.3%
40	14.6%
100	10.3%
200	9.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SP-SM



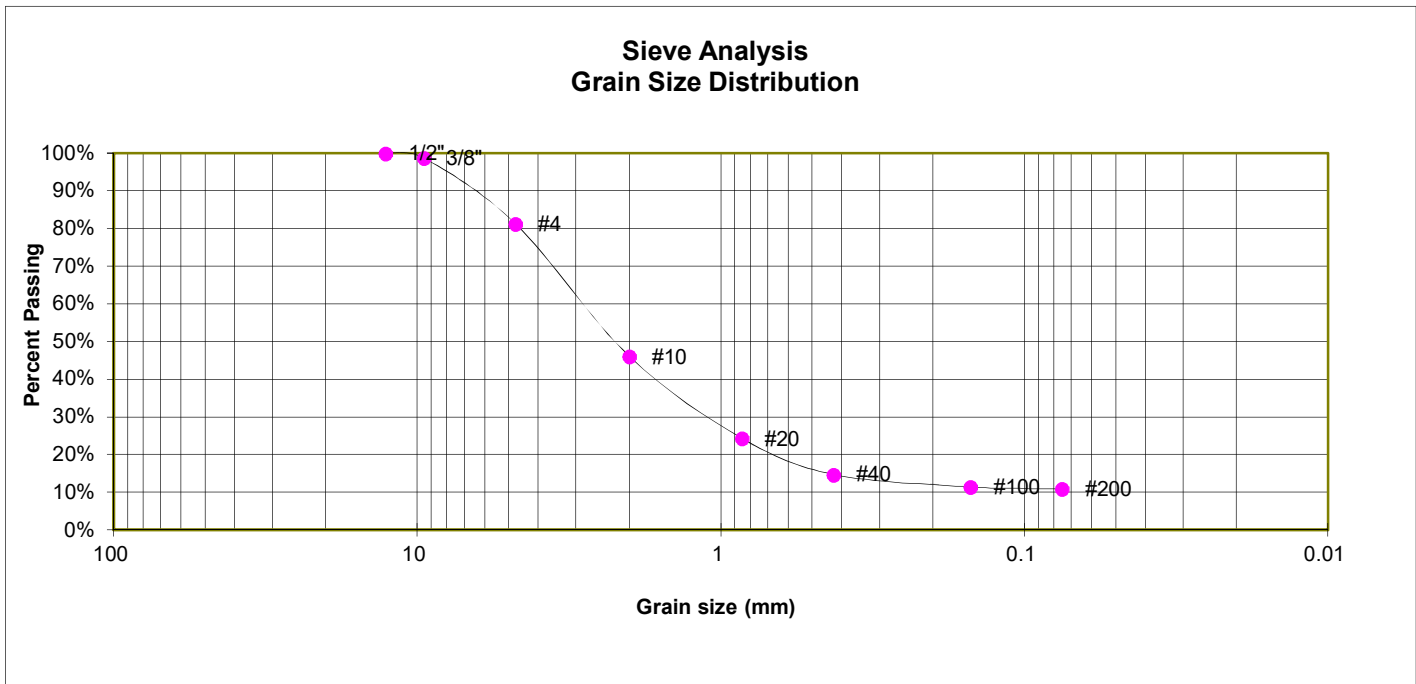
LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

FIG. C-13

TEST PIT	TP-3	SOIL DESCRIPTION SAND, WITH SILT
DEPTH (FT)	36-66"	SOIL TYPE # 1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.7%
4	81.3%
10	46.0%
20	24.2%
40	14.7%
100	11.4%
200	10.9%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SP-SM



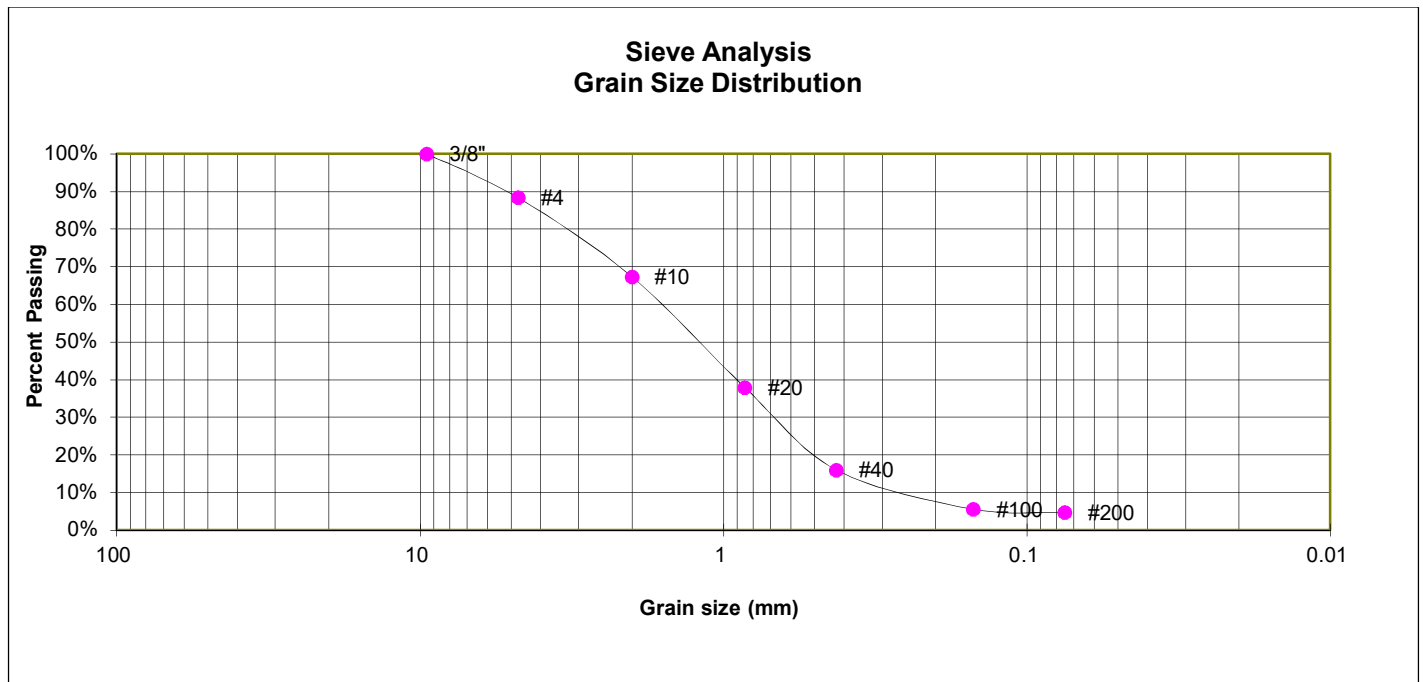
LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

FIG. C-14

TEST PIT	TP-4	SOIL DESCRIPTION SAND, SLIGHTLY SILTY
DEPTH (FT)	18-42"	SOIL TYPE # 0



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	88.4%
10	67.3%
20	37.9%
40	16.0%
100	5.6%
200	4.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SP



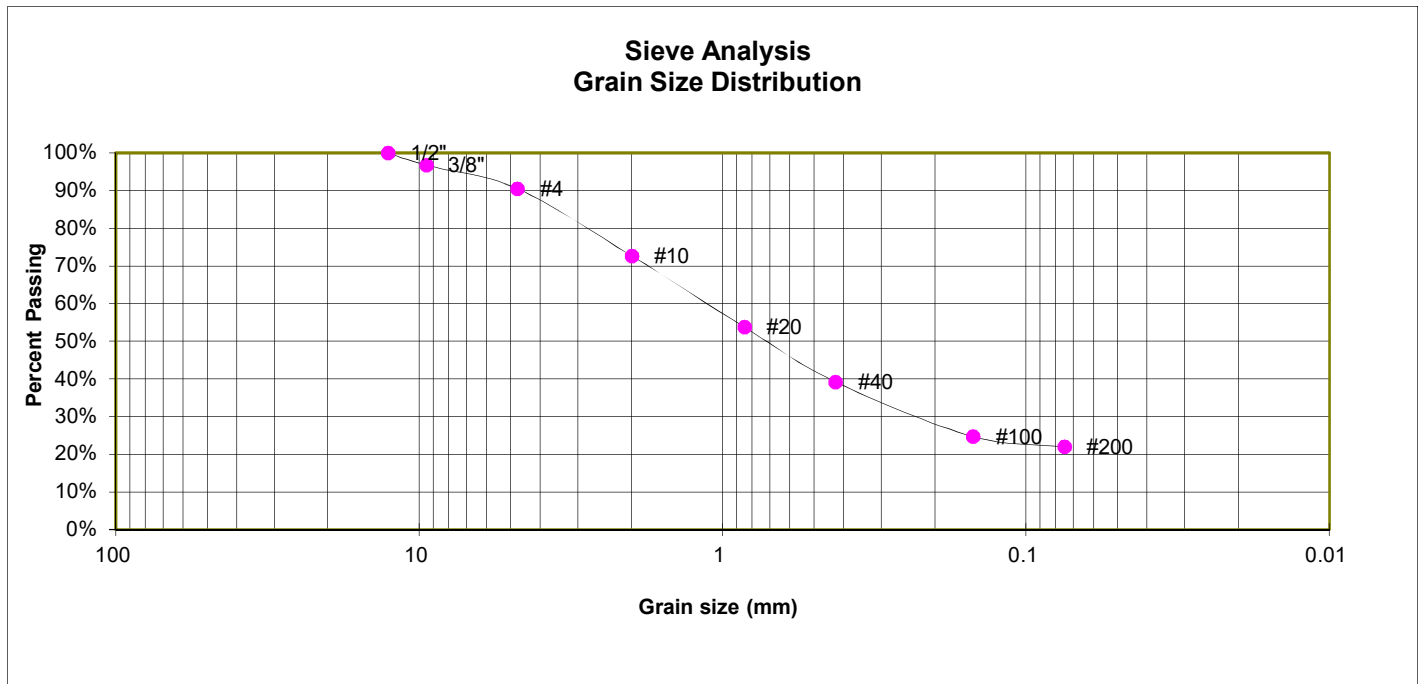
LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

FIG. C-15

TEST PIT	TP-4	SOIL DESCRIPTION SAND, CLAYEY
DEPTH (FT)	42-60"	SOIL TYPE # 2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.7%
4	90.5%
10	72.7%
20	53.8%
40	39.2%
100	24.7%
200	22.0%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SC



LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

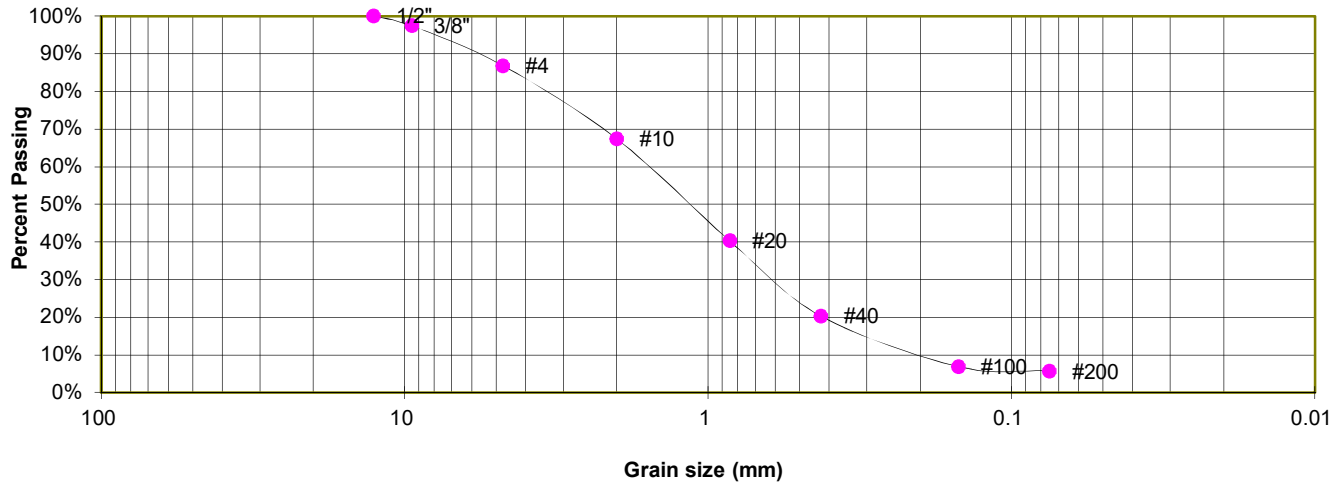
FIG. C-16

TEST PIT
DEPTH (FT)

TP-5
18-30"

SOIL DESCRIPTION SAND, GRAVELLY, WITH SILT
SOIL TYPE # 1

**Sieve Analysis
Grain Size Distribution**



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.5%
4	86.9%
10	67.4%
20	40.3%
40	20.3%
100	6.9%
200	5.7%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SW-SM



LABORATORY TEST RESULTS

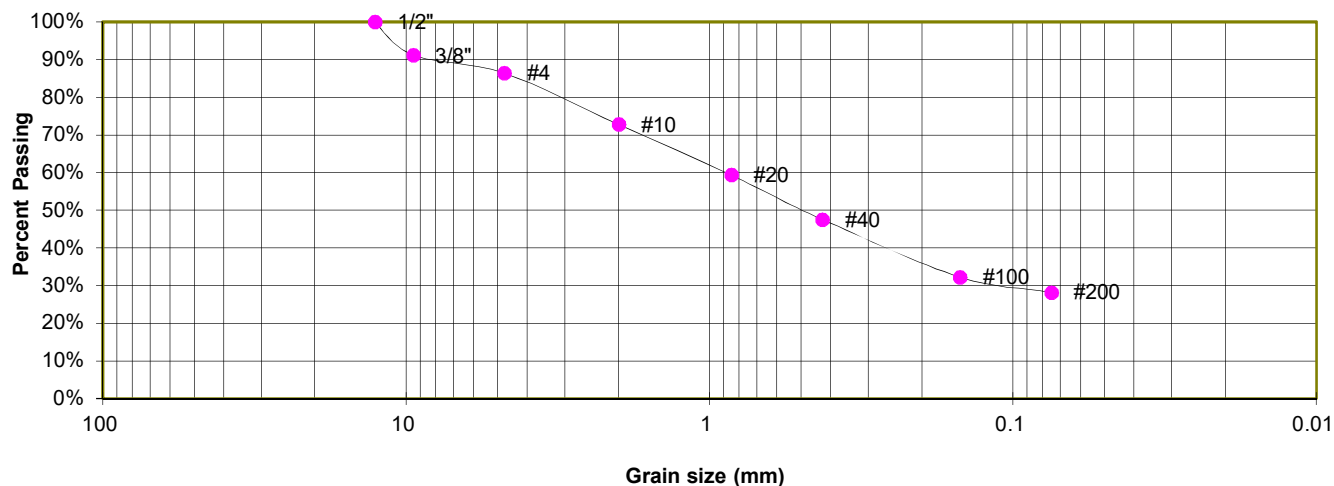
17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

FIG. C-17

TEST PIT	TP-5	SOIL DESCRIPTION SAND, GRAVELLY, CLAYEY
DEPTH (FT)	30-48"	SOIL TYPE # 2A

Sieve Analysis Grain Size Distribution



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	91.2%
4	86.4%
10	72.8%
20	59.3%
40	47.5%
100	32.3%
200	28.2%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SC



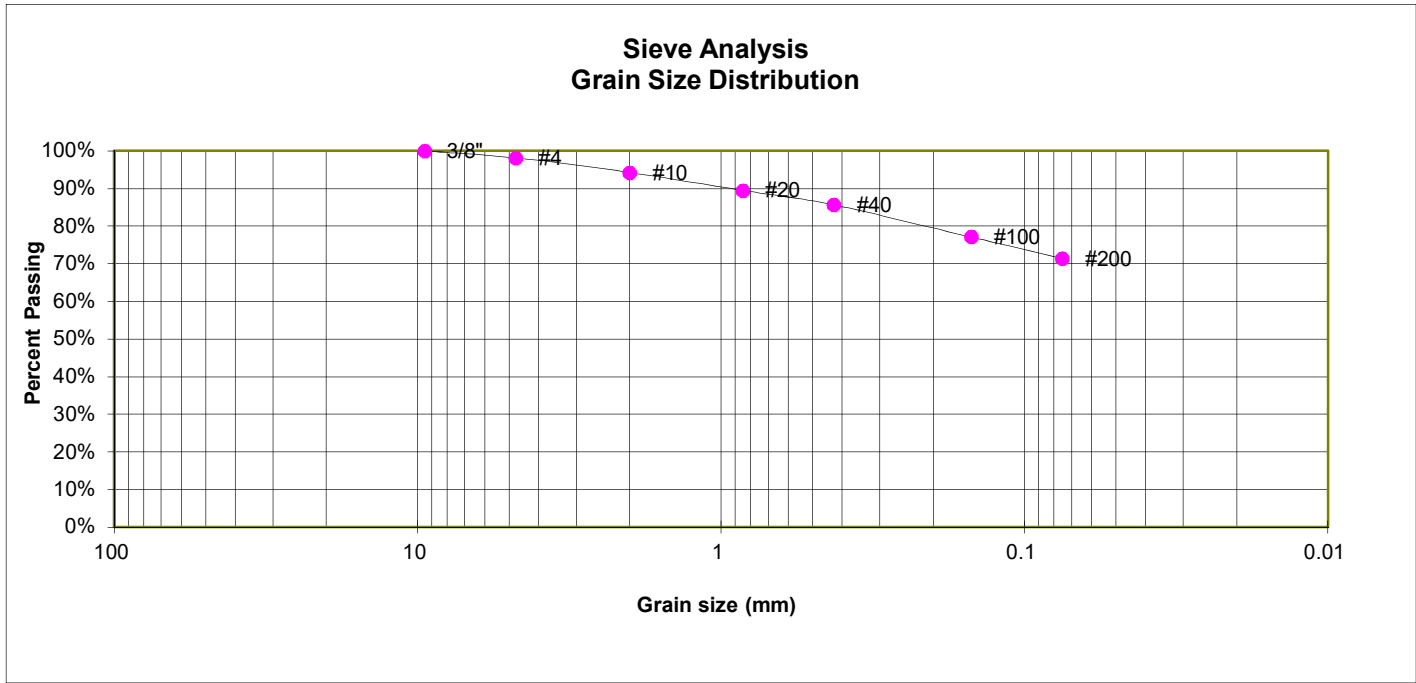
LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

FIG. C-18

TEST PIT	TP-5	SOIL DESCRIPTION	CLAY, WITH SAND
DEPTH (FT)	48-60"	SOIL TYPE #	4



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.2%
10	94.3%
20	89.5%
40	85.6%
100	77.1%
200	71.5%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL



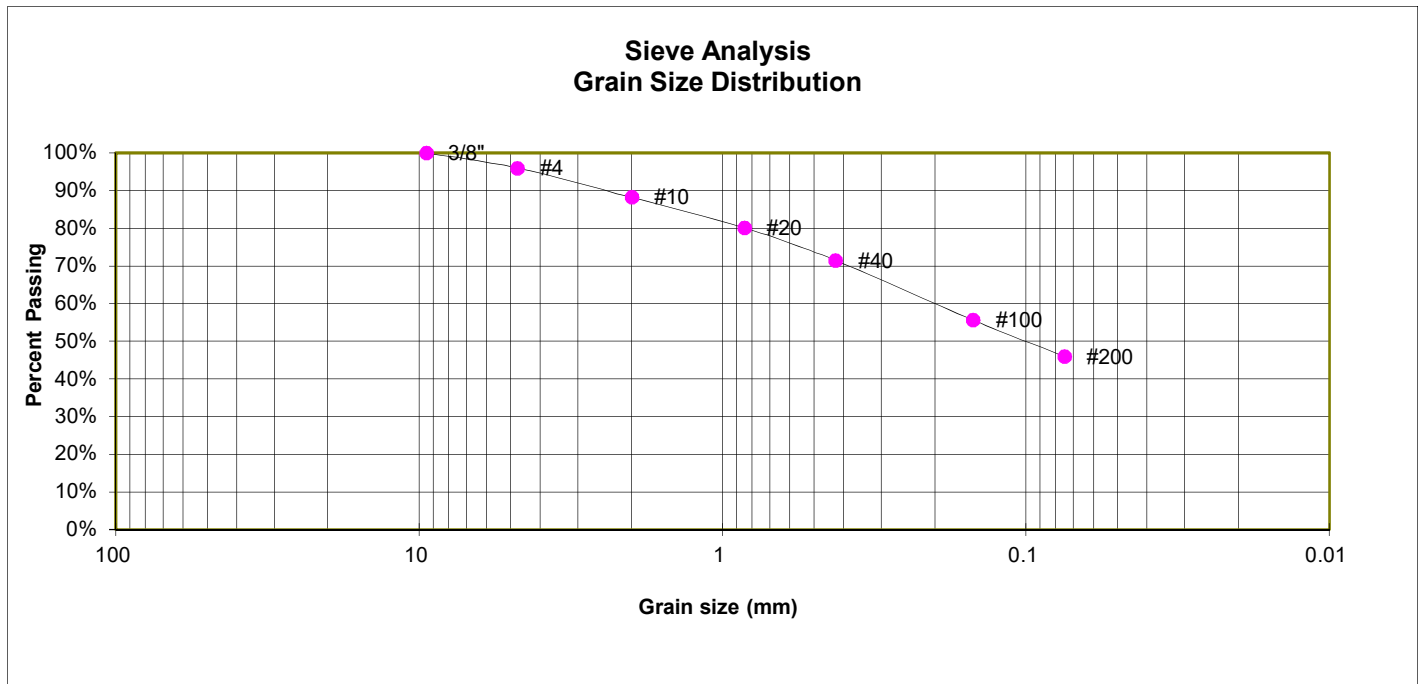
LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

FIG. C-19

TEST PIT	TP-6	SOIL DESCRIPTION SAND, CLAYEY
DEPTH (FT)	12-30"	SOIL TYPE # 3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	96.0%
10	88.2%
20	80.1%
40	71.5%
100	55.7%
200	46.0%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SC



LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

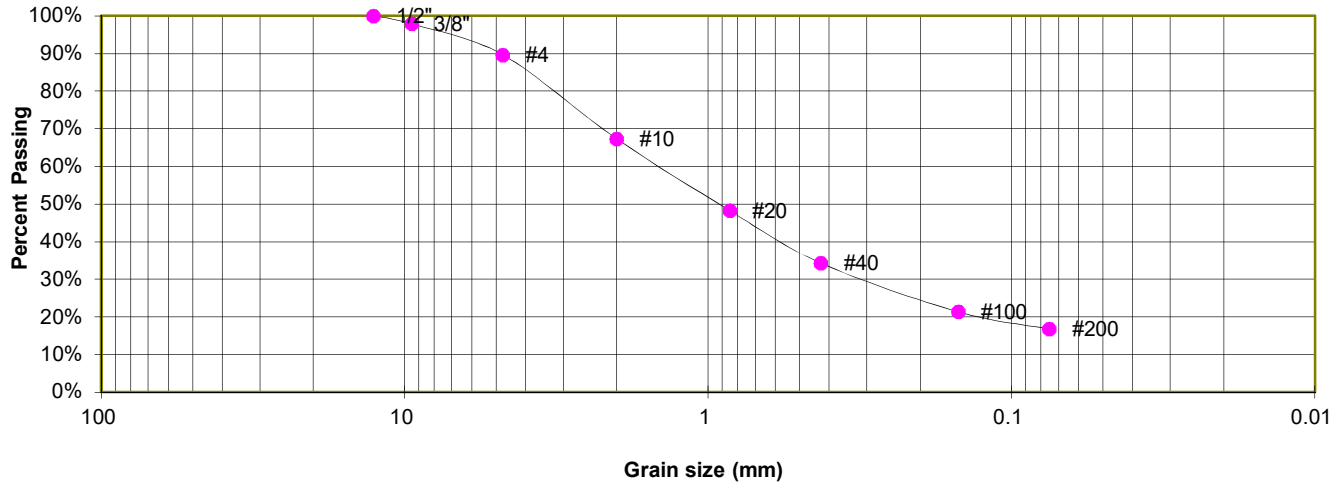
FIG. C-20

TEST PIT
DEPTH (FT)

TP-6
30-54"

SOIL DESCRIPTION SAND, GRAVELLY, SILTY
SOIL TYPE # 1

**Sieve Analysis
Grain Size Distribution**



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.9%
4	89.7%
10	67.3%
20	48.3%
40	34.3%
100	21.4%
200	16.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM



LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

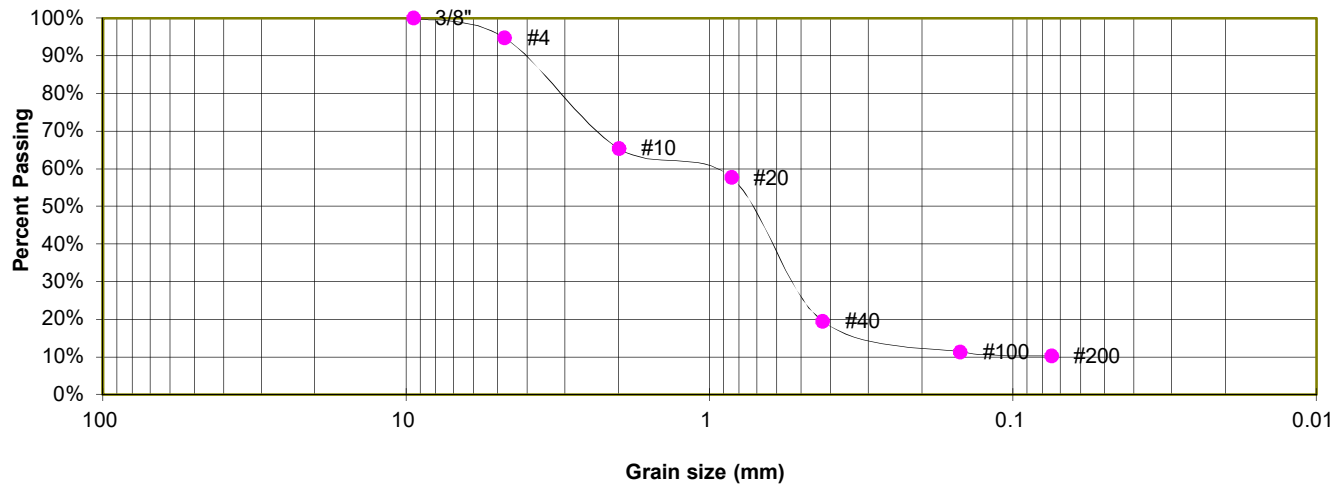
FIG. C-21

TEST PIT
DEPTH (FT)

TP-6
72-96"

SOIL DESCRIPTION SAND, WITH SILT
SOIL TYPE # 1

**Sieve Analysis
Grain Size Distribution**



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	94.8%
10	65.4%
20	57.7%
40	19.5%
100	11.3%
200	10.2%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SP-SM



LABORATORY TEST RESULTS

17675 HIGHWAY 83
NORTH PARK, LLC

JOB NO.
260494

FIG. C-22

APPENDIX D: USDA Soil Survey Descriptions

El Paso County Area, Colorado

26—Elbeth sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 367y

Landscape: Uplands

Elevation: 7,300 to 7,600 feet

Farmland classification: Not prime farmland

Map Unit Composition

Elbeth and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elbeth

Setting

Landscape: Uplands

Landform: Hills

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from arkose

Typical profile

A - 0 to 3 inches: sandy loam

E - 3 to 23 inches: loamy sand

Bt - 23 to 68 inches: sandy clay loam

C - 68 to 74 inches: sandy clay loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: F048AY908CO - Mixed Conifer

Hydric soil rating: No



Minor Components

Other soils

Percent of map unit: 10 percent

Hydric soil rating: No

Pleasant

Percent of map unit: 5 percent

Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 23, Aug 29, 2025



El Paso County Area, Colorado

28—Ellicott loamy coarse sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 3680

Elevation: 5,500 to 6,500 feet

Mean annual precipitation: 13 to 15 inches

Mean annual air temperature: 47 to 50 degrees F

Frost-free period: 125 to 145 days

Farmland classification: Not prime farmland

Map Unit Composition

Ellicott and similar soils: 97 percent

Minor components: 3 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ellicott

Setting

Landform: Stream terraces, Flood plains

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy alluvium

Typical profile

A - 0 to 4 inches: loamy coarse sand

C - 4 to 60 inches: stratified coarse sand to sandy loam

Properties and qualities

Slope: 0 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: Frequent

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: A

Ecological site: R069XY031CO - Sandy Bottomland

Other vegetative classification: SANDY BOTTOMLAND
(069AY031CO)

Hydric soil rating: No



Minor Components

Fluvaquentic haplaquoll

Percent of map unit: 1 percent

Landform: Swales

Hydric soil rating: Yes

Other soils

Percent of map unit: 1 percent

Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent

Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 23, Aug 29, 2025



El Paso County Area, Colorado

92—Tomah-Crowfoot loamy sands, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 36b9

Elevation: 7,300 to 7,600 feet

Farmland classification: Not prime farmland

Map Unit Composition

Tomah and similar soils: 50 percent

Crowfoot and similar soils: 30 percent

Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tomah

Setting

Landform: Alluvial fans, Hills

Landform position (three-dimensional): Crest, side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from arkose and/or residuum weathered from arkose

Typical profile

A - 0 to 10 inches: loamy sand

E - 10 to 22 inches: coarse sand

Bt - 22 to 48 inches: stratified coarse sand to sandy clay loam

C - 48 to 60 inches: coarse sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: R049XY216CO - Sandy Divide

Hydric soil rating: No



Description of Crowfoot

Setting

Landform: Hills, Alluvial fans
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 12 inches: loamy sand
E - 12 to 23 inches: sand
Bt - 23 to 36 inches: sandy clay loam
C - 36 to 60 inches: coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R049XY216CO - Sandy Divide
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 15 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 23, Aug 29, 2025



APPENDIX E: Existing El Paso County Health Department Septic Records



Prevent • Promote • Protect

Environmental Health
1675 W. Garden of the Gods Rd.,
Suite 2044
Colorado Springs, CO 80907
(719) 578-3199 *phone*
(719) 575-3188 *fax*
www.elpasocountyhealth.org

ON-SITE WASTEWATER TREATMENT SYSTEM OWTS MULTIPLE SYSTEM NOTICE

Please be advised that multiple OWTS systems are associated with this parcel.
Each OWTS serves a separate structure and has its own individual records on file.
To request all OWTS records that exist for this parcel please email
HEASepticInfo@elpasoco.com.

EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT
INDIVIDUAL SEWAGE DISPOSAL SYSTEM INSPECTION FORM

Permit # 8896
Date APRIL 18 1995

APPROVED: YES ☒ NO ☐ # 610000243 ENVIRONMENTALIST KRUEGER

Address 7675 HIGHWAY 83 B Owner HERBERTSON

Legal Description ATTACHED
Residence ☒ # of bedrooms 5; Commercial ☐; System Installer V+K

SEPTIC TANK:

Commercial ☒; Noncommercial ☐ L ☐ W ☐ WD ☐
Construction Material CONCRETE, capacity 2250 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 INFILTRATOR, number of chambers 26, bed ☐, trench ☒
sq. ft./section 18, reduction allowed 50%, sq. ft. required 928

total sq. ft. installed 236, depth of installation 30"

Engineer Design Y or ☒ N, Designing Engineer ☐

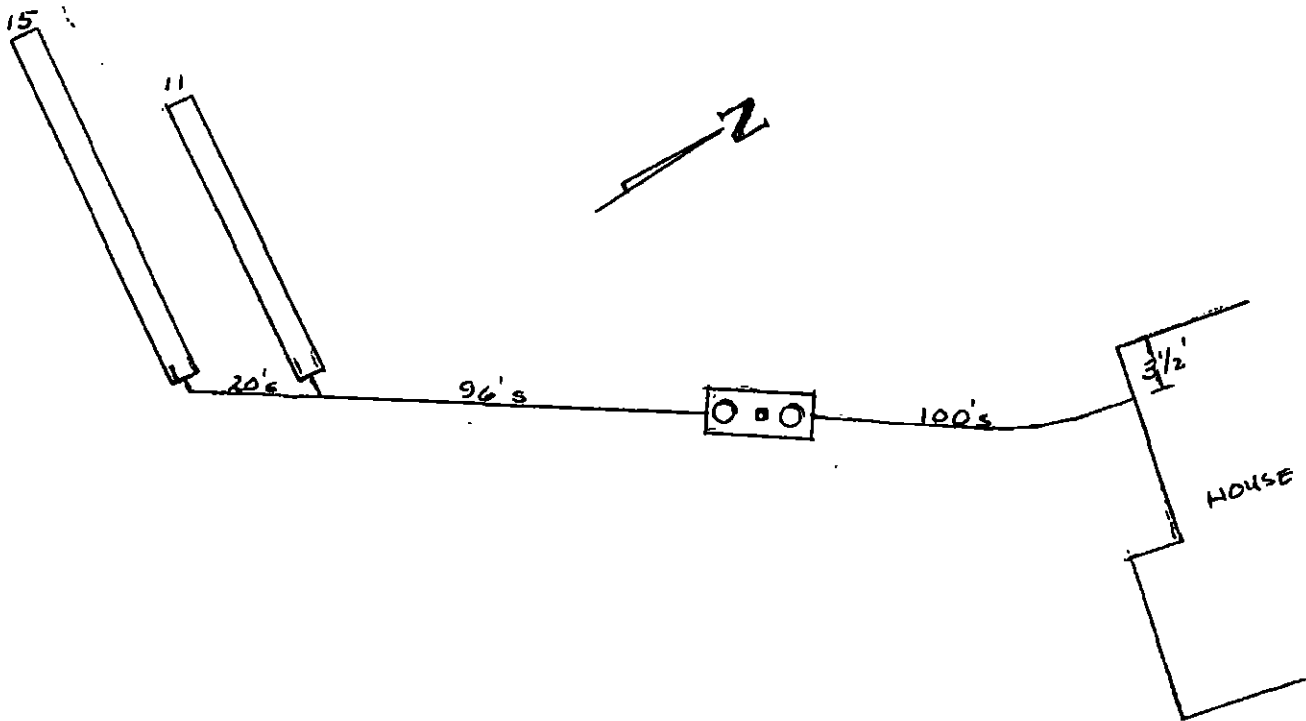
Approval letter provided? Y or N

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 48

EL PASO COUNTY

• DEPARTMENT OF HEALTH AND ENVIRONMENT

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

Water Supply WI

Permit 3396

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

Receipt No. 2139

Issued to ELMER HERBERTSON

Date 3-14-95

Address of Property 17675 HIGHWAY 83

Phone 598-7208

(Permit valid at this address only)

Sewage-Disposal System work to be performed by JIM MURISON J+K

Phone 495-0451

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)

3-14-96

John B. Quirk, Jr.
DIRECTOR, DEPARTMENT OF HEALTH AND ENVIRONMENT

Krueger
ENVIRONMENTALIST

DATE OF EXPIRATION

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	total square feet	total square feet	total square feet
1750	928 *		
gallons	ft. of trench		rings or diam.x w/d
	inches wide		
	ft. of trench		
	inches wide		

NOTES: STAY IN AREA OF PERCOLATION TEST. MEET ALL DISTANCE REQUIREMENTS. *RECOMMEND ADDITIONAL 60 PER CENT FOR WASHER AND DISPOSAL. KEEP TRENCHES AT PERC TEST DEPTH.

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.

EL PASO COUNTY DEPARTMENT OF HEALTH & ENVIRONMENT
301 South Union Boulevard
Colorado Springs, CO 80909-3423
(719) 578-3125

Pine Crest Court
Box 488-1884
Builder: 443-4583 Agan

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

NAME OF OWNER Elmer Herberkson HOME PHONE 580-7208 WORK PHONE ---
ADDRESS OF PROPERTY 12675 Highway 83 Monument DATE 2/21/95
LEGAL DESCRIPTION OF PROPERTY See Plat
TAX SCHEDULE NUMBER 6000-00-243 SYSTEM CONTRACTOR HUNSON PHONE 495-0451
OWNER'S ADDRESS IF DIFFERENT 6584 Bull Hill Ct. J/c.
TYPE OF HOUSE CONSTRUCTION Frame & Brick SOURCE AND TYPE OF WATER SUPPLY Well
SIZE OF LOT 4.3 Acres MAXIMUM POTENTIAL NUMBER OF BEDROOMS 5 EASEMENT (yes or no)
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 knowledge 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 [Signature]

HEALTH DEPARTMENT USE ONLY

PERMIT NUMBER 8896 RECEIPT NUMBER 2139 DATE TO LAND USE DEPARTMENT 2-22-95
DESCRIPTION AREA *928' TANK CAPACITY 1750 DATE OF SITE INSPECTION 2/28/95

REMARKS: NEED PLANNING APPROVAL. STAY IN AREA OF PERC TEST.
MEET ALL DISTANCE REQUIREMENTS. *RECOMMEND ADDITIONAL
60% FOR WASHER + DISPOSAL KEEP TRENCHES @ PERC TEST DEPTH

APPLICATION IS APPROVED () DENIED () DATE 2/28/95 ENVIRONMENTALIST Krueger
Mail to
1265 Deer Creek Rd
Monument CO 81132

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

PROPERTY LINES ☒ _____
PROPERTY DIMENSIONS ☒ _____
LOCATION OF PROPOSED SEPTIC SYSTEM ☒ _____
LOCATION OF WELL ☒ _____
LOCATION OF ADJACENT WELLS ☒ _____
BUILDINGS ☒ _____
PROPOSED BUILDINGS ☒ _____
WATER SUPPLY LINE ☒ _____
CISTERNS _____
SPRINGS _____
LAKES _____
PONDS _____
WATER COURSES _____
STREAMS _____
DRY GULCHES _____
SUBSOIL DRAINS _____

DIRECTIONS TO PROPERTY FROM MAIN HIGHWAYS:

ONE MILE SOUTH OF ~~105~~ Highway 105 ON Highway 93

East side of Highway -

~~Call Ken at Pine crest~~ gate - someone will have to meet
you at the gate. Call Ken at Pine crest - # on front



**FRONT RANGE
GEOTECHNICAL
INC.**

P.O.Box 1351
Monument, CO 80132

17675 Highway 83 A

6100000369

E

2-9-07

**PERCOLATION TEST
FOR
PINE CREST CONSTRUCTION**

17675 State Highway #83,
El Paso County,
Colorado

Respectfully submitted,

Jeff Houchin

Jeff Houchin
Geologist



PERCOLATION TEST FINDINGS

Enclosed are the results of the percolation test for the septic system to be installed at 17675 State Highway #83, El Paso County, Colorado. The residence will not be on a public sewer system or on a public water system. The number of bedrooms in the design for the residence is three. Due to the natural slope of the property, the entire system will gravity feed to the southwest approximately 240 feet down slope. All applicable regulations of the El Paso County Health Department will be complied with for the installation of the disposal system.

The percolation test was performed on January 24, 1995, with three test holes being dug. The location of these test holes was determined by Ken Starkey, builder. These test holes had one foot of water placed in them that dissipated in less than ten minutes: (Table 3-8, Falling Head Percolation Test Procedure, Colorado Department of Health). For the test, the holes were filled to the bottom 25% of the hole and allowed to drain while measurements were taken every ten minutes of the test. The field data and results of the percolation test are on the following page.

The average of the three test holes is one inch in 16.8 minutes which I feel is representative of the soils conditions in the area. A rate of one inch in 16.8 minutes will be adequate for the design and sizing of the disposal system. While there are some variations in the rate of percolation for each hole there is no significant variation in the composition of materials encountered while drilling these holes. The test and procedures conform to El Paso County Health Department regulations. The soil profile for the disposal system is as follows.

0 to 12" - Topsoil- sandy loam, organic composition.
12" to 12' - Sand-medium grained, moderate density and moisture content, low clay content, non-plastic, tan-buff in color, density increases with depth.

No water was encountered during the drilling of all holes. Bedrock was not encountered during drilling. No known wells were observed within 100 feet of the proposed system. The following setbacks shall be followed during the construction of the field: Property line setback - 10', building foundation setback - 20', any well - 100'.

If during construction of the field itself, subsurface conditions change considerably or if the location of the proposed field changes, this office shall be notified to determine whether the conditions are adequate for the system as designed or whether a new system needs to be designed.

Weather conditions at the time of the test consisted of partly cloudy skies, with mild temperatures.

FRONT RANGE GEOTECHNICAL, INC

PERCOLATION TEST DATA FORM

NAME PINECREST CONST. ADDRESS 17675 STATE HIGHWAY 83
 CITY _____ STATE COLORADO ZIP _____ PHONE _____
 LOCATION OF TEST SEE SITE MAP COUNTY EL PASO
 WATER SUPPLY PRIVATE BEDROOMS 3 SLOPE S.W. 79.
 DATE OF TEST 1-24-95 DIAMETER 5" DEPTH 32"
 DROP IN INCHES

TIME	P-1	P-2	P-3
9:55			
10:05	8 3/8	6 7/8	6 5/16
10:15	5 1/2	3 1/2	3 3/8
10:25	3 3/4	2 3/4	2 1/8
10:35	2 -	1 7/16	1 -
10:45	1 9/16	1 1/8	9/16
10:55	1 1/8	1 1/16	1/2
11:05	3/4	5/8	
11:15	1 1/16		
AVERAGE FOR EACH HOLE	14.5	16	20
TOTAL AVERAGE	16.8 MINUTES / INCH		

PROFILE 0-1' TOPSOIL; 1'-12' SAND - MEDIUM GRAINED,
 5' MODERATE DENSITY AND MOISTURE CONTENT,
 BLOW COUNT 21 LOW CLAY CONTENT, NON-PLASTIC, TAN-BUFF
 12" COLOR, DENSITY INCREASES WITH DEPTH.

GROUNDWATER NONE BEDROCK NONE

Site Map

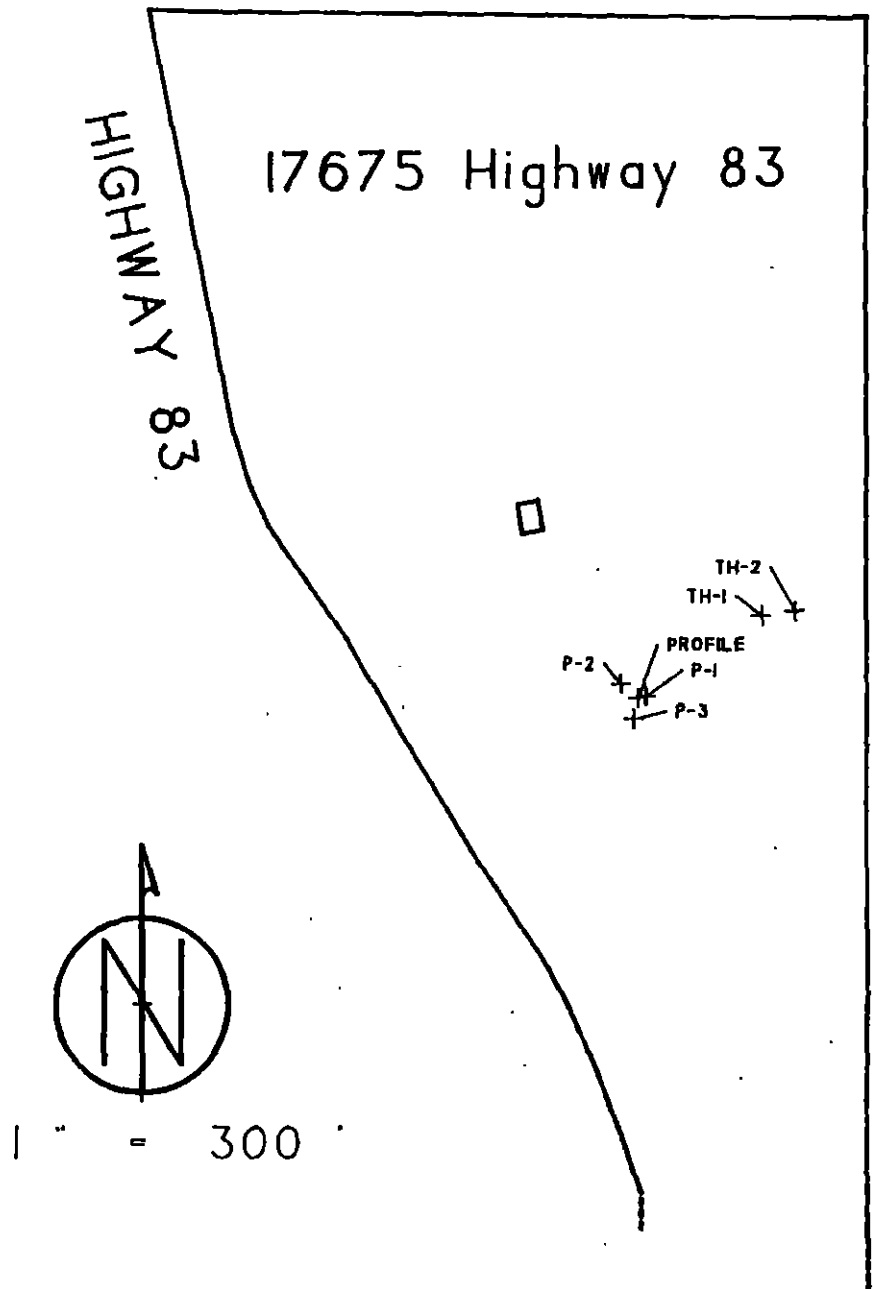
17675 State Highway #83,
El Paso County, Colorado

Location from S.E. Corner of Existing Metal Shed to:

PROFILE: S. 29° E. - 310'

Locations from PROFILE to:

P-1:	N. 72° E.	-	13'
P-2:	N. 50° W.	-	36'
P-3:	S. 12° W.	-	33'



EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT
INDIVIDUAL SEWAGE DISPOSAL SYSTEM INSPECTION FORM

Permit # ON 0007529 ²⁸⁹ *288*
Date 9 Feb 2007

APPROVED: Yes ☒ No ☐ Environmental Health Specialist: J. Christensen

Address 17725 Hwy 83 80908 Owner Elmer Herbertson
Legal Description Twp 10S, R15E, S4SW4, SEC 22-11-66
Residence ☒ # Bedrooms 3 Commercial ☐ System Installer J+K Excavating

SEPTIC TANK:

Commercial ☐ Noncommercial ☒ Construction Material Concrete Capacity Gallon 1250

DISPOSAL FIELD:

Trench: Depth (Range) _____ Width _____ Total Length _____ Sq. Ft. _____

Bed: Depth (Range) _____ Length _____ Width _____ Sq. Ft. _____

Depth of Rock _____ Under PVC _____ Type of cover on Rock _____

DRYWELLS: # of Pits _____ Rings (Pit 1) _____ Rings (Pit 2) _____ Working Depth #1 _____ #2 _____

Size (L x W) #1 _____ #2 _____ Total Sq. Ft. _____

ROCKLESS SYSTEMS:

Standard Chamber: Type Biodiffuser #Chambers 38 Sq. Ft./Chamber 5.5 Bed ☒ Trench ☐

High Profile Units: Type Chamber _____ #Chambers _____ Sq. Ft./Chamber _____ Bed ☐ Trench ☐

Reduction Allowed 35 % Sq. Ft. Required 891 Depth (Range) 12" - 28"

Sq. Ft. Installed 589 Equivalent Sq. Ft. Installed with Reduction 906

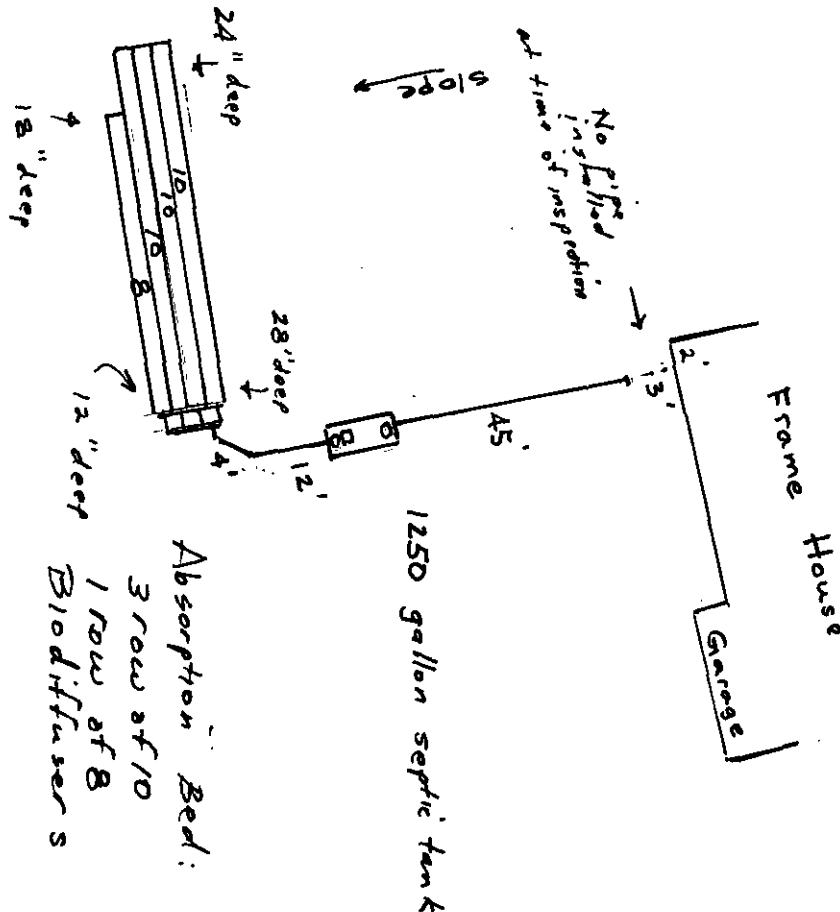
Engineer Design: Y ☒ Engineering Firm N/A

Approval letter provided? Y ☒

Well installed at time of septic system inspection? Y ☒ 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: All septic pipe 4" SDR35. House sewer stub out not installed at time of inspection.



[Handwritten signature]

299

INDIVIDUAL SEWAGE DISPOSAL SYSTEM PERMIT

OWNER NAME: ELMER J HERBERTSON
ADDRESS: 17725 HIGHWAY 83
CITY, STATE, ZIP: COLORADO SPRINGS CO 80908
INSTALLED BY:

PERMIT NUMBER: ON0007529
DATE PERMITTED: 11/20/2006
PHONE NUMBER: 7194881884

This permit is issued in accordance with 25-10-107 Colorado Revised Statutes. 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). If both a building and an ISDS permit are issued for the same property and construction has not commenced prior to the expiration date of the building permit, the ISDS permit shall expire at the same time as the building permit. This permit is revokable if all stated requirements are not met.
Sewage disposal system to be installed by an El Paso County Licensed System Contractor or the property owner.

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

Rosemary C. Baker-Martin

DIRECTOR, EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT

PERMIT EXPIRATION DATE :
Expires twelve months from date of issue

Brad Wallan 578-3127
ENVIRONMENTALIST / PHONE NUMBER*

WATER SOURCE: WELL

MINIMUM SEPTIC TANK SIZE : 1,250 GALLONS

MINIMUM ABSORPTION AREA REQUIRED 891 SQ FT

PLANNING DEPARTMENT



ENUMERATION



FLOOD PLAIN



WASTEWATER



COMMENTS:

* FOR INSPECTIONS CALL 575-8699 BEFORE 8:30 A.M. OF THE DAY TO BE INSPECTED.
(WEEKENDS & HOLIDAYS EXCLUDED)
LEAVE THE ENTIRE SEWAGE DISPOSAL SYSTEM UNCOVERED FOR FINAL INSPECTION.

INSTALL ABSORPTION SYSTEM IN AREA AND AVERAGE DEPTH (34 INCHES) OF SOIL 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 time for the purpose of making such inspections as are necessary to determine compliance with requirements of this law.

FOR ADMINISTRATIVE USE ONLY

Permit Ready: 11-22-06 Called _____ Mailed _____

Final Inspection Requested: BY: John / J & K

Date Called In: 2-9-07

Phone # 331-4321

Septic Site will be ready: Now

481-2417

EL PASO COUNTY ENVIRONMENTAL HEALTH SERVICES

301 South Union Boulevard • Colorado Springs, CO • 80910-3123 • (719) 578-3125 • Fax: (719) 578-3188

ALL PAYMENTS ARE DUE AT TIME OF SUBMITTAL IN CASH OR CHECK*APPLICATION FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM PERMIT**☒ NEW CONSTRUCTION ☐ MINOR REPAIR ☐ MAJOR REPAIR/ADD

Owner Elmer J. Hecker NEW HOUSE 17725 Ken Starkey Daytime Phone 488-1884
 Address of Property 17575 Highway 83 City & Zip Colo Spgs, CO 80908
 Legal Description Tolson Sub Attachment SE 4 SW 4 Sec 15 T 11 S R 6 E
 Owner's MAILING Address P.O. Box 2160 City, State & Zip HOUSTON TX 77032
 Lot Size 47 1/2 Tax Schedule # 61000 00 369

Type of Building: ☒ Frame ☐ Modular ☐ Mobile ☐ Commercial ☐ Manufactured ☐ Other _____Water Supply: ☒ Well or Spring ☐ Cistern ☐ Public Inside City Limits: ☒ No ☐ Yes-City _____☐ MAIL PERMIT OR ☒ PICK UP PERMIT ☐ THERE IS AN ADDITIONAL RESIDENCE ON THIS PROPERTYMAXIMUM POTENTIAL NUMBER OF BEDROOMS 3Percolation Test Attached ☒ Y ☐ N Basement ☒ Y ☐ N Garbage Disposal ☒ Y ☐ N Clothes Washer ☒ Y ☐ N

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 and additional tests and reports as may be required by the Department to be made and furnished by an applicant for purposes of evaluating 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 pursuant to C.R.S. 25-10-107 et. seq. I hereby certify all represented to be true and correct to the best of my knowledge and belief, and are designed to be relied on by the El Paso County Department of Health and Environment 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 and in legal action for perjury as provided by law.

OWNER'S SIGNATURE Elmer J. HeckerDate 11/16/06You will be notified by telephone when your permit is ready for pick up. Please allow a minimum of 10 days for new septic.**DEPARTMENT OF HEALTH USE ONLY**

1250 gallons Minimum Tank Capacity 891 ft² Minimum Absorption Area 17 Nov. 2006 Date of Site Inspection

REMARKS N 39° 05' 28" W 104° 46' 12" Acc. 14 feet
Install absorption system in area and average depth (34 inches)
of soil percolation test.

EHS INSPECTOR Imel Christina DATE 11/17/06 ☒ APPROVED ☐ DENIED**FEES AS OF 01/01/04:**

NEW CONSTRUCTION \$483.00 + Planning Department Surcharge of \$30. = \$513.00

MAJOR REPAIR/ADDITION \$489.00

MINOR REPAIR/ADDITION \$263.00

DATE TO PLANNING / WASTEWATER: _____
DATE TO FLOODPLAIN/ENUMERATIONS 11-16-2006 mgm**PLEASE COMPLETE THE BACK OF THIS FORM**

- 1) We require an original of your **PERCOLATION (PERC) TEST** with an original professional engineer's (PE) stamp and signature as well as a plot of the percolation test hole locations with measurements from a fixed reference point.
- 2) **PROPERTY ADDRESS OR LOT NUMBER MUST BE POSTED AND CLEARLY VISIBLE FROM ROAD. PERC HOLES MUST BE CLEARLY MARKED OR AN ADDITIONAL CHARGE FOR A RETURN TRIP TO THE SITE MAY BE ASSESSED.**
- 3) A **PLOT PLAN** must be drawn (not to scale) on an 8 1/2 x 11 sheet of paper. The plot plan must include:

1) a north bearing	4) all buildings (proposed or existing)	7) driveway (proposed or existing and name of adjoining street)
2) property lines	5) proposed septic system site	
3) property dimensions	6) alternate septic system site	
- 4) Initial any of the following features that apply to your property and **INCLUDE** them on your **PLOT PLAN**.

☒ Well(s)	☐ Adjacent property well(s)	☐ Subsoil drain
☐ Cistern	☐ Water line	
- 5) Initial any of the following that are within 100 feet of your proposed septic system and **INCLUDE** on your **PLOT PLAN**.

☐ Spring(s)	☐ Lake(s)
☐ Pond(s)	☐ Stream(s)
☐ Dry Gulch(es)	☐ Natural drainage course(s)

6) GIVE COMPLETE DIRECTIONS TO THE PROPERTY FROM A MAIN HIGHWAY

North on Highway 83 just before 1 mile

Driveway has brick posts on either side, wrought iron gate. (Just south of John Westfall's house)

5
+
=

333.9

890.5

2 + 1 18

60%



P.O. Box 1351
Monument, CO 80132
719 481-4560
Fax 481-9204

17725 Hwy 83
6100000369

E

02-09-07

PERCOLATION TEST

FOR

PINECREST CONSTRUCTION

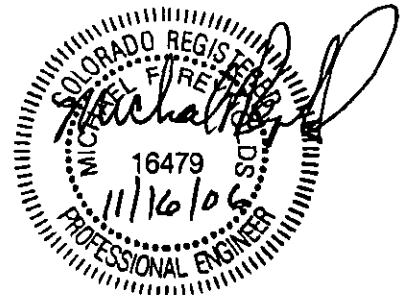
JOB #15160

17725 Highway 83,
El Paso County,
Colorado

Respectfully submitted,

A handwritten signature in cursive script, reading "Jeff Houchin".

Jeff Houchin
Geologist



Michael F. Reynolds, P.E.
Civil Engineer

PERCOLATION TEST FINDINGS

Enclosed are the results of the percolation test for the septic system to be installed at **17725 Highway 83, El Paso County, Colorado**. The locations of the percolation test borings were determined by Ken Starkey. The residence will not be on a public water system. The number of bedrooms in the design for the residence is unknown. Due to the natural slope of the property, the entire system will feed to the west at 4% approximately 93 feet. All applicable regulations of the El Paso County Health Department will be complied with for the installation of the disposal system.

The percolation test was performed on June 19, 2006, in accordance with **Section VI, Soil Test, ISDS Regulations, E.P.C.D.H. & E**. The field data and results of the percolation test are as follows:

PERC. TEST @ TIME	PERC HOLE #1 @ 34" DEPTH DROP (IN INCHES)	PERC HOLE #2 @ 34" DEPTH DROP (IN INCHES)	PERC HOLE #3 @ 34" DEPTH DROP (IN INCHES)
3:45	7	4-3/8	3-1/8
3:55	4-1/16	1-5/8	1-1/2
4:05	2	1-1/8	1-1/16
4:15	1-3/16	11/16	9/16
4:25	3/4	5/8	1/2
4:35	13/16		
Rate/Hole	12.3	16.0	20.0

The average of the test holes is 16.1 minutes per inch.

The soil profile for the disposal system is as follows:

- 0 to 6" - Topsoil- loam, organic composition.
- 6" to 12' - Sand- fine to medium grained, low density, moderate moisture content, low clay content, low plasticity, buff-tan in color.

No water was encountered during the drilling of all holes. Bedrock was not encountered. No known wells were observed within 100 feet of the proposed system. **All setbacks shall conform to county regulations.**

If during construction of the field itself, subsurface conditions change considerably or if the location of the proposed field changes, this office shall be notified to determine whether the conditions are adequate for the system as designed or whether a new system needs to be designed.

Weather conditions at the time of the test consisted of partly cloudy skies, with warm temperatures.

**FRONT RANGE GEOTECHNICAL INC.**
SITE MAP

17725 Highway 83,
El Paso County,
Colorado
Job #15160

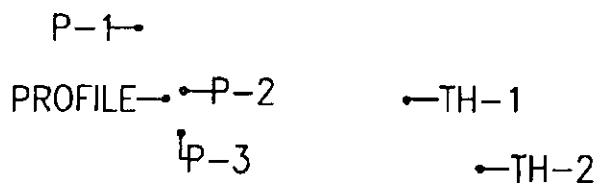
Location from Northeast Barn Corner to Profile: N. 16° W. - 360'

Location from Profile to:

P-1: N. 21° W. - 30'

P-2: N. 66° E. - 7.5'

P-3: S. 22° E. - 15'



Northeast
Barn
Corner



0 25 50 75
GRAPHIC SCALE IN FEET
SCALE: 1" = 75'



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

ON-SITE WASTEWATER TREATMENT SYSTEM INSPECTION FORM

ON-SITE ID: ON0024320

APN # 6100000369

DATE: 10/27/2015

APPROVED YES ☒ NO ☐

Environmental Health Specialist: Janet Christensen

Address: 17675 State Hwy 83 Owner: Elmer Herbertson

Residence: ☒ #Bedrooms: 5 Commercial: ☐ System Installer: J&K Excavating

SEPTIC TANK: Construction Material Concrete

Capacity Gallon 2250

SOIL TREATMENT AREA:

Trench: Depth (Range): Width: Total Length: Sq. Ft.:

Bed: Depth (Range): Width: Total Length: Sq. Ft.:

Depth of Rock: Under PVC: Type of cover on Rock:

SEEPAGE PITS: # of Pits: Working Depth #1: #2: Size (L x W) #1 #2 Total Sq. Ft.

CHAMBER SYSTEMS:

Type of Chamber: ARC36 #Chambers: 40 Sq. Ft./Chamber: 15 Bed: ☐ Trench: ☒ Depth (Range): 2 1/2 - 3'

Sq. Ft. Required (10-1): 1000 Sq. Ft. Required (10-2): 1000 Sq. Ft. Required (10-3): 1000 Sq. Ft. Required for Diverter Valve: 500

Sq. Ft. Installed: 600

Engineer Design: Y ☐ N ☒ Engineering Firm: N/A Approval Letter Provided: Y ☐ N ☒

Well installed at time of OWTS inspection: Y ☒ N ☐ Public Water: Y ☐ N ☒

*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 soil treatment area.

Notes:

Diverter Valve installed. 10/27/15

Existing Septic Tank installed 4/18/15.

Existing absorption trenches 936ft².

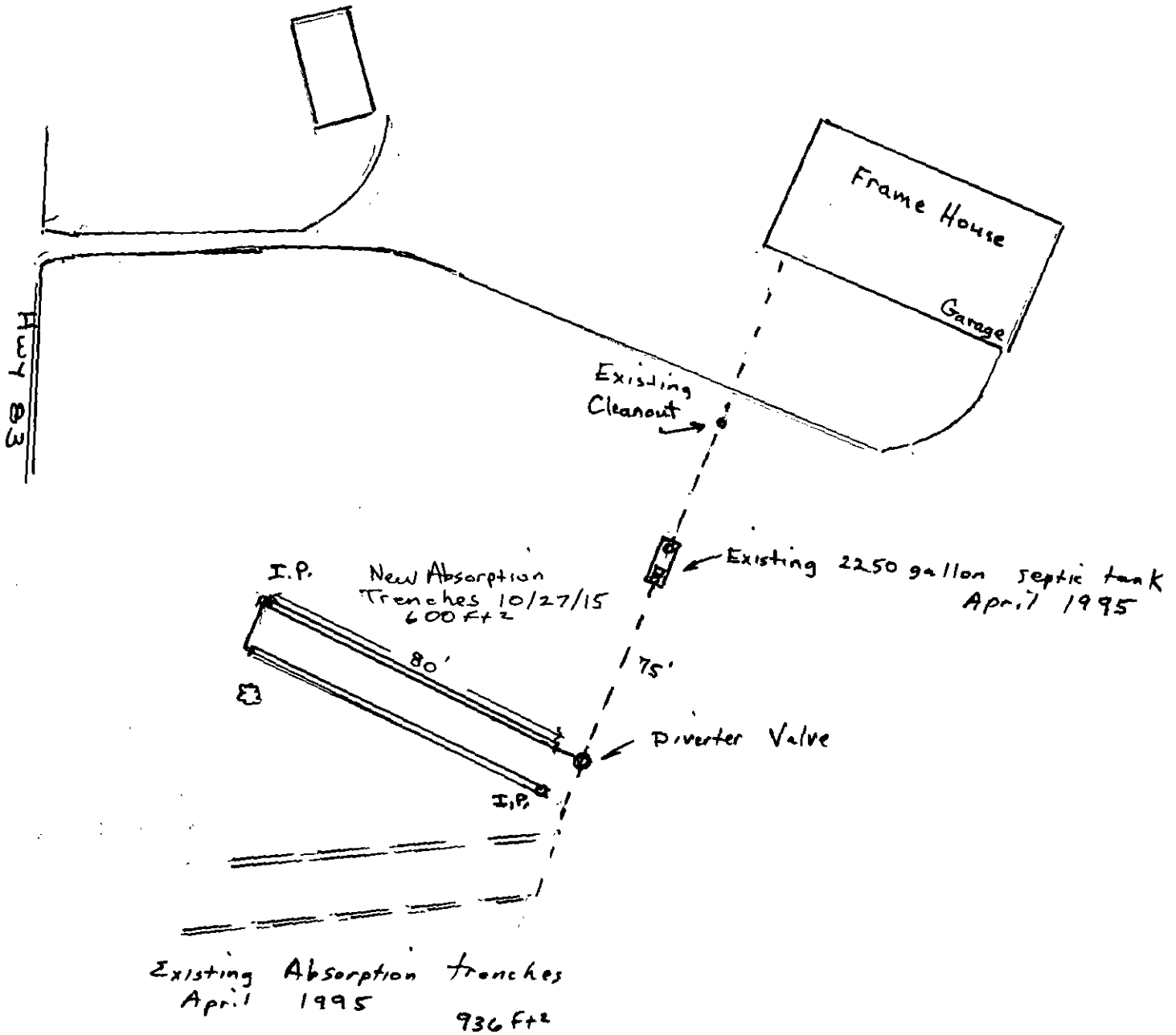
As-Built

17675 State Hwy 83

ON 00 24320

APN# 6100000369

10/27/15



Attn: HERBERTSON ELMER J & ANNA F
17675 HIGHWAY 83 HWY
COLORADO SPRINGS, CO 80908

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.



**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 10/15/2015 To 10/15/2016

PERMITEE :

HERBERTSON ELMER J & ANNA F
17675 HIGHWAY 83 HWY
COLORADO SPRINGS, CO 80908

Onsite ID: ON0024320

Tax Schedule # : 6100000369

Permit Issue Date: 10/15/2015

Dwelling Type: RESIDENTIAL

OWNER NAME :

HERBERTSON ELMER J & ANNA F

of Bedrooms (if Res): 5

Proposed Use (if Comm):

Designed Gallons/Day:

Water Source: PRIVATE WELL

System Installation Requirements:

- A repair/addition to an existing soil treatment area (STA) is to be installed.
- Install the diverter valve and chambers in trench configuration per approved design document. 500 square feet minimum is required.

The OWTS must be installed per the stamped and approved Design Document dated 10/15/2015.

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 8:30 a.m. of the day that the inspection is requested
Weekends & Holidays excluded.**

 578-3141

Authorized By: Environmental Health Specialist

58000376 1980008014

APPLICATION FOR AN ON-SITE WASTEWATER TREATMENT SYSTEM PERMIT
☐ NEW PERMIT ☒ MAJOR REPAIR PERMIT ☐ MINOR REPAIR PERMIT

Owner Elmer Herbertson Daytime Phone 719-481-2417
 System Installer JEK Excavating Daytime Phone 719-331-4321
 Property Address 77675 State Hwy 83 City and Zip C/S, CO 80908
 Legal Description _____
 Owners Mailing Address _____
 Email Address kmwestfall5@gmail.com Fax # _____
 Tax Schedule # 6100000369 Lot Size 60000 47.55
 Site Located Inside City Limits ☐ Yes ☒ No Primary Contact ☐ Owner ☒ Contractor
 Proposed Use: ☒ Single Family ☐ Multi-Family ☐ Commercial
 Water Supply: ☒ Well ☐ Cistern ☐ Municipal Number of Bedrooms 5
☐ Pick up: ☐ Fax: ☒ Email: kmwestfall5@gmail.com

CURRENT FEES AS APPROVED BY THE EL PASO COUNTY BOARD OF HEALTH**New Permit:** \$650.00 (EPCPH Charge) + \$147.00 (EPC Planning Dept. Surcharge) + \$23.00 (CDPHE Surcharge) = \$820.00**Major Repair Permit:** \$515.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = \$538.00**Minor Repair Permit:** \$230.00 (EPCPH Charge) + \$23.00 (CDPHE Surcharge) = \$253.00

- All Payments are due at the time of application submittal; by cash, check or major credit card (Visa / MC)
- This permit will expire one year from the date of issuance.

I certify that the information provided on this application is in compliance with Section 8.3, Chapter 8 of the Onsite 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.

Applicants Signature: Jim M Westfall Date: Oct 13, 15Site Insp. Date: 10-15-15 Perc. Rate: 0.60 L/TAR Permit # 000024320E.H.S. Review Notes: Existing installed 2/9/07
3 bedroom TAX # 6100000369 is for 17725 Hwy 83
E-DOCS
Date to: E.P.C. Development Services N/A Flood Plain and Enumerations N/A**Permit Requirements:**Existing 2250 gallons

Min. Septic Tank Capacity

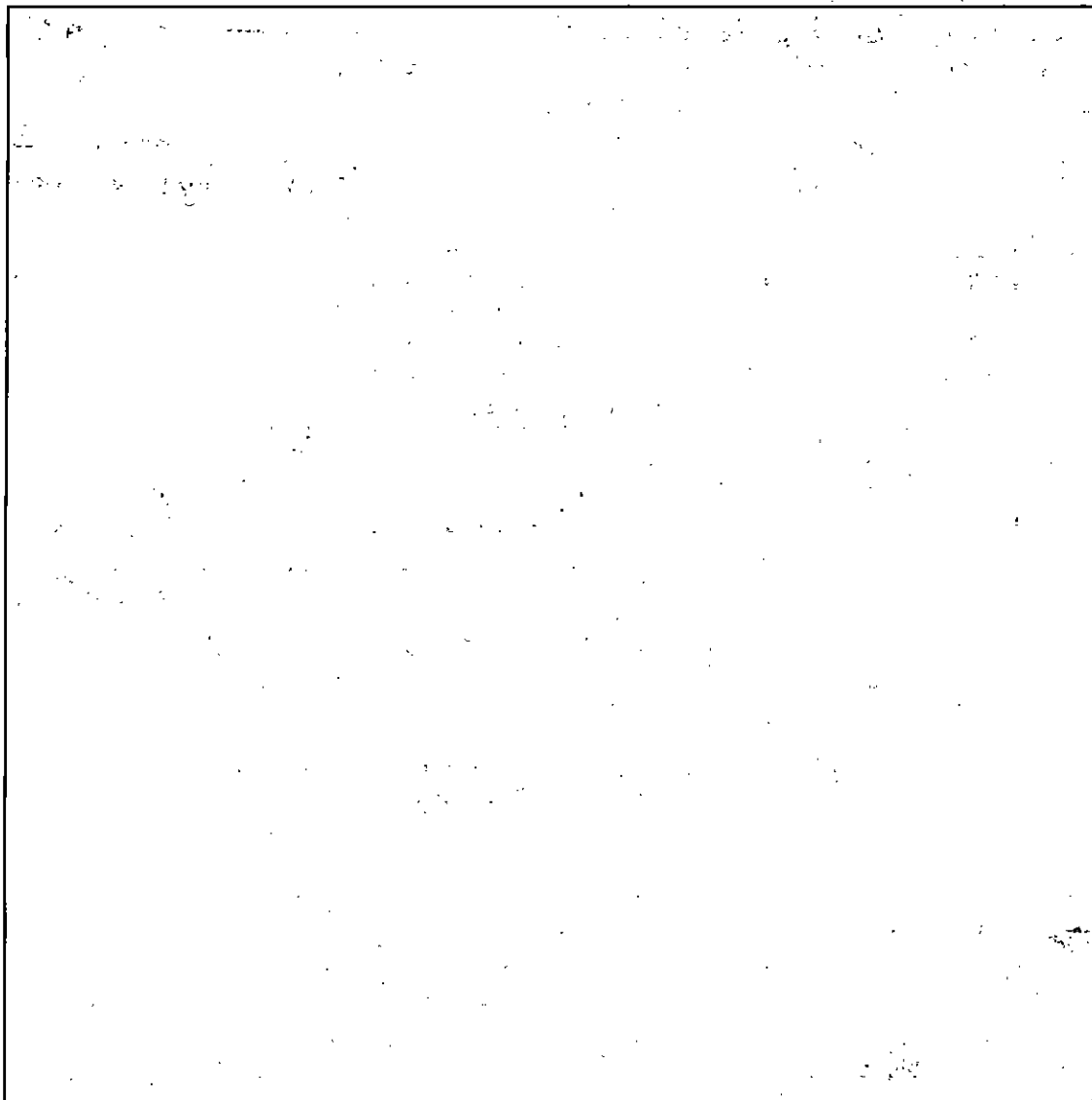
500 FT²

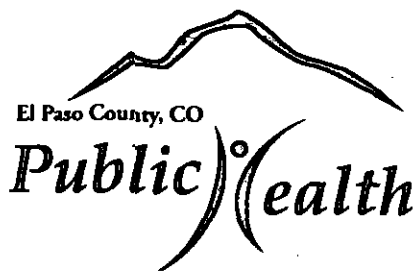
Min. Absorption Area

E.H. Specialist Janet ChristensenDate 10-15-15☒ Approved ☐ Denied

Janet

- 1) A report is required per Section 8.5 A-E, "Site and Soil Evaluation", or Section 8.5 A-F if the OWTS requires design by a Colorado Registered Professional Engineer. If your permit application submittal is incomplete, the application will not be accepted.
- 2) Property address or lot number must be posted and clearly visible from the road. The percolation test holes and/ or soil profile test pit must be clearly marked or an additional charge for a return trip to the site may be assessed.
- 3) The proposed soil treatment area must be protected from compaction and disturbance by staking, fencing, posting or other effective method.
- 4) In the Box below, please provide complete and accurate directions to the property from a main highway.

A large, empty rectangular box with a black border, intended for the applicant to provide complete and accurate directions to the property from a main highway.



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

Prevent • Promote • Protect
6100000369

17675 State Highway 83 B
CONVENTIONAL (NON-ENGINEERED) ON0024320

ON-SITE WASTEWATER TREATMENT SYSTEM (OWTS) DESIGN WORKSHEET
(MUST BE COMPLETED FOR ALL CONVENTIONAL DESIGNS)

Wastewater Flow

Total number of bedrooms: 5
Design wastewater flow (gallons/day) from Table 6-1: 600

Septic Tank

Septic tank size (in gallons) from Table 9-1: 2250
Tank burial depth (from top of tank, in inches) 12"
(NOTE: Shall not exceed 48 inch depth by regulation)
Will groundwater affect tank? Yes ☐ No ☒
Will an effluent screen be installed? Yes ☐ No ☒
(Note: Effluent screens are required for all new systems or replacement of the septic tank)

Soil Treatment Area (STA)

Long Term Acceptance Rate (LTAR) From Table 10-1: .60
Unadjusted STA size (see 8.10.C.4) – show calculation: $600 \div .6 = 1000$
Design flow (gallons per day)
LTAR (gallons/day/sq.ft.) = _____
Depth of STA (cannot exceed 48"):
Trenches are preferred. If bed system is selected,
the selection reason must be specified:
Type of STA (check which applies):
☒ Trench ☐ Bed
FOR REPAIRS ONLY (check which applies):
☐ Wide Bed (more than 12 feet wide)
☐ Deep Gravel Trenches
☐ Seepage Pit
☐ None of the Above

Method of Septic Tank Effluent Application (check which applies):

- ☒ Gravity
☐ Pump to gravity
☐ Dispersed by siphon

Type of Distribution Media (check which applies):

- ☐ Rock
☐ Tire chips
☒ Chambers
☐ Other _____ Other type _____

Adjusted STA size, using factors from Table 10-2 & 10-3 (show calculation, with adjustment factors utilized):

$600 \div .6 = 1000 - 1000 \div 2 = 500$
 $500 \div 15 = 34 \text{ chambers in trench}$ *owner will put in 40 chambers*

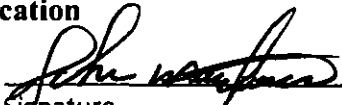
A scale drawing *shall* be provided with each design document (see attached example design documents), showing:

- Layout of entire OWTS, including the STA configuration (trench, bed, etc.)
- Dimensions of the trench(s) or the bed(s)
- Location of all OWTS components and distances to all applicable physical features in Table 7-1
- Depths of all components (or elevations relative to a designated benchmark)
- Location of the soil profile test pit excavation(s), or percolation test holes, if required
- Location of the alternate STA site
- North direction arrow
- Graphic scale (1" = 20', 1" = 30', etc.)
- Contours, OR slope direction and % slope

Note: It is recommended that the design document is completed by a professional in the OWTS industry. EPCPH does not complete, or alter design documents. Contact EPCPH with any questions.

The proposed STA sites must be protected from disturbance, compaction, or other damage by staking, fencing, posting or other effective methods.

Certification


Signature

John Westfall
Print Name

10-10-15
Date

17675 Hwy 83
Property Address

JWK EXCAVATING
Company Name

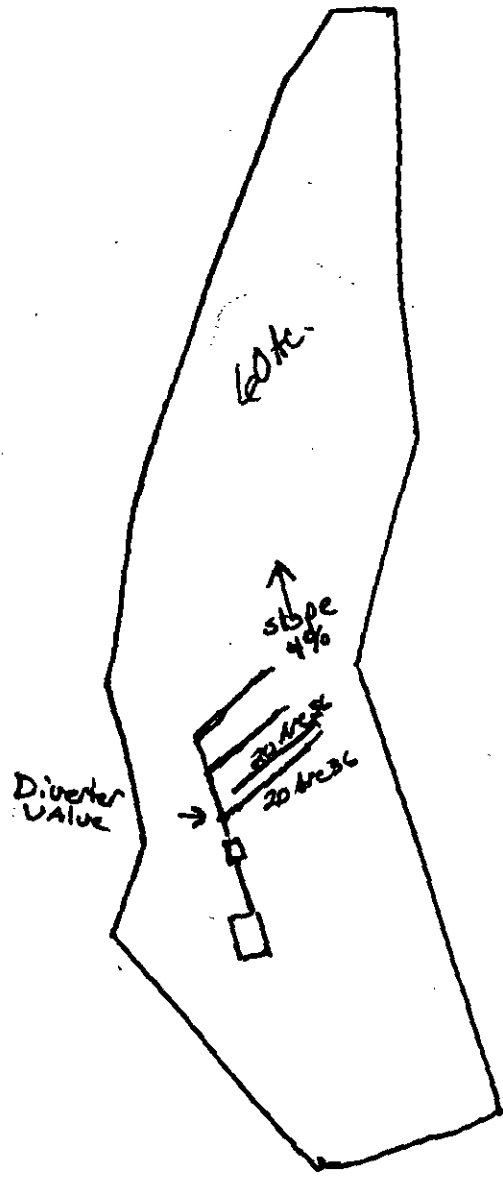
P.O. Box 584, Monument, Co. 80132
Address

719-331-4321
Phone

K.M. Westfall 5@Gmail.com
Email

(See attached Tables and Design Document examples)

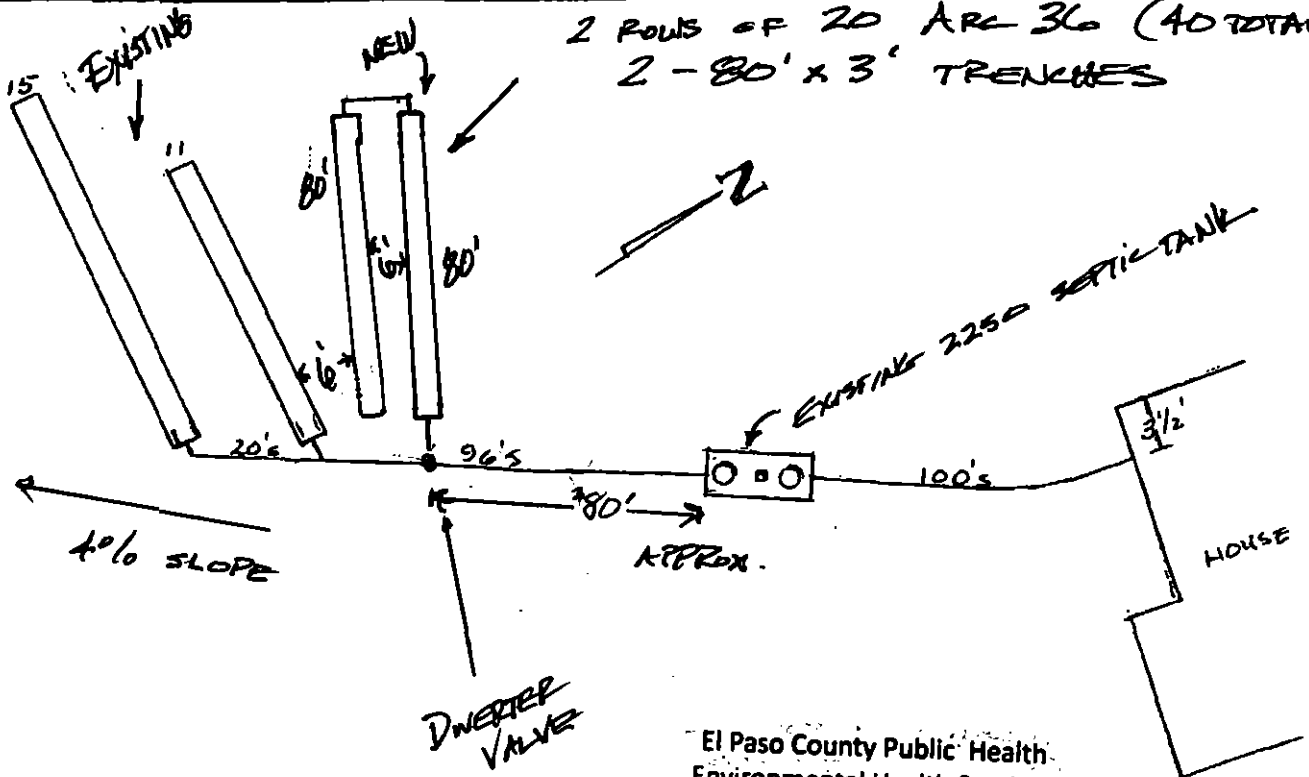
1
2



From tank to leach Field
 Install Diverter valve
 Install 40 - Are 36 Chambers
 in trenches, Between tank
 & old leach Field
 Inspection ports on end of
 each Row

10-1
 5 Bedroom House
 $600 \div 16 = 1000$
 $1000 \div 2 = 500$
 $500 \div 15 = 34 \text{ chambers}$

2 ROWS OF 20 ARE 36 (40 TOTAL)
2 - 80' x 3' TRENCHES



El Paso County Public Health
Environmental Health Services
1675 W. Garden of the Gods Rd., Suite 2044
Colorado Springs, CO 80907

John Christ

10-15-15

