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SOILS AND GEOLOGY STUDY
IRON RIDGE SUBDIVSION – WALKER ROAD
EL PASO COUNTY, COLORADO

Prepared for:
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Attn: Jake Decoto

September 24, 2025

Respectfully Submitted,

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1 SUMMARY

Project Location

The project site is located within a portion of the S½ of Section 13, Township 11 South, Range 66 West of the 6th Principal Meridian in El Paso County, Colorado. The site is located south of the intersection of Brown Road and Walker Road in northern El Paso County approximately 6 miles east of Monument, Colorado. The location of the site is as shown on the Vicinity Map (Figure 1).

Project Description

The project consists of subdividing approximately 90 acres into a 29-lot rural residential subdivision. The proposed lots are to range from 2.5 to 6 acres in size and will be serviced by individual water wells and on-site wastewater treatment systems (OWTS).

Scope of Report

This report presents the results of our geologic evaluation and treatment of engineering geologic hazard study for 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, downslope creep, potentially unstable slopes, shallow bedrock, seasonal and potentially seasonal shallow groundwater areas, areas of ponded water, erosion, 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 varies from gently to moderately sloping, generally to the south and north towards the unnamed tributary of East Cherry Creek which runs through central portion of the site. Several minor drainage swales are located across the site. The drainages on site generally flow in southeasterly and easterly-northeasterly directions across the site. Water was not observed flowing in the drainages at the time of this investigation; however, an area of ponded water was observed in the stock pond located in the southern portion of the site. The site boundaries are indicated on the USGS Map (Figure 2). Previous land uses have included grazing and pastureland. The site primarily contains field grasses and weeds. Site photographs are included in Appendix A.

The project consists of subdividing approximately 90 acres into a 29-lot rural residential subdivision. The proposed lots are to range from 2.5 to 6 acres and will be serviced by individual water wells and on-site wastewater treatment systems (OWTS). Preliminary plans indicate two extended detention basins (EDBs). Pond 1 will be located in the southern portion of the site, and Pond 2 will be located in the northern portion of the site. Grading will primarily be associated with the construction of roads and extended detention basins. The proposed development plan is shown in the Site and Exploration Plan, Figure 4.

3 SCOPE OF THE REPORT

The scope of the 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 (Figure 6). 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 Engineering Geology Map (Figure 6), which identified pertinent geologic conditions affecting development. The field mapping was performed by personnel of Entech on June 24 and July 14, 2025. Site photographs are included in Appendix A.

Twelve (12) test borings were drilled and eight (8) test pits were excavated across the project site to determine the classification and engineering characteristics of the soils. The borings were drilled to depths of 15 to 20 feet using a truck-mounted, continuous flight auger drilling rig supplied and operated by Entech, and the test pits were excavated to depths of 7 to 8 feet. The locations of the test borings and test pits are indicated in the Site and Exploration Plan, Figure 4. The Test Boring and Test Pit Logs 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 D422), and Atterberg Limits testing (ASTM D4318). Swell testing included Swell/Consolidation Tests. 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. A major structural feature known as the Rampart Range Fault lies approximately 11 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 southeastern edge of a large structural feature known as the Denver Basin. Bedrock in the area tends to be very gently dipping in a northerly 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 residual, colluvial, man-made, and alluvial soils of the 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 alluvial soils were deposited by water in the drainages on site. Man-made soils exist as earthen dams and erosion berms. 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 (Figure 4). In general, it is a sandy loam. The soils are described as follows:

Exhibit 1: Soil Survey Description

Type	Description
67	Peyton sandy loam, 5 to 9% slopes
69	Peyton-Pring Complex, 8 to 15% slopes
92	Tomah-Crowfoot loamy sands, 3 to 8% slopes

Complete descriptions of each soil type are presented in Appendix E. The soil has generally been described as having moderately 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 soil has been described to have moderate erosion hazards.

5.3 Site Stratigraphy

The Geologic Map of the Black Forest Quadrangle showing the site is presented in Figure 5 (Reference 4). The Geology/Engineering Geology Map prepared for the site is presented in Figure 5. Four mappable units were identified on this site that are described as follows:

Qaf **Artificial Fill of Holocene Age:** These are man-placed fill deposits associated with erosion berms and the earthen dams on the site. Other areas of fill may exist on the site in addition to those mapped.

Qal **Alluvium of Holocene Age:** These are recent stream deposits associated with the drainages on the site. These materials generally consist of silty to clayey sands.

Qt_1 **Terrace Alluvium One of Holocene and late Pleistocene Age:** These are stream terrace deposits located along the drainage in the central portion of the site. These materials generally consist of silty to clayey sands.

Tkda **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 residual soil. 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. Areas of colluvial soils may exist on some of the slopes on site. These 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 1^0 x 2^0 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 Map prepared for the site is presented in Figure 6.

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 sand with varying amounts of silt and clay (SM, SC). The sand was encountered in all of the test borings at depths ranging from the existing surface to 3 feet bgs and extending to 3 to 18 feet bgs and to the termination of TB-3, TB-6, TB-7, and TB-12. The sand was encountered at loose to dense states and dry to moist conditions. The majority of the sand was encountered at medium dense states. One dimensional swell/collapse testing on a sample of the clayey sand resulted in an expansion of 0.7% indicating a low expansion potential.

Soil Type 2 classified as a sandy silt and sandy clay (ML, CL). The silt and clay were encountered in all test borings at depths ranging from the existing surface to 8 feet bgs and extending to 3 to 12 feet bgs. The silt and clay were encountered at stiff to very stiff states and moist conditions. One dimensional swell/collapse testing on a samples of the silt and clay resulted in consolidations of 1.3 to 2.3% indicating moderate consolidation potentials.

Soil Type 3 classified as a highly weathered sandstone or sand with varying amounts of silt and clay classified as a soil (SM, SC). The sandstone was encountered in eight of the test borings at depths ranging from 3 feet to 18 feet bgs and extending to the termination of the borings (15 to 20 Feet).

The test boring logs and laboratory test results pertaining to this investigation are included in Appendix B and summarized in Table B-1.

5.5 Groundwater

Groundwater was not encountered in any of the test borings that were drilled to depths of 15 to 20 feet during and subsequent to drilling. Redoximorpic features were observed in TP-1, TP-6 and TP-7 at depths of 3 to 7 feet. Areas of potentially seasonal shallow and 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, downslope creep, potentially unstable slopes, seasonal and potentially seasonal shallow groundwater areas, areas of ponded water, erosion, and the potential for elevated radon levels. These constraints and the recommended mitigation techniques include:

Artificial Fill – Constraint

These are areas of man-made fill associated with earthen dams and erosion berms observed on the site.

Mitigation: The earthen dams lie within defined drainages and should be avoided as building sites. The berms can either be avoided or penetrated by foundations. The fill on this site is considered uncontrolled for construction purposes. 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.

Expansive Soils – Constraint

Low expansion soils were encountered in the test borings drilled on site. Highly expansive soil is typically interbedded in the Dawson Formation. These occurrences are typically sporadic; therefore, none have been indicated on the maps. The clays and claystone, if encountered at foundation grade, can cause differential movement in structures. These occurrences should be identified and dealt with on an individual lot basis.

Mitigation Should expansive soils be encountered beneath foundations; mitigation will be necessary. Mitigation of expansive soils may require special foundation design. Overexcavation 3 to 5 feet and replacement with non-expansive soils at a minimum of 95% of its maximum Modified Proctor Dry Density, ASTM D1557 is a suitable mitigation, which is common in the area. Floor slabs on expansive soils should be expected to experience movement. Overexcavation and replacement has been successful in minimizing slab movements. The use of structural floors should be considered for basement construction on highly expansive clays. Final recommendations should be determined after additional investigation of each building site.

Loose or Collapsible Soils – Constraint

Some of the fine grained soils encountered on site exhibit low density and may be subject to settlement under a load. These areas are sporadic; therefore, none have been indicated on the map. Swell/consolidation testing on samples of the silt and clay resulted in consolidations of 1.3 to 2.7%. These occurrences should be identified and dealt with on an individual lot basis.

Mitigation: Should loose collapsible soils be encountered beneath foundations, removal and recompaction of the upper 2 feet with thorough moisture conditioning at 95% of its maximum Standard Proctor Dry Density, ASTM D698 will be necessary. Specific recommendations should be made after additional investigation of each building site

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. Potentially unstable slopes have been identified along portions of the drainage in the central portion of the site and are further discussed below. It is recommended that any future grading or fill slopes be 3:1 or flatter.

Downslope Creep Areas – Constraint

The areas identified with this hazard include portions of the moderate to steep slopes in the northern portion of the site. In these areas we would anticipate lateral and vertical movement of the near surface soils in the downslope direction. These areas are acceptable as building sites with the following constraints on construction.

Mitigation: Downslope creep will increase lateral pressures against foundation walls on the uphill side of structures. The design of foundations in these areas should account for this additional pressure. A lateral pressure detail is shown in Figure 7. Where possible in areas of downslope creep, structures should be designed to be as compact and rigid as possible. This will help them better tolerate the vertical and lateral movements to which the foundation system may be subjected. Long, rambling, irregular structures should be avoided in these areas as they are associated with a much greater potential for damaging differential movement. Tie walls and buttresses are often used to stiffen the foundation system.

Potentially Unstable Slope Areas – Constraint

These majority of these slopes are considered stable in their present condition; however, care must be exercised in these areas not to create a condition which would tend to activate instability. An area of accelerated erosion was observed on the northeastern portion of the potentially unstable slope located on Lot 4. The steeper slopes along the drainage in the central portion of the site located on Lots 1 and 4. Additional investigation may be warranted once building locations are determined on the lots with this constraint, however, based on the size of the proposed lots it is anticipated development these areas can likely be avoided or mitigated.

Mitigation: It is anticipated the majority of these areas can be avoided. Building should be avoided on the potentially unstable slopes unless they are stabilized. A minimum setback of 30 feet from the crest of these slopes is recommended. Stabilization could involve regrading to slope angles no steeper than 3:1 or the use of engineer-designed retaining walls, tiebacks, or buttresses. Where retaining walls are not used, erosion protection may be necessary to prevent undercutting by the creek during periods of high water.

Drainage and Flood Plain Areas – Constraint

The site is not located within any floodplain zones according to FEMA Map No. 08041C0305G (Figure 8, Reference 8). The nearest floodplain is mapped to be approximately ¼ mile to the northeast of the site. The site is mapped as a having a 1% annual chance of flooding. Specific drainage studies and floodplain locations are beyond the scope of this report. An unnamed tributary of East Cherry Creek through central portion of the site. Several minor drainage swales

are located across the site. The drainages on site generally flow in southeasterly and easterly-northeasterly directions across the site. Water was not observed flowing in the drainages at the time of this investigation; however, an area of ponded water was observed in the stock pond located in the southern portion of the site. The main drainage in the central portion of the site has been identified as a seasonal shallow groundwater area and minor drainage swales across the site have been identified as potential seasonal shallow groundwater areas.

The stock pond observed in the southern portion of the site has been included in the National Wetlands Inventory as a Freshwater Wetland habitats classified as **PUSCh** (Palustrine – P, Unconsolidated Shore – US, Seasonally Flooded – C, Diked/Impounded – h), and PEM1C Palustrine – P, Emergent – EM, Persistent – 1, Seasonally Flooded – C) (Figure 9, Reference 9). These areas should be avoided by construction and is further discussed below.

Potentially Seasonal Shallow Groundwater Area – Constraint

In these areas, we would anticipate the potential for periodically high subsurface moisture conditions, frost heave potential and highly organic soils. Most of these areas lie within defined drainage swales which will be avoided by the proposed structures. Any structures in or adjacent to these areas should follow the mitigation discussed below.

Mitigation: Foundations must have a minimum 30-inch depth for frost protection. Buildings should be a minimum of 3 feet above groundwater levels. Subsurface perimeter drains are recommended for any usable below grade areas including crawlspaces. Groundwater was not encountered in the test borings and is not anticipated to effect the construction of the proposed riding arena. Any grading in these areas should be done to direct surface flow around construction to avoid areas of ponded water. Structures should not block drainages. All organic material should be completely removed prior to any fill placement. Septic fields should not be placed in areas where there is the potential for shallow groundwater.

Seasonal Shallow Groundwater Area – Constraint

Areas exist on-site that are affected by the potential for seasonally high groundwater conditions. In these areas, the potential exists for periodically high subsurface moisture conditions and possible frost heave potential, depending on the soil conditions. These areas include those areas mapped as sw-seasonal shallow groundwater on Figure 6 associated with the main drainage in the central portion of the site.

Mitigation: It is anticipated that these areas would be avoided or regraded during development. Surface waters should be directed away from structures such that areas of ponded water are

avoided. Structures adjacent to drainage areas are subject to severe frost heave potential should penetrate sufficient depth so as to discourage the formation of ice lenses beneath foundations. At this location and elevation, a foundation depth for frost protection of 2.5 feet is recommended. In areas where high subsurface moisture conditions are anticipated periodically, a subsurface perimeter drain will be necessary to help prevent the intrusion of water into areas located below grade. Typical drain details are shown on Figures 10 through 12. Additionally, swales should be created to intercept surface runoff and carry it safely around and away from structures. Structures should not be placed in the drainage in ways that obstruct water flow or create areas of ponded water. All soft and organic soils encountered should be removed prior to filling.

Areas of Ponded Water – Constraint

These are areas of standing water behind earth dams on site. We would not expect development in these areas. Either the dams can be avoided by construction, or the areas may be completely regraded. Should complete regrading of the site be considered, all organic matter and soft, wet soils should be completely removed before filling. Any drainage into these areas should be rerouted in a non-erosive manner off the site to prevent areas of ponded water around proposed structures.

Areas of Erosion – Constraint

These are areas undergoing erosion by water, sheetwash-producing gullies, and rill erosion along portions of the moderate to steep slopes in the northern portion of the site.

Mitigation: Due to the nature of the soils on this site, virtually all the soils are subject to erosion by wind and water. Minor areas of erosion, other than those mapped, were observed on site, particularly where some rill erosion has occurred. Areas of erosion can occur across the entire site, particularly if the soils are disturbed during construction. Vegetation reduces the potential for erosion. Areas of erosion may require check dams, regrading, and revegetation using erosion control mats to anchor vegetation. Further recommendations for erosion control are discussed in the Erosion Control Section (9.0) of this report. Recommendations pertaining to revegetation may require input from a qualified landscape architect and/or the Natural Resource Conservation Service (previously Soil Conservation Service).

Shallow Bedrock – Constraint

Bedrock was encountered in 8 the test borings at depths of 3 and 18 feet. A Summary of the Depth to Bedrock is included in Table B-1. Where claystone or sandstone are encountered, excavation/grading may be difficult requiring track-mounted excavators. Bedrock will likely be

encountered cuts for utility excavations. The potential for seasonally perched groundwater may occur in areas of shallow bedrock and within more permeable layers of the Dawson Formation.

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 10). The average radon level for the 80908 zip code is 3.40 pCi/l. The following is a table of radon levels in this area:

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. It is our opinion that the existing geologic and engineering geologic conditions will impose some constraints on the proposed development and construction. The most significant problems affecting development will be those associated with the potentially unstable slopes and drainages on site which can be avoided. Other hazards on site may be satisfactorily mitigated through proper engineering design and construction practices.

The upper residual soils are typically found at medium dense states. The granular soils encountered in the upper soil profiles of the test borings should provide good support for foundations. Foundations anticipated for the site are standard spread footings on granular soils or in conjunction with overexcavation in areas of expansive soils. Areas containing sands and arkosic sandstone will have high allowable bearing conditions. Difficult excavation should be anticipated in areas of shallow bedrock. Expansive layers may also be encountered in the soil and bedrock on this site. Areas of expansive soils encountered on site are 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. Bearing capacities of 2000 to 2400 psf for granular soils or structural fill, and 3000 to 3500 psf for undisturbed sandstone are anticipated. Site-specific subsurface investigations will need to be conducted and recommendations provided prior to construction.

The site is not located within any floodplain zones according to FEMA Map No. 08041C0305G (Figure 8, Reference 8). The nearest floodplain is mapped to be approximately ¼ mile to the northeast of the site. It is mapped as a having a 1% annual chance of flooding. Specific drainage studies and floodplain locations are beyond the scope of this report. An unnamed tributary of East Cherry Creek through central portion of the site. Several minor drainage swales are located across the site. The drainages on site generally flow in southeasterly and easterly-northeasterly directions across the site. Water was not observed flowing in the drainages at the time of this investigation; however, an area of ponded water was observed in the stock pond located in the southern portion of the site. The main drainage in the central portion of the site has been identified as a seasonal shallow groundwater area and minor drainage swales across the site have been identified as potential seasonal shallow groundwater areas. Should groundwater be encountered within 3 feet of foundation grade, additional drains may include interceptor drains, under slab drains (capillary break), and overexcavation drains. Typical drain details are presented in Figure 10. Specific recommendations should be made once development plans have been determined and additional site investigation is completed.

Areas of fill associated with dams and erosion control berms were observed on site. It is anticipated that the dams could be avoided by development. The erosion berms should be regraded during earthwork. The fill on this site is considered uncontrolled for construction purposes. Any uncontrolled fill encountered beneath foundations should be removed and recompacted at a minimum of 95% of the Modified Proctor (ASTM D1557) maximum dry density.

Areas of erosion and gullying may require the construction of check dams and revegetation if construction encroaches on these areas. General recommendations for erosion control are discussed under Section 9.0 Erosion Control.

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 recommended 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 11), portions of the area are mapped as stream terrace deposits. According to the *Atlas of Sand, Gravel and Quarry Aggregate Resources, Colorado Front Range Counties* distributed by the Colorado Geological Survey (Reference 12), areas of the site are not mapped with any resources. According to the *Evaluation of Mineral and Mineral Fuel Potential* (Reference 13), the area of the site has been mapped as "Good 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, 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 13), 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 13).

The site has been mapped as "Fair" for oil and gas resources (Reference 13). 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 ROADWAY, EMBANKMENT, and STORMWATER DETENTION FACILITY CONSTRUCTION RECOMMENDATIONS

In general, the site soils are suitable for the proposed roadways and embankments. Seasonally occurring groundwater may be encountered in deeper cuts and along drainages and low-lying areas across the site. Additional investigation of these areas is recommended as plans are completed. If excavations encroach on the groundwater level, unstable soil conditions may be encountered. Excavation of saturated soils will be difficult with rubber-tired equipment. Stabilization using shot rock or geogrids may be necessary.

The proposed embankment for the EDB is located in a potential seasonal shallow groundwater area as indicated on the Geology/Engineering Geology Map, Figure 6. Based on the soils types and the gradual existing slopes near the EDB location lining of the EDB is not necessary.

Any areas to receive fill should have all topsoil, organic material, or debris removed. Prior to fill placement, Entech should observe the subgrade. Fill must be properly benched and compacted to minimize potentially unstable conditions in slope areas. Fill slopes should be 3:1 or flatter. 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 pavement designs once roadway grading is completed and utilities are installed.

10 CLOSURE

It is our opinion that the existing geologic engineering and geologic conditions will impose some constraints on development and construction of the site. The majority of these 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 as plans (grading and development) are generated prior to construction on individual building sites.

This report has been prepared for Atticus Land, 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

1. Bryant, Bruce, McGrew, Laura W., and Wobus, Reinhard A. 1981. *Geologic Structure Map of the Denver 1º x 2º Quadrangle, North-Central Colorado*. U.S. Geologic Survey. Map 1-1163.
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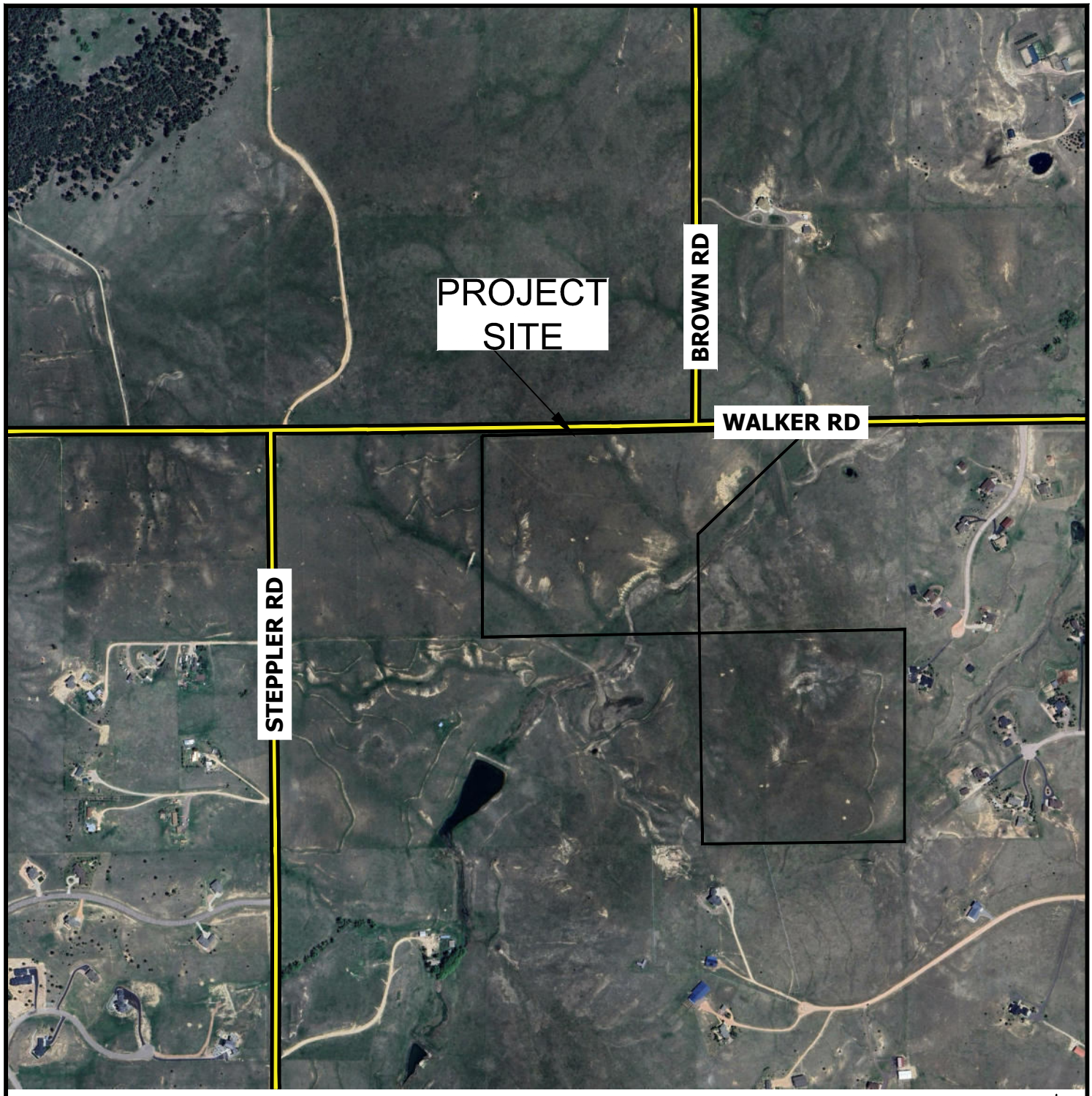
FIGURES



N

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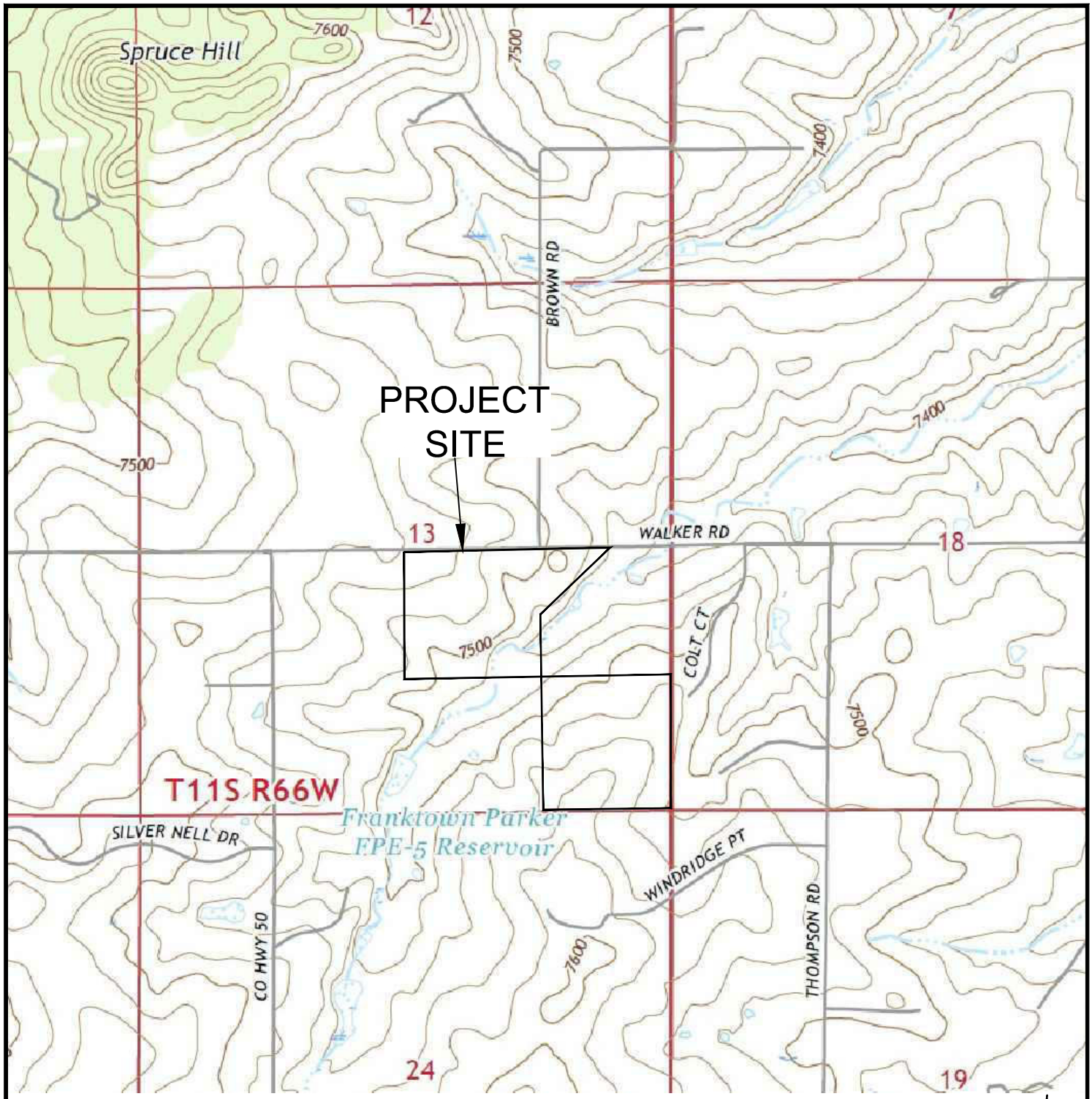
VICINITY MAP

IRON RIDGE
ATTICUS LAND, LLC

JOB NO.
251117

FIG. 1



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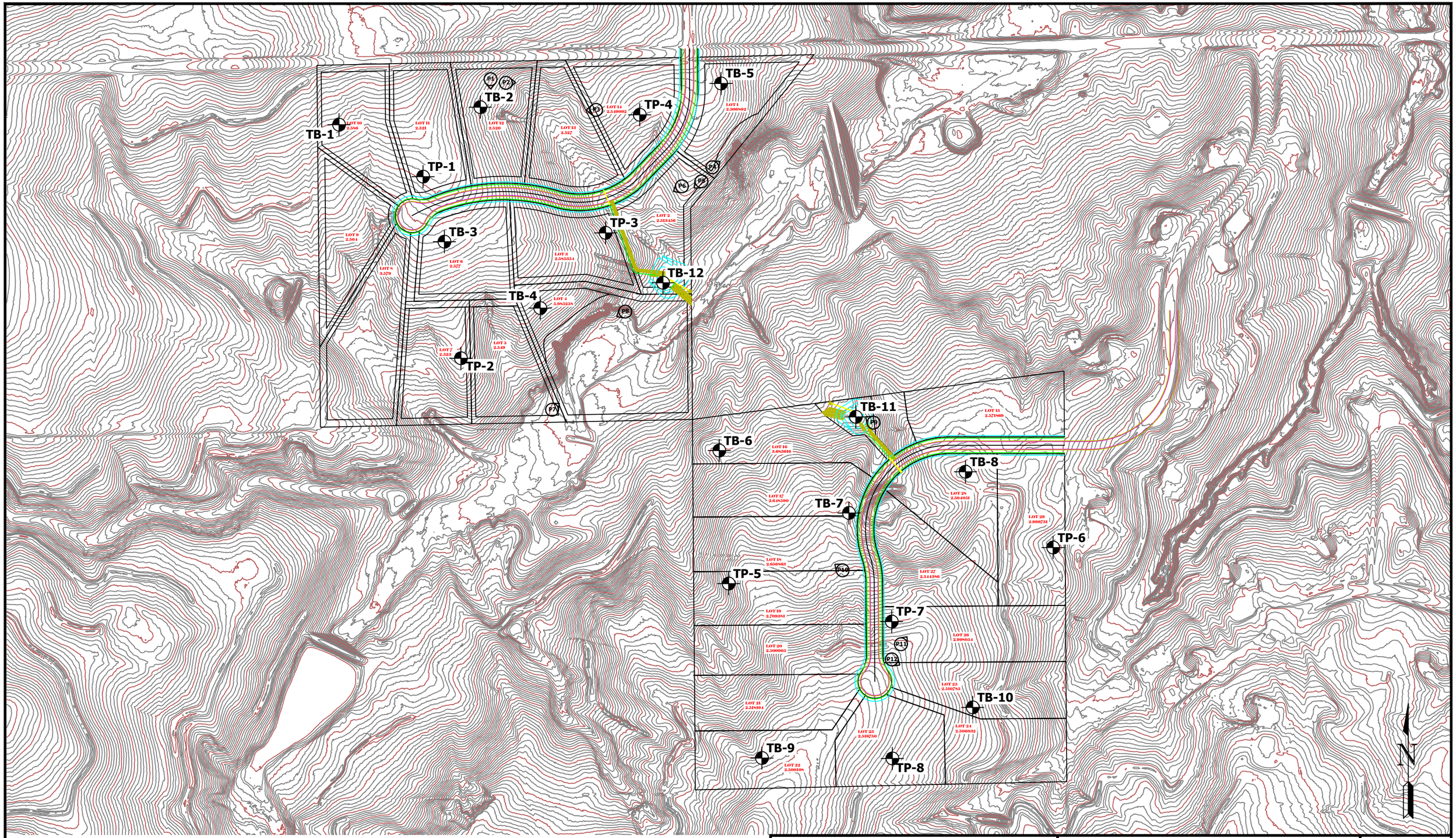
USGS TOPOGRAPHY MAP

IRON RIDGE
ATTICUS LAND, LLC

JOB NO.
251117

FIG. 2



- APPROXIMATE TEST BORING LOCATION AND NUMBER

P2 - APPROXIMATE PHOTOGRAPH LOCATION AND NUMBER

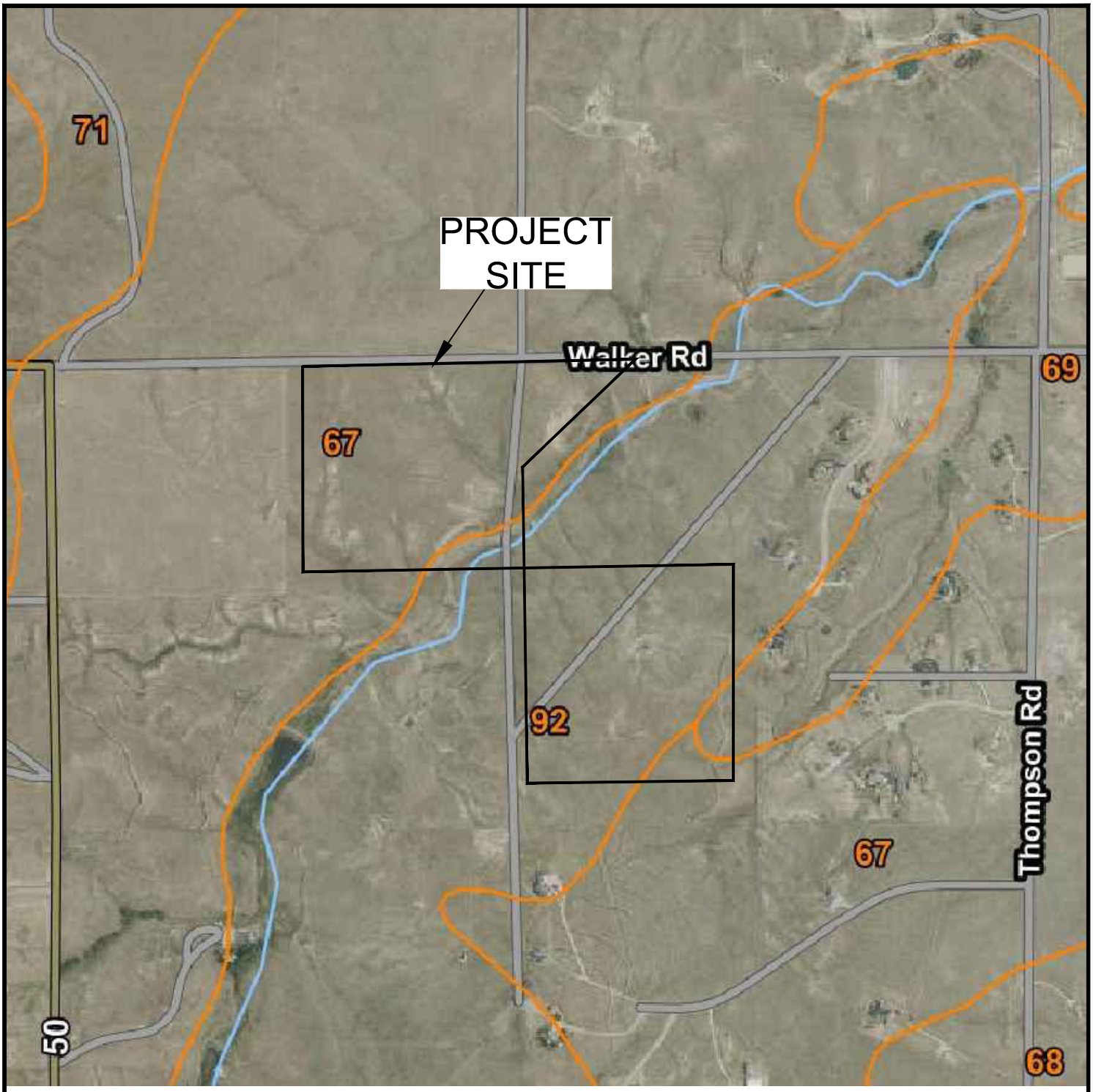
ENTECH ENGINEERING, INC.

SITE AND EXPLORATION PLAN

IRON RIDGE SUBDIVISION - WALKER ROAD
ATTICUS LAND

JOB NO. 251117

FIG. 3



N

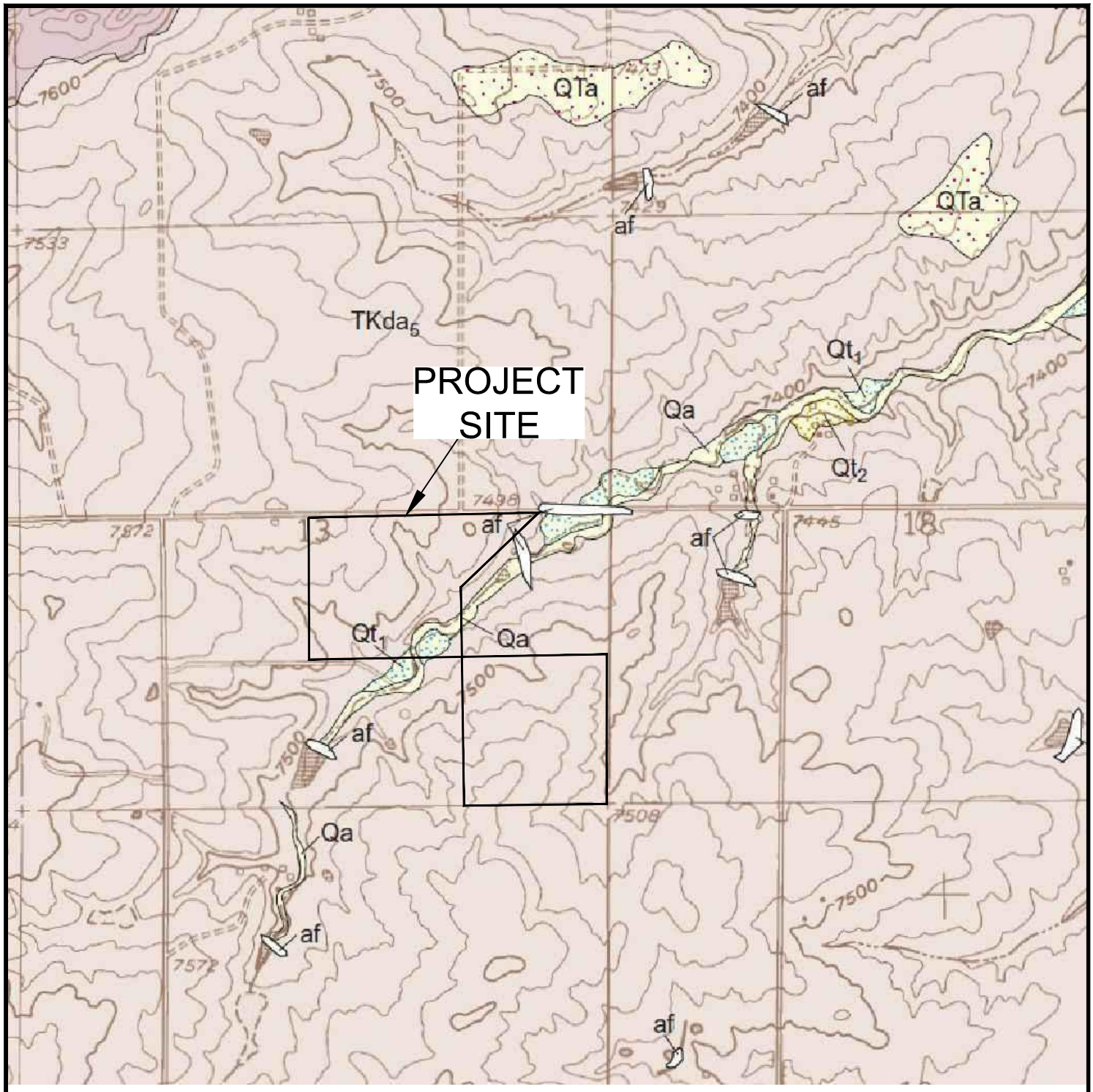
ENTECH ENGINEERING, INC.

SOIL SURVEY AMP

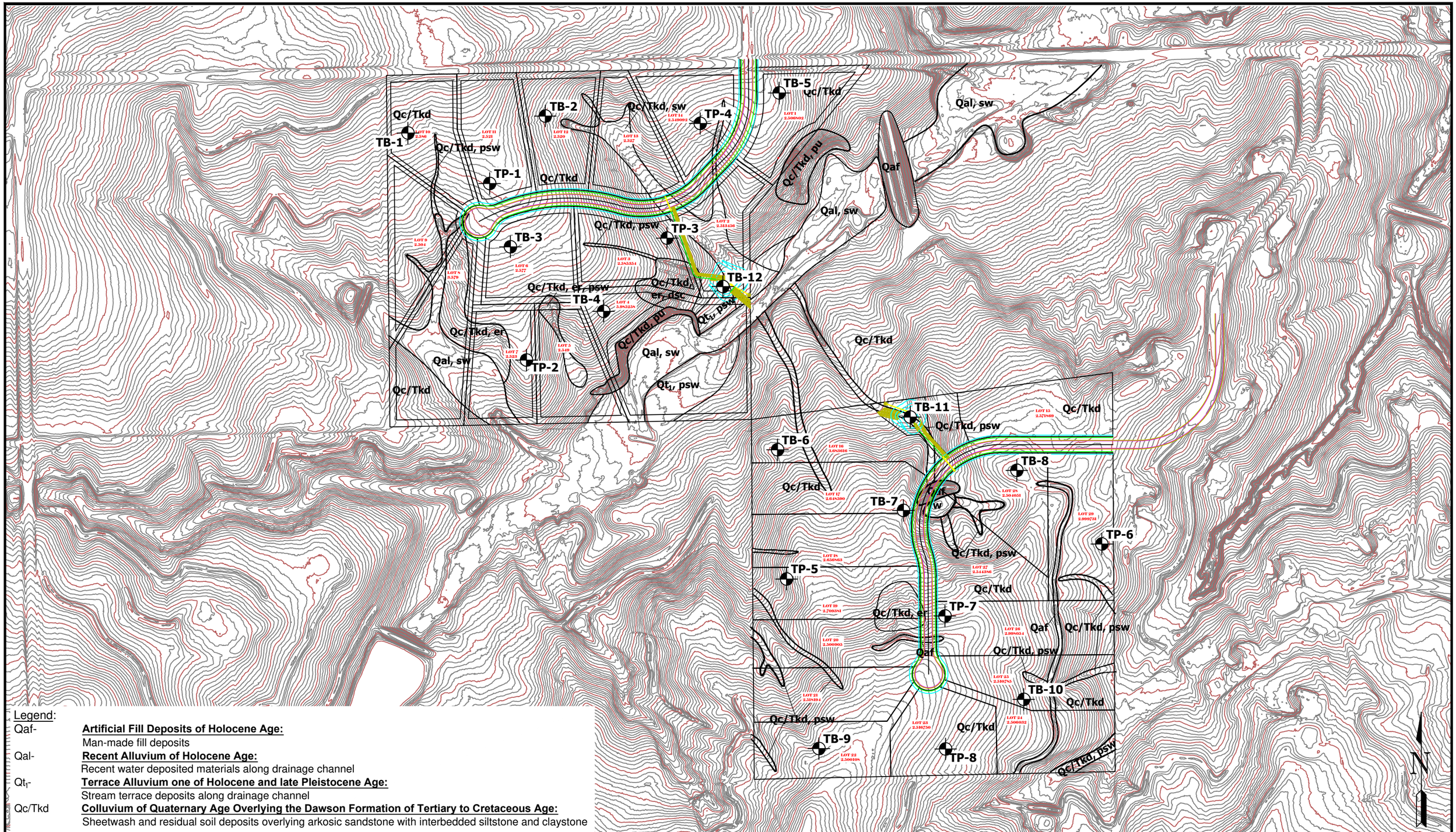
IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. 4



ENTECH ENGINEERING, INC.	**GEOLOGIC MAP OF THE BLACK FOREST QUADRANGLE** **IRON RIDGE** **ATTICUS LAND, LLC**	**JOB NO. 251117** **FIG. 5**



Legend:

Qaf-	**Artificial Fill Deposits of Holocene Age:** Man-made fill deposits
Qal-	**Recent Alluvium of Holocene Age:** Recent water deposited materials along drainage channel
Qt_1-	**Terrace Alluvium one of Holocene and late Pleistocene Age:** Stream terrace deposits along drainage channel
Qc/Tkd	**Colluvium of Quaternary Age Overlying the Dawson Formation of Tertiary to Cretaceous Age:** Sheetwash and residual soil deposits overlying arkosic sandstone with interbedded siltstone and claystone

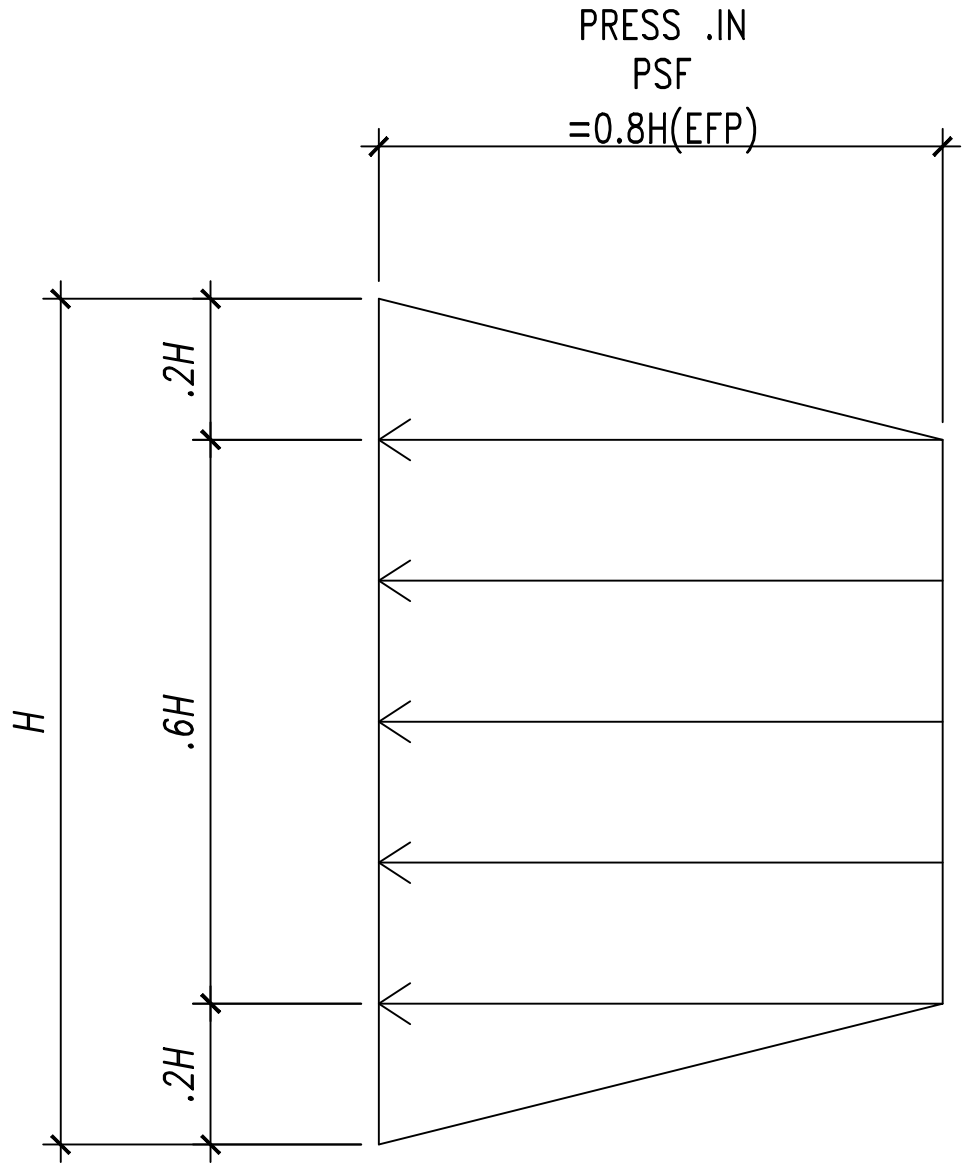
er-	erosion
psw-	potential seasonally shallow groundwater
sw-	seasonally shallow groundwater
w -	ponded water
dsc -	downslope creep
pu -	potentially unstable slopes

ENTECH ENGINEERING, INC.

GEOLOGY / ENGINEERING GEOLOGY MAP
IRON RIDGE SUBDIVISION - WALKER ROAD
ATTICUS LAND, LLC

JOB NO. 251117

FIG. 6



PRESSURE DISTRIBUTION

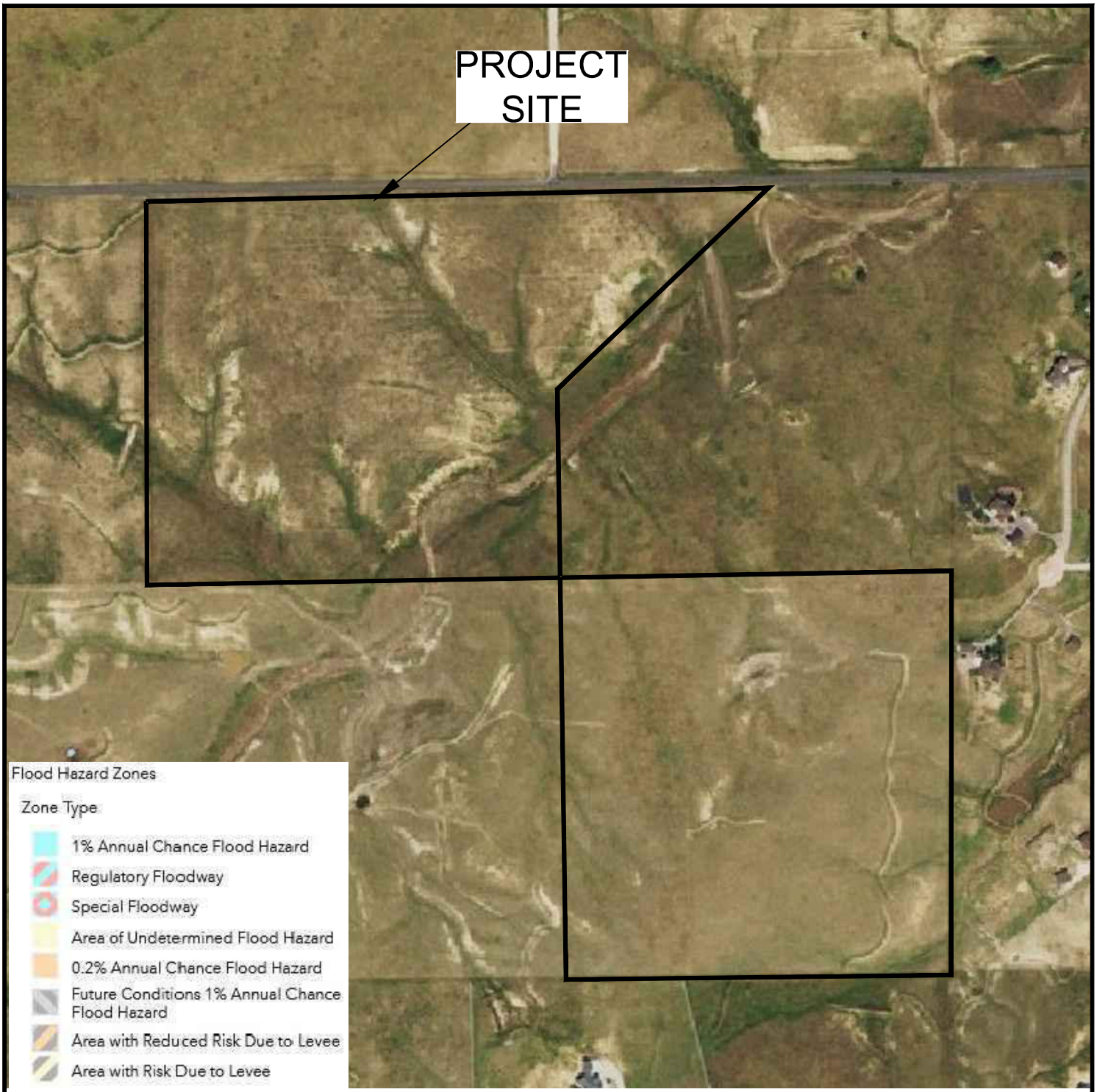
ENTECH ENGINEERING, INC.

LATERAL PRESSURE DIAGRAM

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. 7



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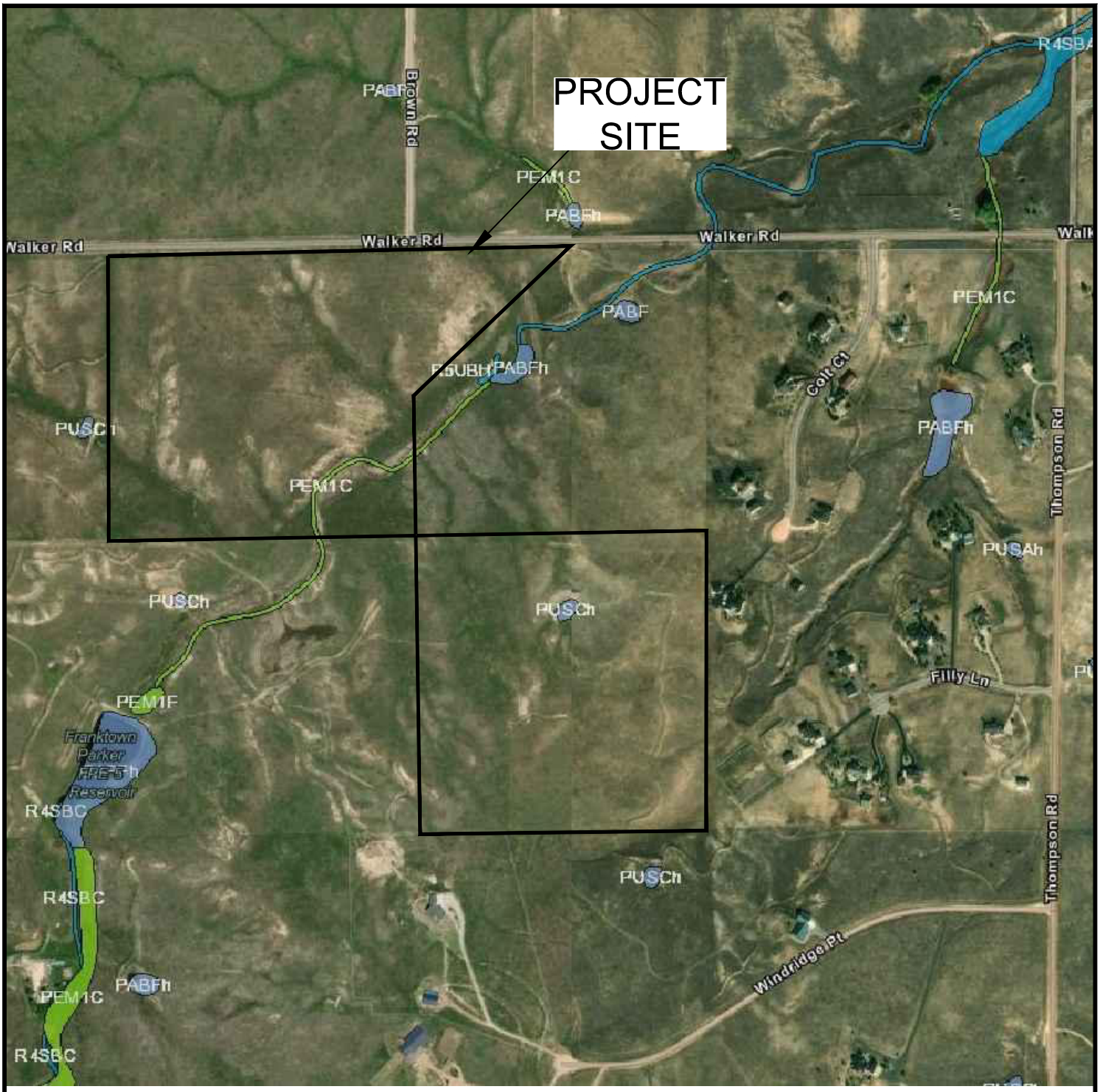
FEMA FLOODPLAIN MAP

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. 8



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USFWS WETLANDS MAP

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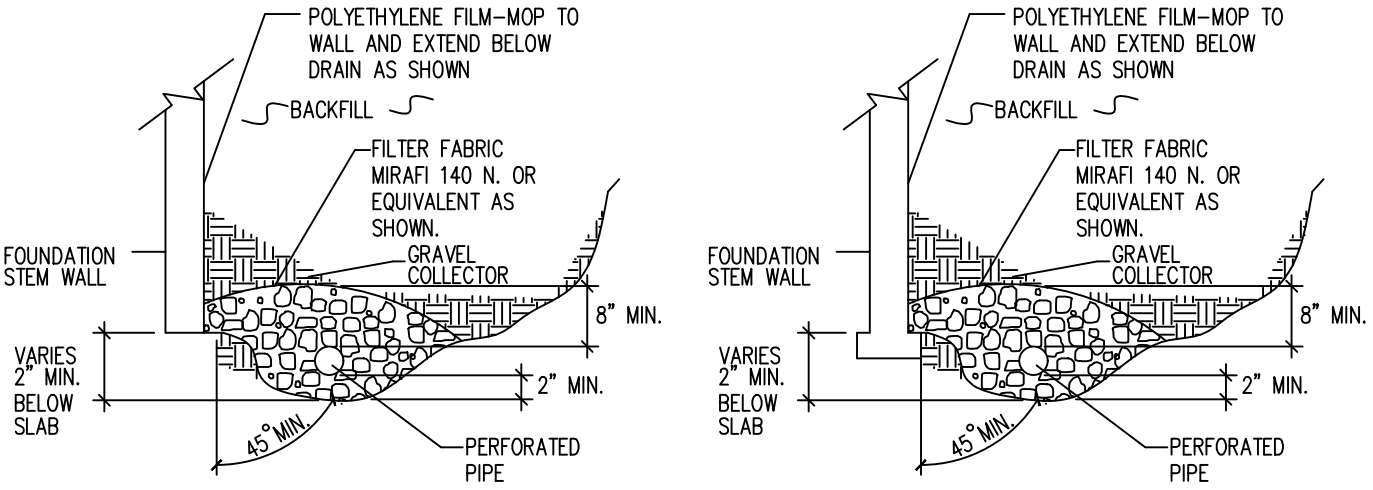
ATTICUS LAND, LLC

JOB NO.
251117

FIG. 9



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.

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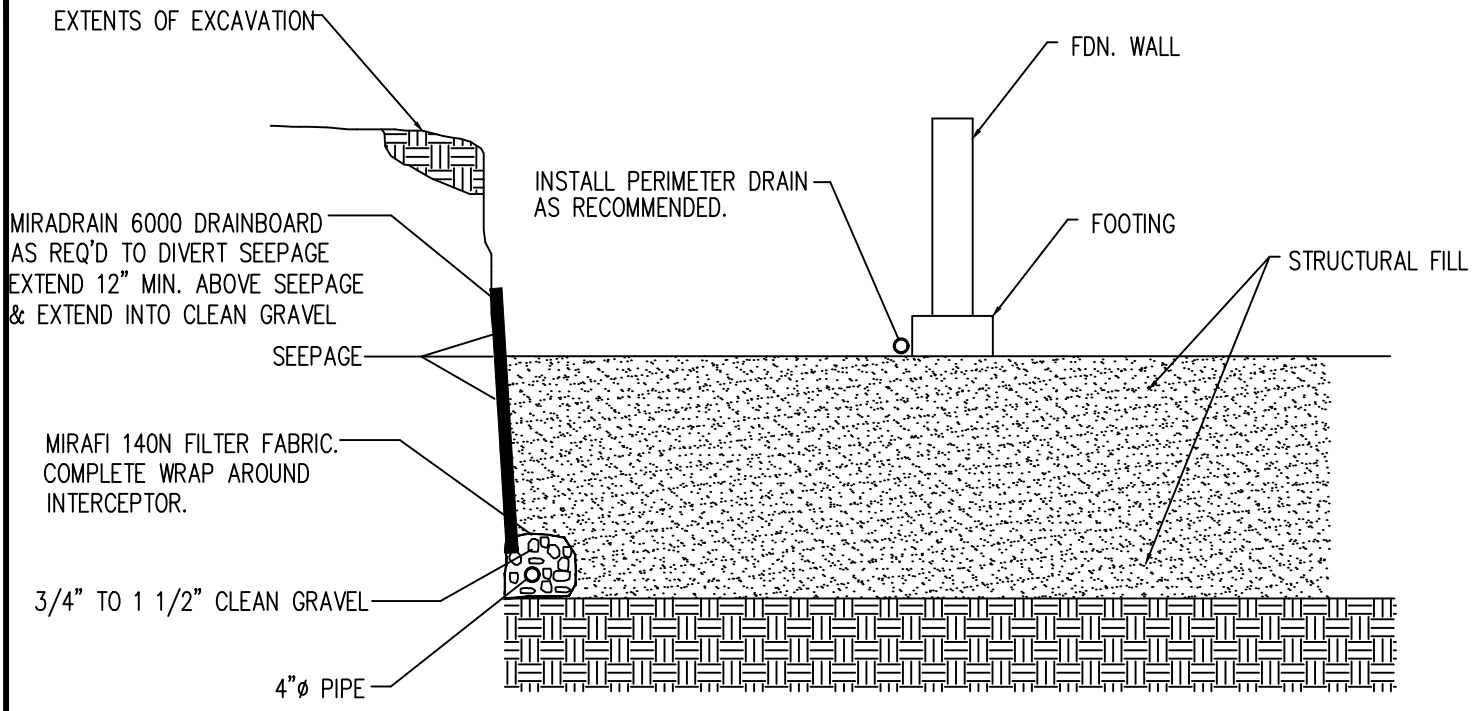
PERIMETER DRAIN DETAIL

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. 10



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

INTERCEPTOR DRAIN DETAIL

N.T.S.

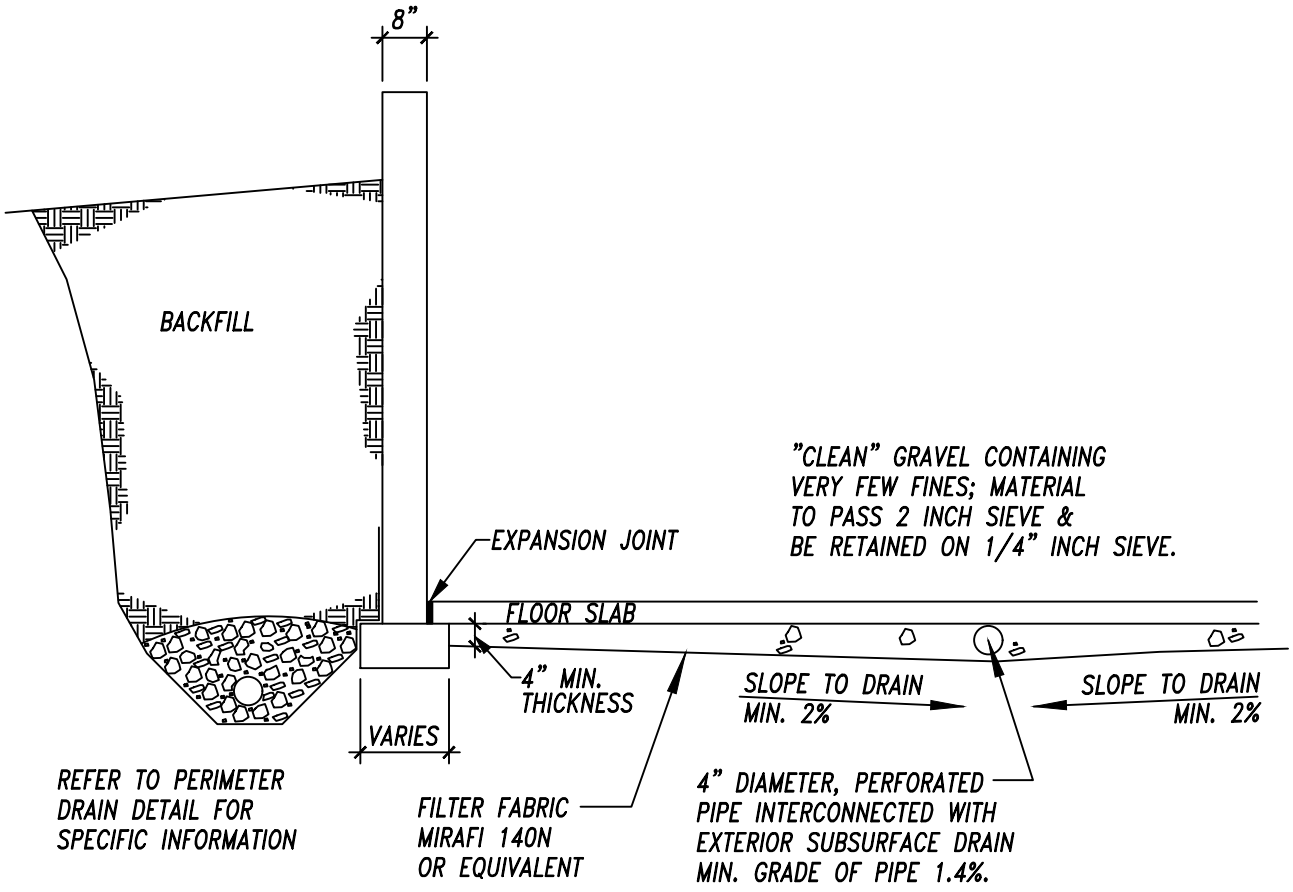
ENTECH ENGINEERING, INC.

INTERCEPTOR DRAIN DETAIL

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. 11



ENTECH ENGINEERING, INC.

TYP. UNDERSLAB DRAINAGE LAYER (CAPILLARY BREAK)

IRON RIDGE

ATTICUS LAND, LLC

JOB NO. 251117

FIG. 12

APPENDIX A: Site Photographs

1

Looking south from the northern portion of the site.

June 24, 2025

2

Looking east from the northwestern portion of the site.

June 24, 2025

Job No. 251117

3

Looking west from the northeastern portion of the site.

June 24, 2025

4

Looking northeast along potentially unstable slope from Lot 1.

June 24, 2025

Job No. 251117

5

Looking southwest from the northeastern portion of the site.

June 24, 2025

6

Looking west from the northeastern portion of the site.

June 24, 2025

Job No. 251117

7

Looking northeast along drainage from the central portion of the site.

June 24, 2025

8

Looking southwest along potentially unstable slope and drainage on proposed Lot 4.

June 24, 2025

Job No. 251117

9

Looking northwest from proposed Pond #1 location.

July 11, 2025

10

Looking northwest from the southern portion of the site.

July 11, 2025

Job No. 251117

11

Looking northeast from southern portion of the site.

July 11, 2025

12

Looking southeast from the southern portion of the site.

July 11, 2025

Job No. 251117

APPENDIX B: Test Boring and Test Pit Logs

TABLE B-1

DEPTH TO BEDROCK & GROUNDWATER

TEST BORING	DEPTH TO BEDROCK (ft.)	DEPTH TO GROUNDWATER (ft.)
1	14	>20
2	18	>20
3	13	>20
4	>20	>20
5	18	>20
6	>20	>20
7	>20	>20
8	3	>20
9	7	>20
10	12	>20
11	8	>20
12	>20	>20

TEST BORING 1
DATE DRILLED 7/9/2025

REMARKS

DRY TO 14', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			12	5.6	1	SAND, SILTY, BROWN, MEDIUM DENSE, MOIST
5			30	5.7	1	
10			14	7.4	1	
15			50/11"	9.7	3	SANDSTONE, VERY WEAK, TAN, MODERATELY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)
20						

TEST BORING 2
DATE DRILLED 7/9/2025

REMARKS

DRY TO 20', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			19	4.6	1	SAND, SILTY, BROWN, MEDIUM DENSE, MOIST
5			16	5.8	1	
10			50/10"	3.1	1	SAND, SILTY, TAN VERY DENSE to DENSE, MOIST (SANDSTONE, VERY WEAK, COMPLETELY WEATHERED)
15			41	3.5	1	
20			50/9"	10.5	3	SANDSTONE, VERY WEAK, TAN, HIGHLY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)

ENTECH ENGINEERING, INC.

TEST BORING LOGS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-1

TEST BORING 3
DATE DRILLED 7/9/2025

REMARKS

DRY TO 19', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
SAND, SILTY, TAN, MEDIUM DENSE, MOIST			18	6.7	1
5			20	6.6	1
10			25	3.6	1
SANDSTONE, VERY WEAK, TAN, MODERATELY WEATHERED (SAND, SILTY, VERY DENSE, MOIST) 15			50	6.3	3
20			50/7"	9.2	3

TEST BORING 4
DATE DRILLED 7/9/2025

REMARKS

DRY TO 20', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
SAND, SILTY, BROWN to TAN, MEDIUM DENSE to VERY DENSE, MOIST			28	5.1	1
5			50	6.8	1
10			18	2.5	1
CLAY LENS 15			16	13.2	1
20			33	5.9	1

ENTECH ENGINEERING, INC.

TEST BORING LOGS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-2

TEST BORING 5
DATE DRILLED 7/9/2025

REMARKS

DRY TO 19', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			23	7.7	2
			24	6.3	1
5					
			31	4.6	1
10					
			21	1.9	1
15					
			50/6"	10.5	3
20					

SILT, SANDY, BROWN, VERY STIFF, MOIST

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

SANDSTONE, VERY WEAK, TAN, MODERATELY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)

TEST BORING 6
DATE DRILLED 7/9/2025

REMARKS

DRY TO 20', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			22	5.4	1
			23	6.0	1
5					
			23	7.5	1
10					
			32	8.6	1
15					
			30	15.9	1
20					

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

ENTECH ENGINEERING, INC.

TEST BORING LOGS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-3

TEST BORING 7
DATE DRILLED 7/9/2025

REMARKS

DRY TO 19.5', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	SAND, SILTY, TAN, VERY DENSE to DENSE, MOIST		50	3.7	1
5			38	3.7	1
10			33	7.4	1
15	SAND, CLAYEY, TAN, DENSE, MOIST		35	13.9	1
20			42	12.6	1

TEST BORING 8
DATE DRILLED 7/10/2025

REMARKS

DRY TO 19', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	SAND, SILTY, BROWN, MEDIUM DENSE, MOIST		24	5.3	1
5	SANDSTONE, VERY to EXTREMELY WEAK, TAN, HIGHLY to COMPLETELY WEATHERED (SAND, SILTY, VERY DENSE to DENSE, MOIST)		50/8"	5.9	3
10	WEATHERED ZONE		37	5.0	3
15			50/9"	5.3	3
20			50/6"	5.3	3

ENTECH ENGINEERING, INC.

TEST BORING LOGS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-4

TEST BORING 9
DATE DRILLED 7/10/2025

REMARKS

DRY TO 19', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	SAND, SILTY, BROWN, DENSE to MEDIUM DENSE, MOIST		49	6.6	1
5			28	9.6	1
	SANDSTONE, VERY WEAK, BROWN to TAN, HIGHLY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)		50/9"	8.3	3
15			50/8"	7.9	3
20			50/7"	7.0	3

TEST BORING 10
DATE DRILLED 7/10/2025

REMARKS

DRY TO 14', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
	SAND, CLAYEY, BROWN, MEDIUM DENSE, MOIST		13	6.4	1
5			15	6.2	1
	CLAY, WITH SAND, BROWN, STIFF, MOIST		12	7.7	2
15	SANDSTONE, VERY WEAK, BROWN to TAN, COMPLETELY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)		50/10"	3.8	3
20					

ENTECH ENGINEERING, INC.

TEST BORING LOGS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-5

TEST BORING 11
DATE DRILLED 7/14/2025

REMARKS

Pond #1
DRY TO 20', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			12	7.1	1
5			24	5.3	1
10			50/11"	9.2	3
15			50/5"	7.8	3
20			50/7"	10.0	3

SAND, SILTY, BROWN, MEDIUM DENSE, MOIST

SANDSTONE, VERY WEAK, OLIVE to TAN, HIGHLY WEATHERED (SAND, SILTY, VERY DENSE, MOIST)

TEST BORING 12
DATE DRILLED 7/14/2025

REMARKS

Pond #2
DRY TO 20', 7/29/25

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			12	4.3	1
5			18	1.7	1
10			7	13.0	1
15			26	7.6	1
20			29	12.7	1

SAND, SILTY, BROWN, MEDIUM DENSE, MOIST to DRY

SAND, CLAYEY, BROWN, LOOSE to MEDIUM DENSE, MOIST

ENTECH ENGINEERING, INC.

TEST BORING LOGS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-6

TEST PIT 1
DATE EXCAVATED 7/11/2025

REMARKS

redoximorphic features at 7'

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, sandy clay, dark brown, moist					
1					
sandy clay, fine grained, brown, moist			gr	m	4
2					
3					
sandy clay loam, fine to coarse grained, grayish brown, moist					
4					
5			gr	m	3
6					
sandy clay, fine to coarse grained, grayish brown, moist					
7			ma	sl	4A
8					
9					
10					

TEST PIT 2
DATE EXCAVATED 7/11/2025

REMARKS

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, sandy clay, dark brown, moist					
1					
2					
sandy clay, fine grained, light brown, moist			bl	m	4
3					
4					
5					
sandy clay, fine grained, light brown, moist			ma	sl	4A
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

ENTECH ENGINEERING, INC.

TEST PIT LOGS

IRON RIDGE SUBDIVISION - WALKER ROAD
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-7

TEST PIT 3
DATE EXCAVATED 7/11/2025
REMARKS

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type	
1						topsoil, sandy clay, dark brown, moist
2						
3			bl	m	4	sandy clay, fine grained, dark brown to brown, moist
4						
5						sandy clay, fine grained, brown, moist
6						
7			ma	sl	4A	
8						
9						
10						

TEST PIT 4
DATE EXCAVATED 7/11/2025

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type	
1						topsoil, sandy clay, dark brown, moist
2						
3			ma	sl	4A	sandy clay, fine grained, light brown, moist
4						
5						
6						
7			ma	sl	4A	
8						
9						
10						

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

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

ENTECH ENGINEERING, INC.

TEST PIT LOGS

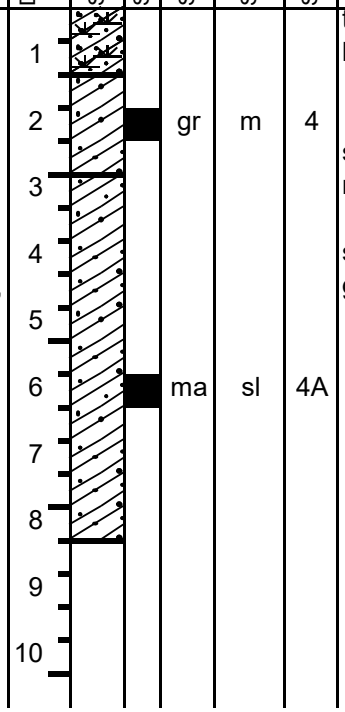
IRON RIDGE SUBDIVISION - WALKER ROAD
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-8

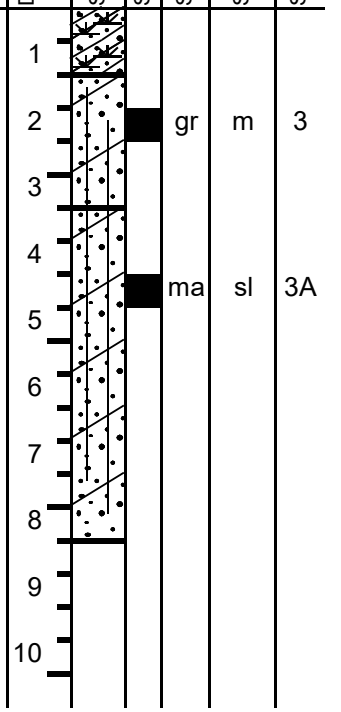
TEST PIT 5
DATE EXCAVATED 7/11/2025
REMARKS

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, sandy clay, dark brown, moist					
sandy clay, fine grained, dark brown to brown, moist			gr	m	4
sandy clay, fine grained, brown, moist			ma	sl	4A



TEST PIT 6
DATE EXCAVAETED 7/11/2025
REMARKS redoximorphic features at 3'

Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	Soil Type
topsoil, sandy clay loam, dark brown, moist					
sandy clay loam, fine to medium grained, light brown,			gr	m	3
sandy clay loam, fine grained, grayish brown, moist			ma	sl	3A



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

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

ENTECH ENGINEERING, INC.

TEST PIT LOGS

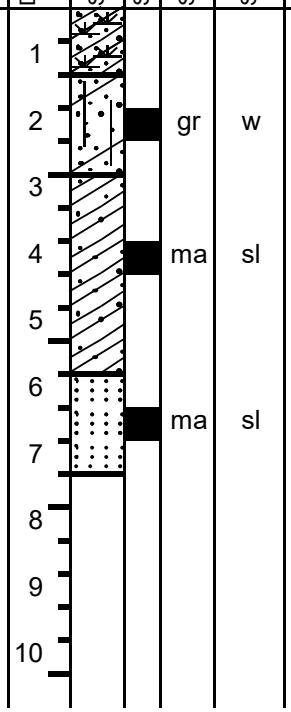
IRON RIDGE SUBDIVISION - WALKER ROAD
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-9

TEST PIT 7
DATE EXCAVATED 7/11/2025
REMARKS

redoximorphic features at 3'



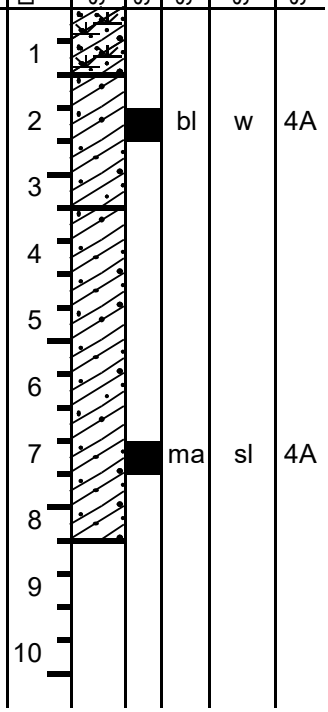
topsoil, sandy clay loam, dark brown, moist

sandy clay loam, fine to medium grained, light brown,

sandy clay, fine grained, gray moist

completely weathered sandstone (sandy clay loam, fine grained, grayis tan moist)

TEST PIT 8
DATE EXCAVATED 7/11/2025
REMARKS



topsoil, sandy clay, dark brown, moist

sandy clay, fine grained, brown, moist

sandy clay, fine grained, light brown, moist

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

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

ENTECH ENGINEERING, INC.

TEST PIT LOGS

IRON RIDGE SUBDIVISION - WALKER ROAD
ATTICUS LAND, LLC

JOB NO. 251117

FIG. B-10

APPENDIX C: Laboratory Test Results

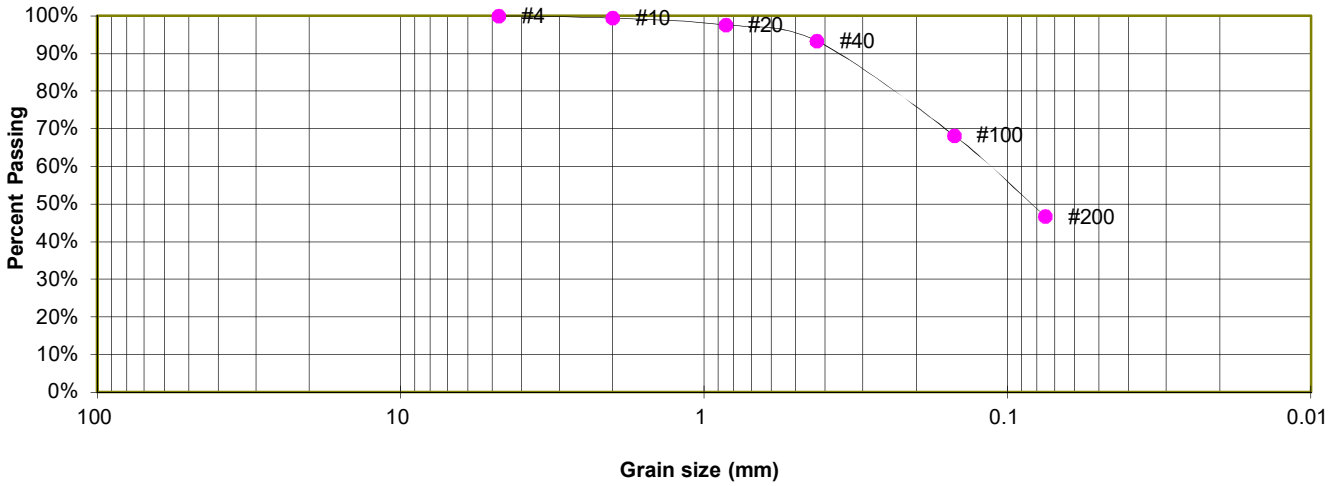
ENTECH ENGINEERING, INC.

TABLE C-1
SUMMARY OF LABORATORY TEST RESULTS

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTIC INDEX	SULFATE (WT %)	SWELL/ CONSOL (%)	USCS	SOIL DESCRIPTION
1	1	2-3			46.7						SM	SAND, SILTY
1	2	10			33.9	16	15	1	0.00		SM	SAND, SILTY
1	4	5			39.1	23	19	4			SM	SAND, SILTY
1	6	10			17.9						SM	SAND, SILTY
1	7	15	16.3	116.3	39.9					0.7	SC	SAND, CLAYEY
1	9	5			23.8						SM	SAND, SILTY
1	11	2-3			17.7						SM	SAND, SILTY
1	12	10			43.3						SM	SAND, SILTY
1	TP-1	5			13.5						SM	SAND, SILTY
1	TP-6	4.5			15.6						SM	SAND, SILTY
2	5	2-3	9.7	100.0	62.0					-2.3	ML	SILT, SANDY
2	10	10	9.1	101.7	73.6					-1.3	CL	CLAY, WITH SAND
2	TP-2	2.5			59.5						CL	CLAY, SANDY
2	TP-3	6			67.7						CL	CLAY, SANDY
2	TP-4	2-3			58.4						CL	CLAY, SANDY
2	TP-5	6.5			54.3						CL	CLAY, SANDY
2	TP-8	2			65.4						CL	CLAY, SANDY
3	3	20			17.0	38	30	8	0.07		SM	SANDSTONE (SAND, SILTY)
3	8	5			36.6						SM	SANDSTONE (SAND, SILTY)
3	TP-7	6.5			22.0						SM	SANDSTONE (SAND, SILTY)

Project: Iron Ridge
Client: Atticus Land, LLC
Job No: 251117

TEST BORING	1	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	2-3	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	99.4%
20	97.6%
40	93.3%
100	68.2%
200	46.7%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

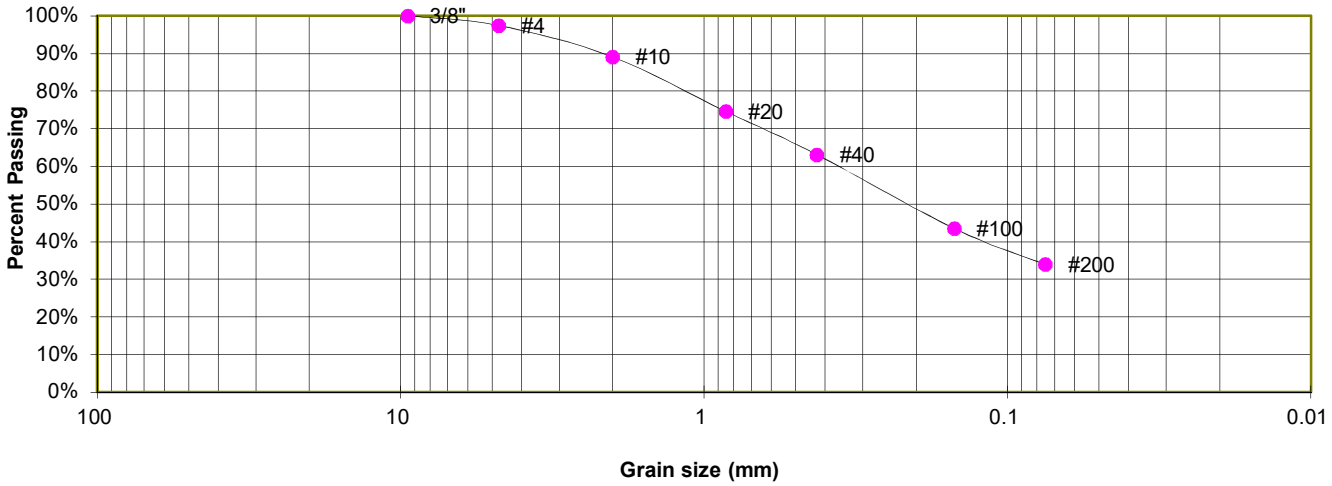
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-1

TEST BORING	2	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	10	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.5%
10	89.1%
20	74.7%
40	63.1%
100	43.5%
200	33.9%

ATTERBERG LIMITS

Plastic Limit	15
Liquid Limit	16
Plastic Index	1

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

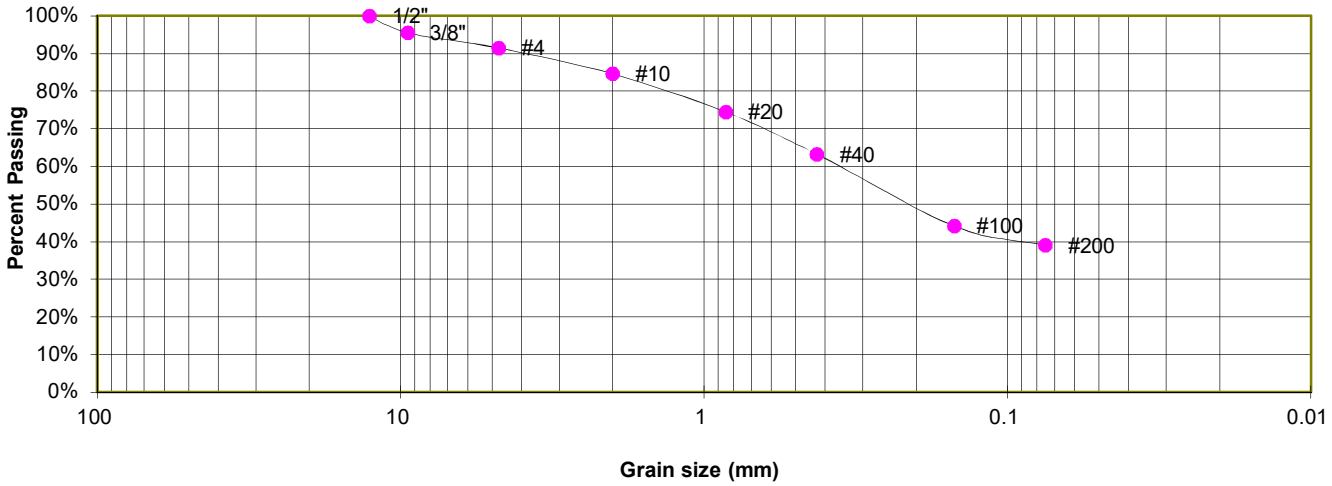
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-2

TEST BORING	4	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	5	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	95.5%
4	91.4%
10	84.6%
20	74.5%
40	63.3%
100	44.1%
200	39.1%

ATTERBERG LIMITS

Plastic Limit	19
Liquid Limit	23
Plastic Index	4

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

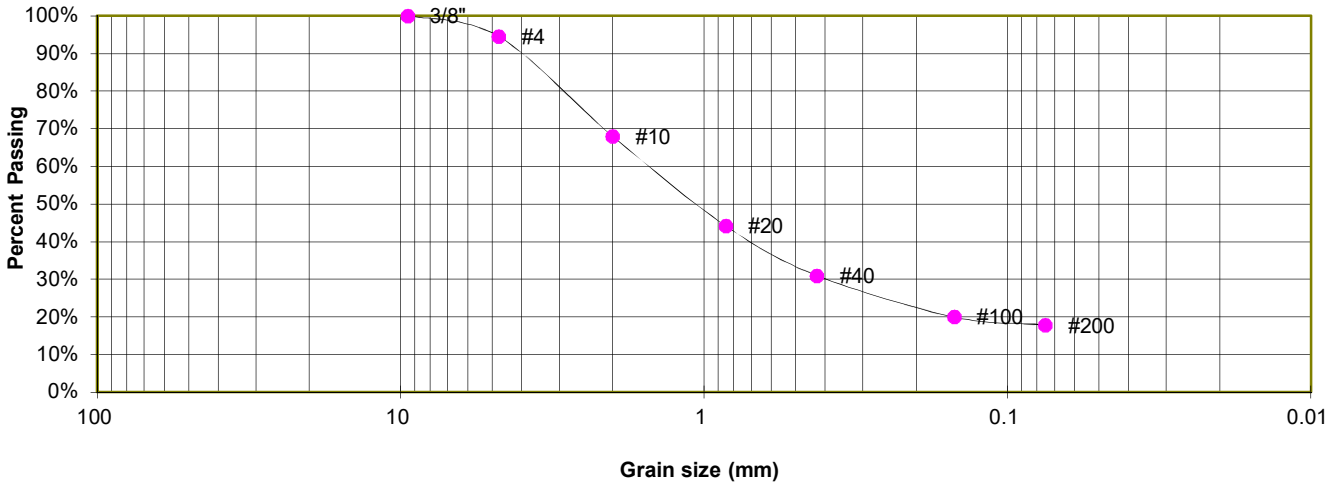
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-3

TEST BORING	6	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	10	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	94.5%
10	68.0%
20	44.2%
40	31.0%
100	20.0%
200	17.9%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

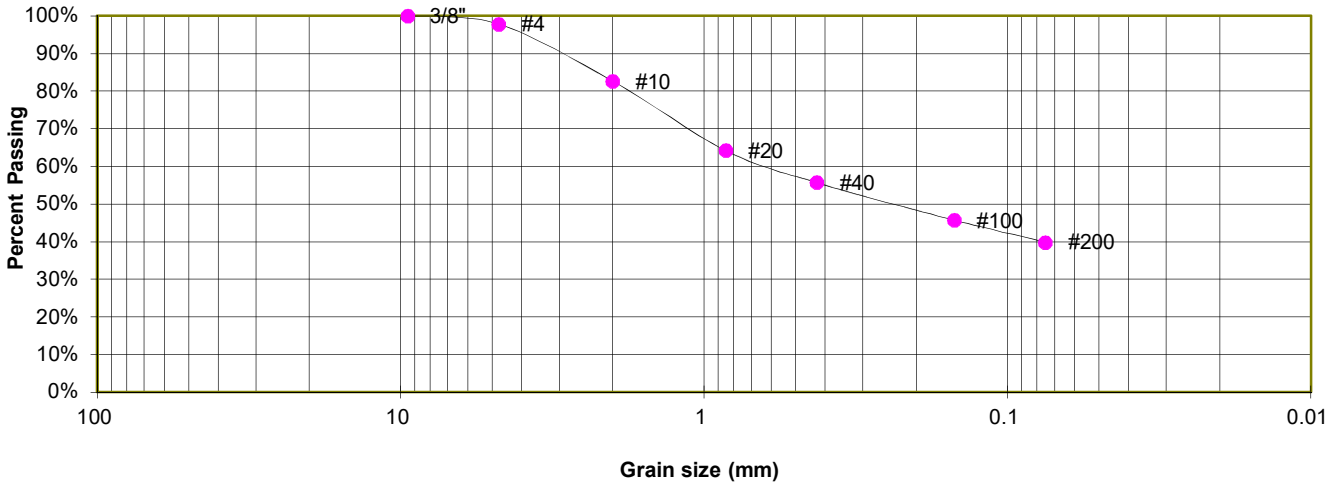
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-4

TEST BORING	7	SOIL DESCRIPTION	SAND, CLAYEY
DEPTH (FT)	15	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.8%
10	82.7%
20	64.2%
40	55.7%
100	45.8%
200	39.9%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SC

ENTECH ENGINEERING, INC.

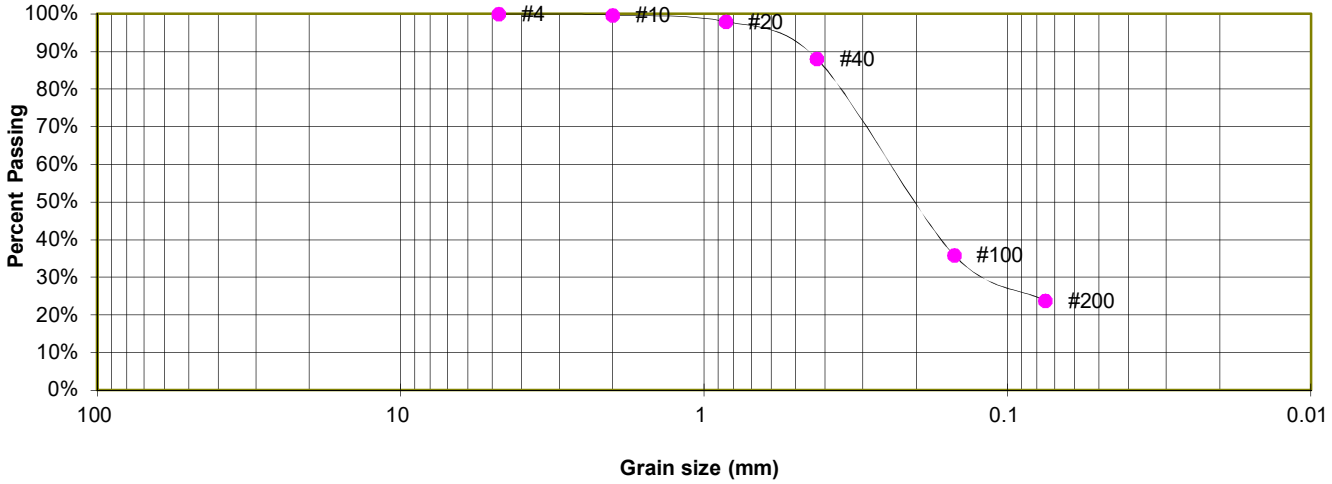
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-5

TEST BORING	9	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	5	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	99.7%
20	98.0%
40	88.1%
100	35.9%
200	23.8%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

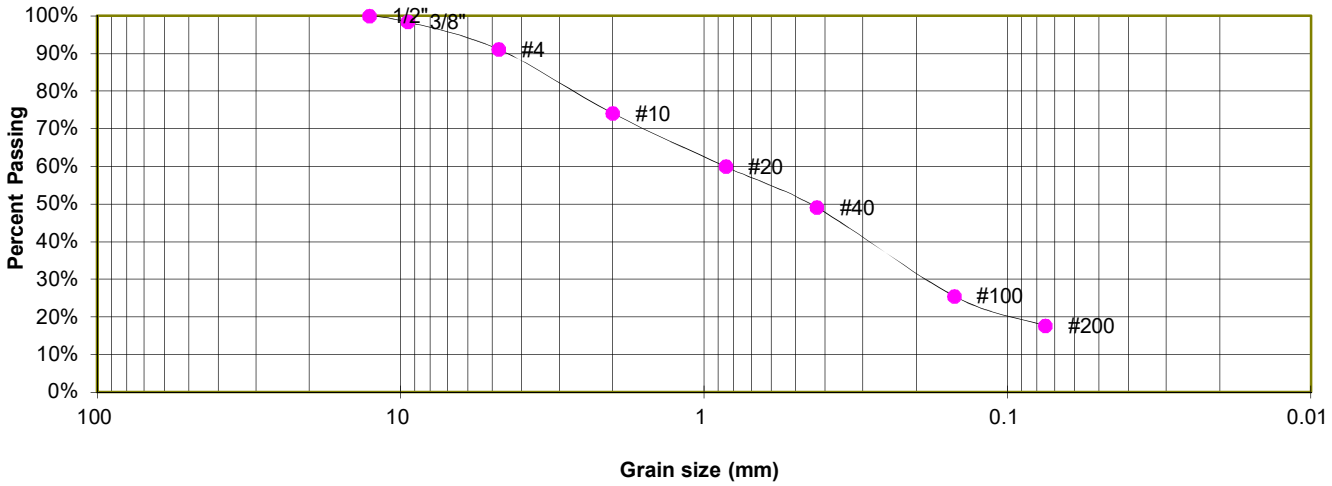
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-6

TEST BORING	11	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	2-3	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.4%
4	91.1%
10	74.1%
20	60.0%
40	49.1%
100	25.6%
200	17.7%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

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LABORATORY TEST RESULTS

IRON RIDGE
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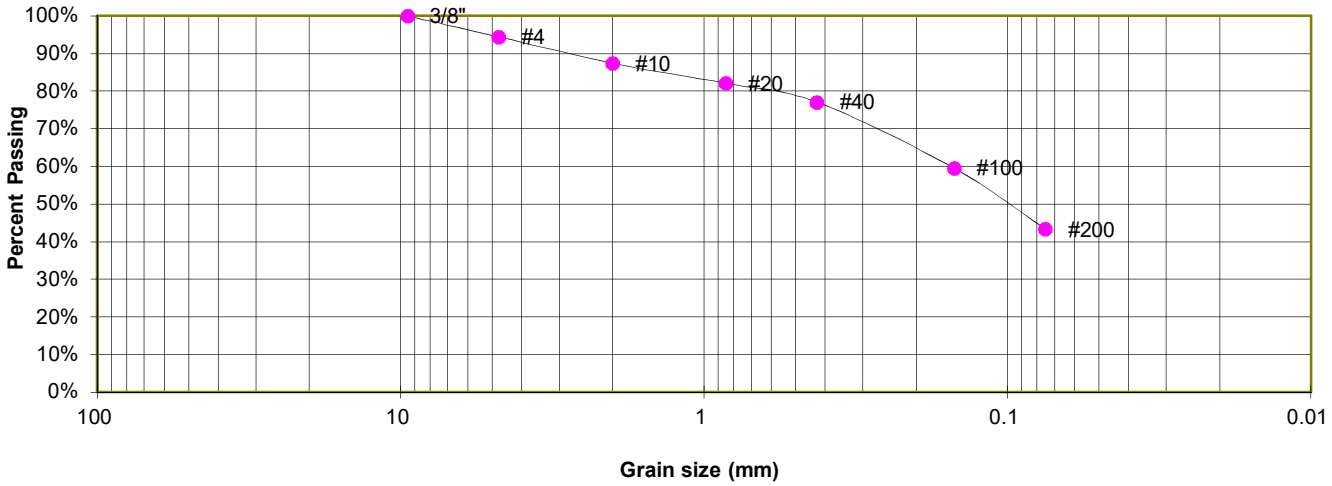
JOB NO. 251117

FIG. C-7

TEST BORING	12	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	10	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	94.4%
10	87.4%
20	82.1%
40	77.1%
100	59.6%
200	43.3%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

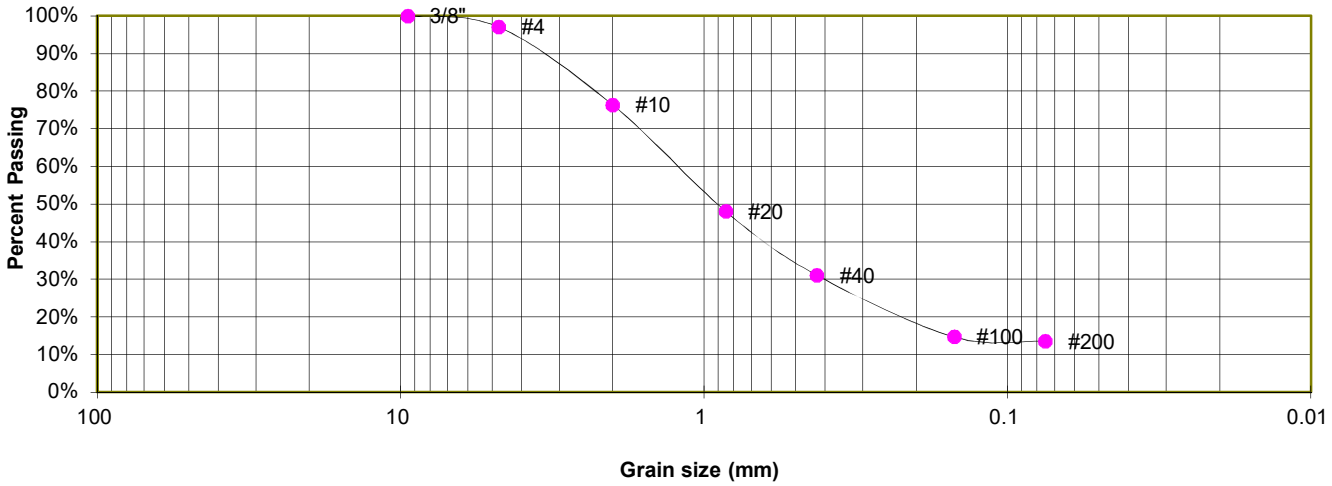
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-8

TEST PIT	TP-1	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	5	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.1%
10	76.3%
20	48.1%
40	31.1%
100	14.7%
200	13.5%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

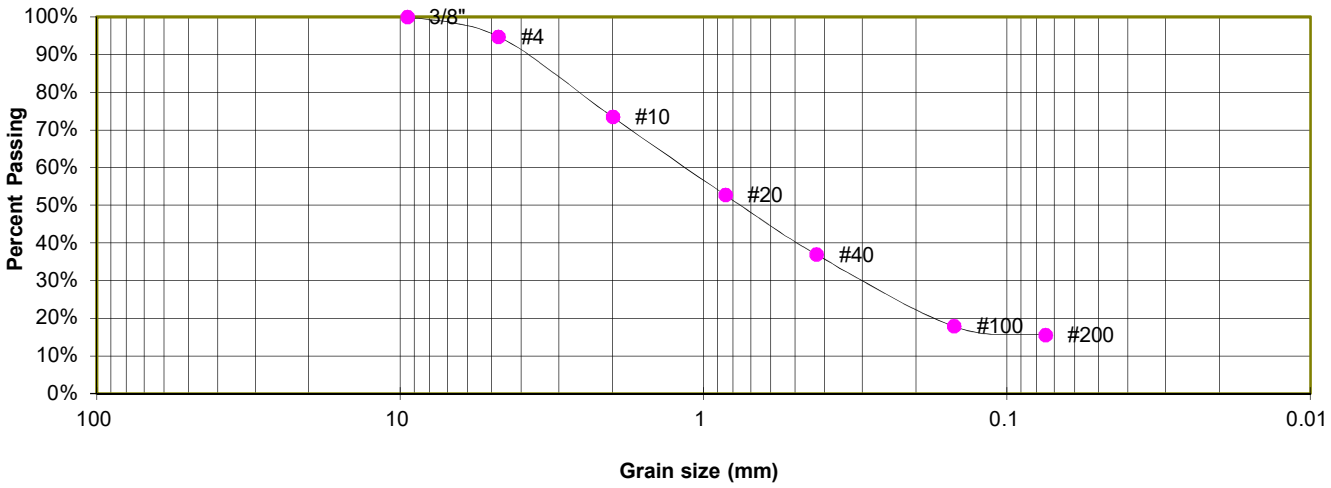
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-9

TEST PIT	TP-6	SOIL DESCRIPTION	SAND, SILTY
DEPTH (FT)	4.5	SOIL TYPE	1



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	94.8%
10	73.4%
20	52.7%
40	36.9%
100	17.9%
200	15.6%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

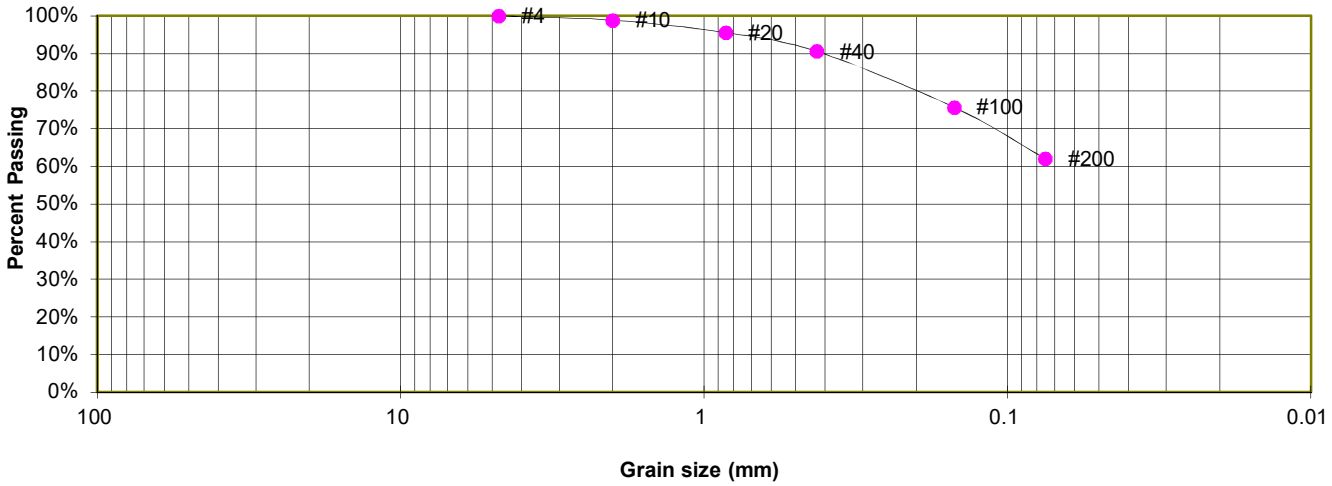
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-10

TEST BORING	5	SOIL DESCRIPTION	SILT, SANDY
DEPTH (FT)	2-3	SOIL TYPE	2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	98.9%
20	95.6%
40	90.6%
100	75.7%
200	62.0%

SOIL CLASSIFICATION

USCS CLASSIFICATION: ML

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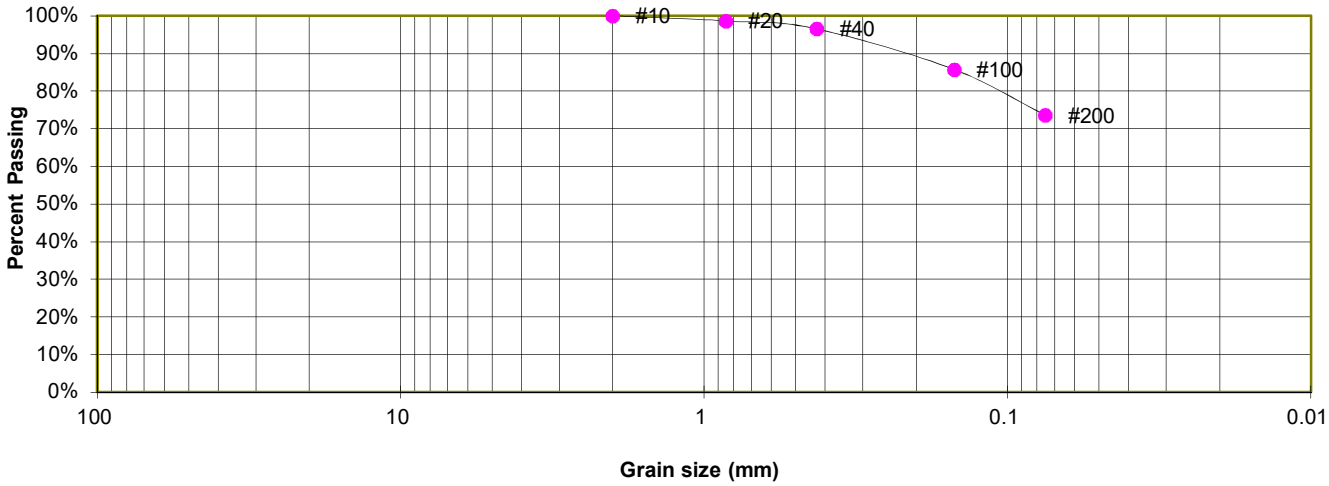
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-11

TEST BORING	10	SOIL DESCRIPTION	CLAY, WITH SAND
DEPTH (FT)	10	SOIL TYPE	2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	
10	100.0%
20	98.7%
40	96.6%
100	85.8%
200	73.6%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

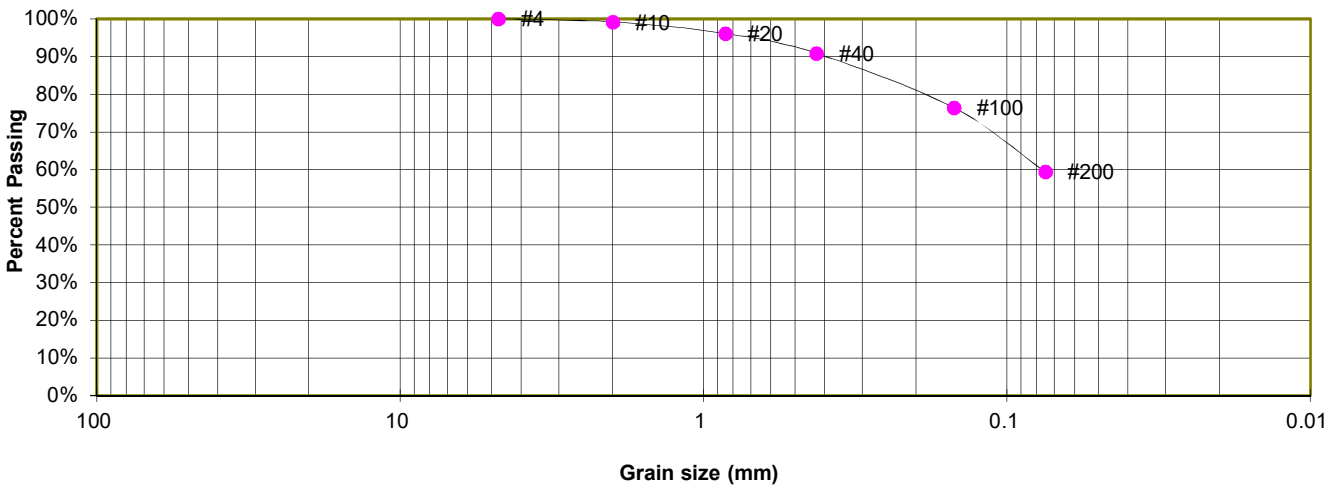
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-12

TEST PIT	TP-2	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	2.5	SOIL TYPE	2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.2%
20	96.1%
40	90.8%
100	76.5%
200	59.5%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

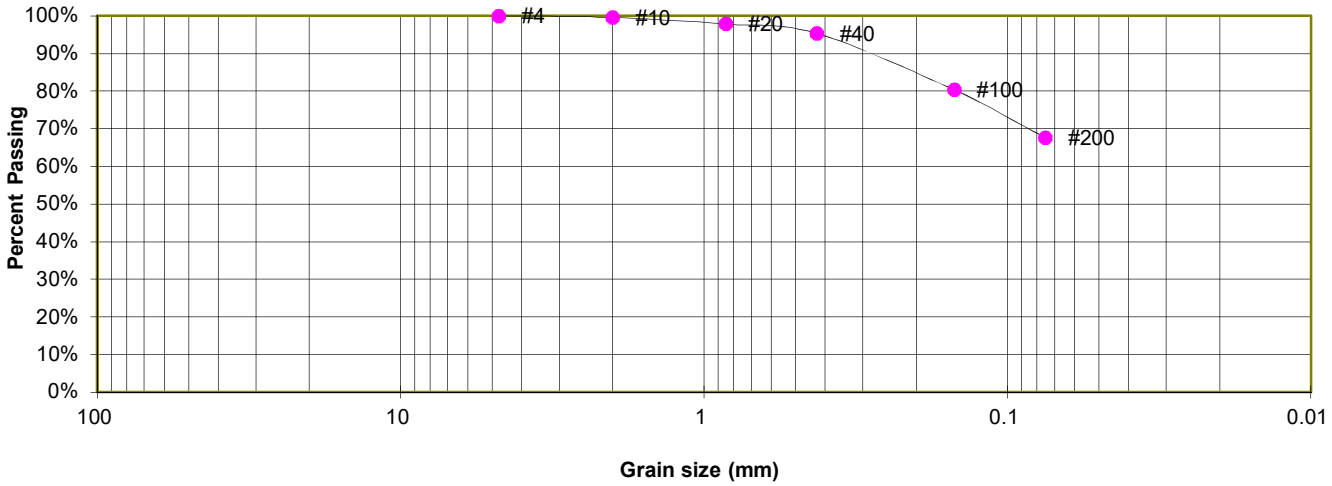
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-13

TEST PIT	TP-3	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	6	SOIL TYPE	2



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.6%
20	97.9%
40	95.4%
100	80.3%
200	67.7%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

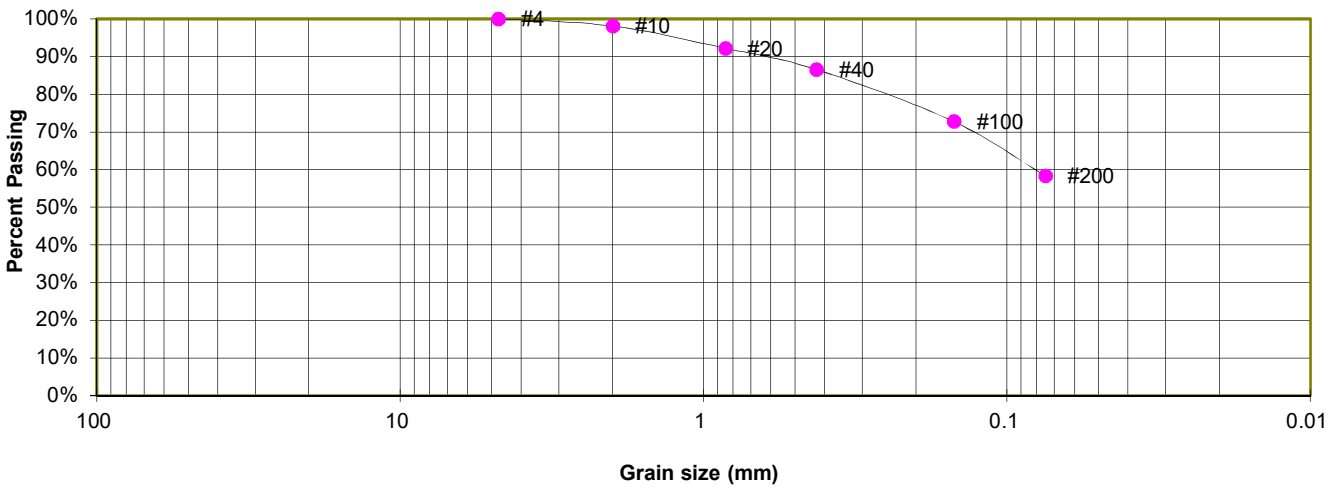
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-14

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



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	98.1%
20	92.2%
40	86.6%
100	72.8%
200	58.4%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

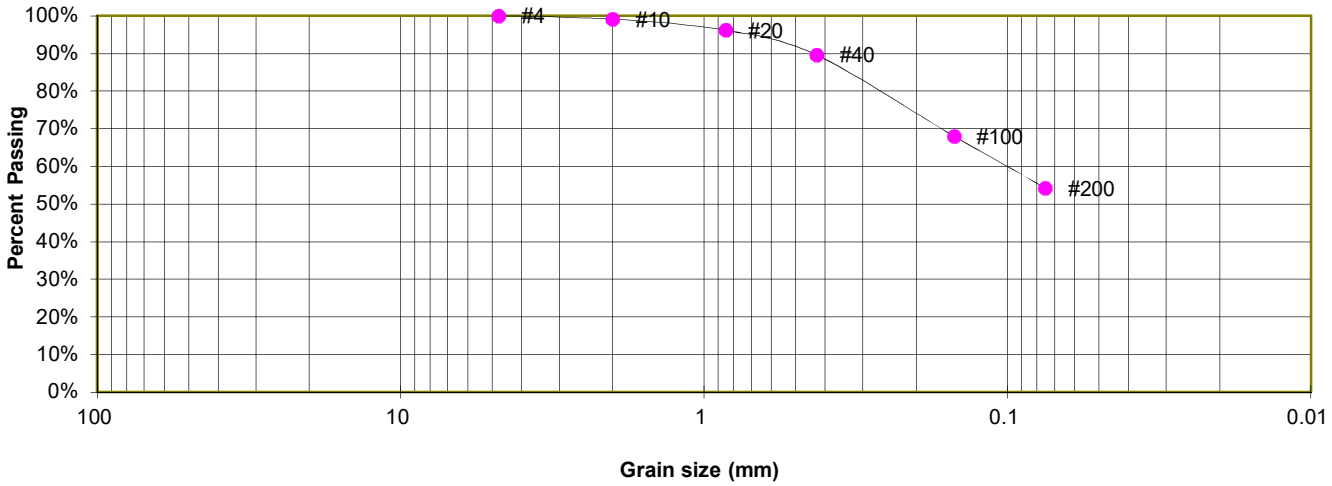
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-15

TEST PIT	TP-5	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	6.5	SOIL TYPE	4



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	99.1%
20	96.2%
40	89.6%
100	68.1%
200	54.3%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

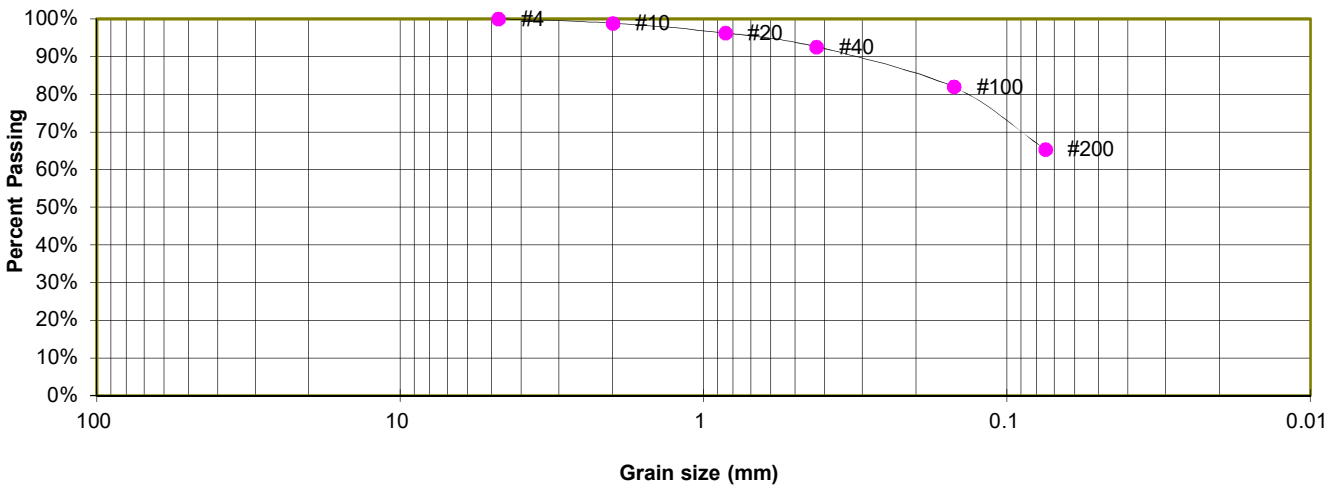
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-16

TEST PIT	TP-8	SOIL DESCRIPTION	CLAY, SANDY
DEPTH (FT)	2	SOIL TYPE	4



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	98.9%
20	96.2%
40	92.6%
100	81.9%
200	65.4%

SOIL CLASSIFICATION

USCS CLASSIFICATION: CL

ENTECH ENGINEERING, INC.

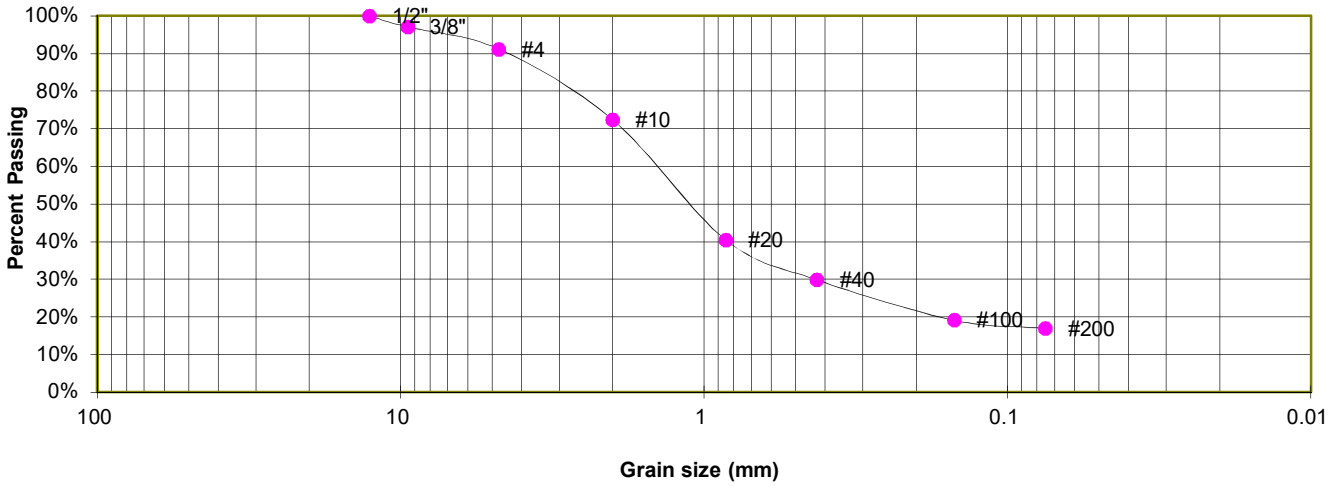
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-17

TEST BORING	3	SOIL DESCRIPTION	SANDSTONE (SAND, SILTY)
DEPTH (FT)	20	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.1%
4	91.2%
10	72.4%
20	40.5%
40	29.8%
100	19.1%
200	17.0%

ATTERBERG LIMITS

Plastic Limit	30
Liquid Limit	38
Plastic Index	8

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

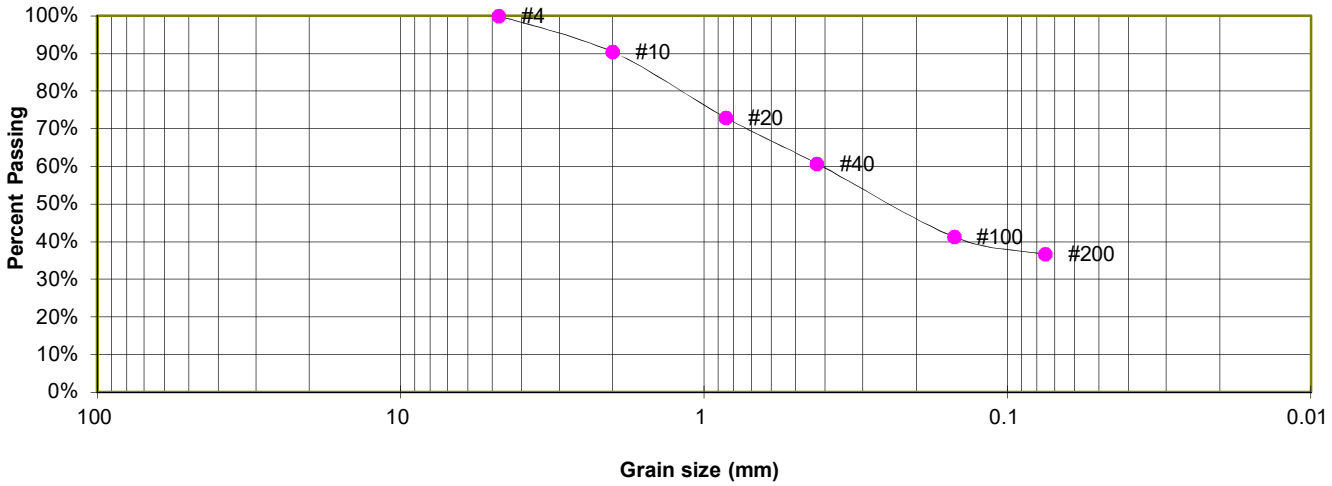
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-18

TEST BORING	8	SOIL DESCRIPTION	SANDSTONE (SAND, SILTY)
DEPTH (FT)	5	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	
4	100.0%
10	90.4%
20	73.0%
40	60.8%
100	41.3%
200	36.6%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

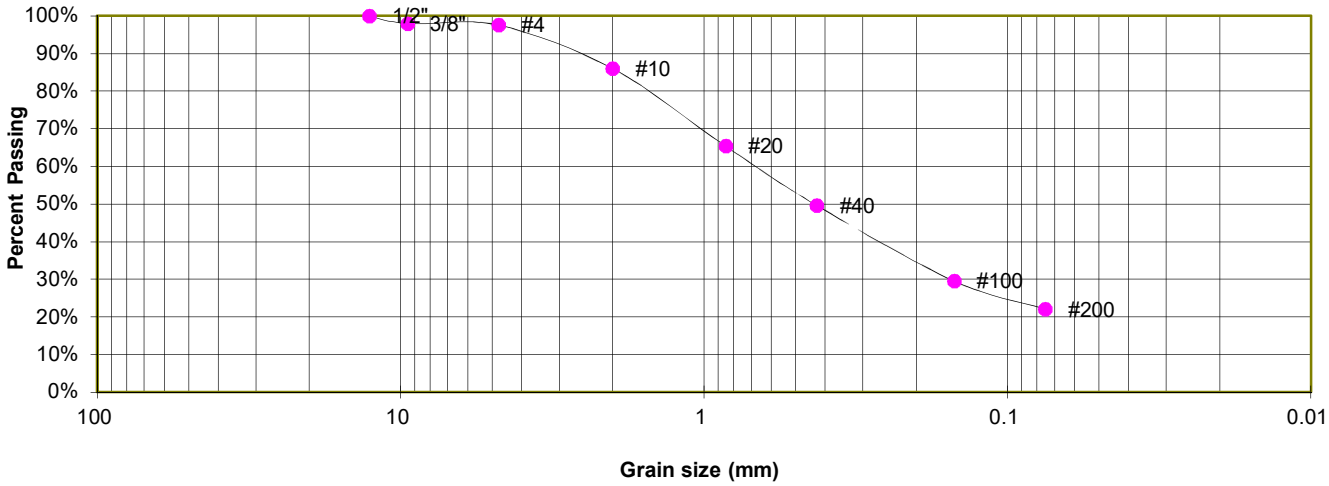
LABORATORY TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-19

TEST PIT	TP-7	SOIL DESCRIPTION	SANDSTONE, SILTY
DEPTH (FT)	6.5	SOIL TYPE	3



GRAIN SIZE ANALYSIS

U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.0%
4	97.5%
10	86.0%
20	65.4%
40	49.6%
100	29.6%
200	22.0%

SOIL CLASSIFICATION

USCS CLASSIFICATION: SM

ENTECH ENGINEERING, INC.

LABORATORY TEST RESULTS

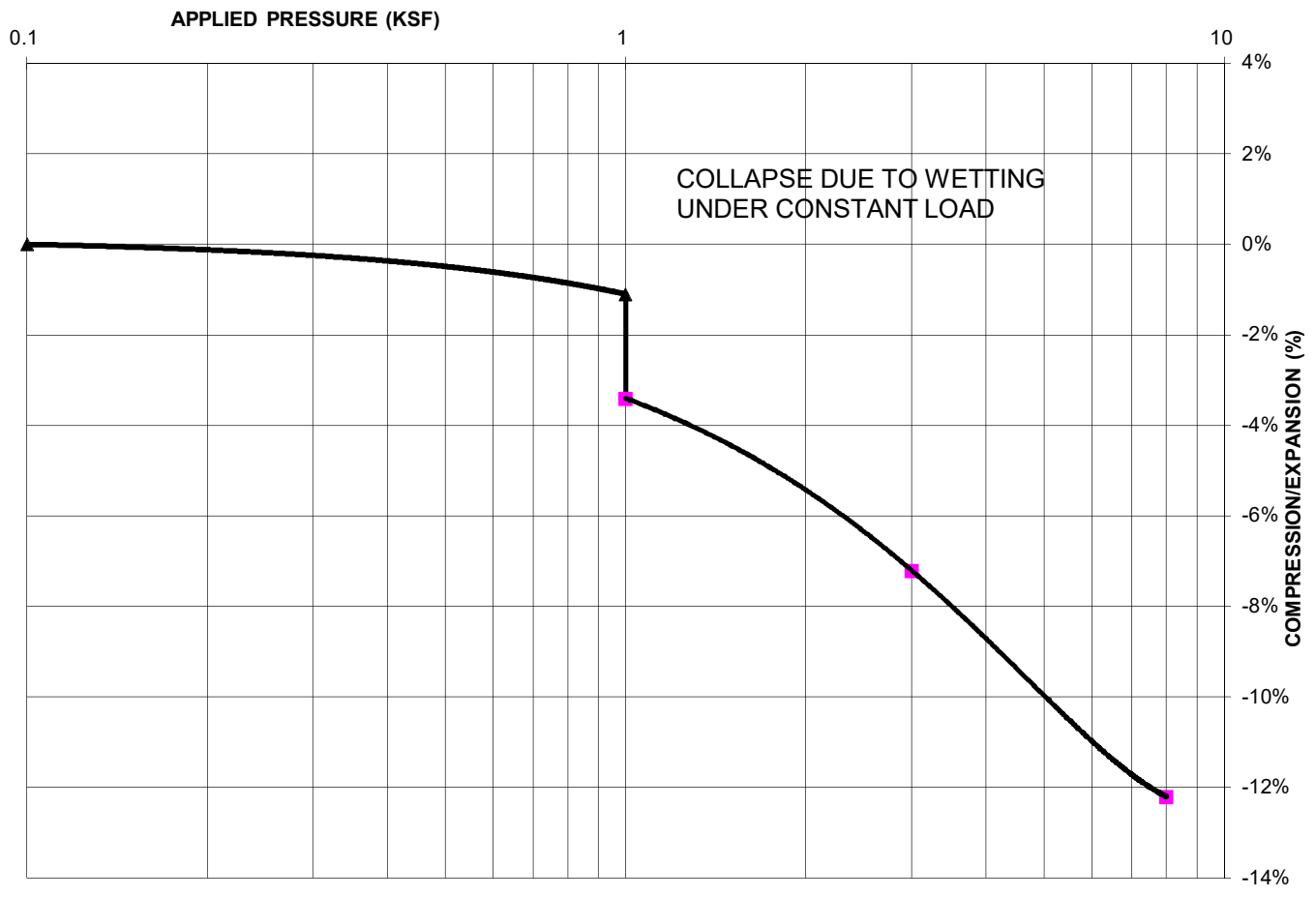
IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-20

TEST BORING	5	SOIL DESCRIPTION	SILT, SANDY
DEPTH (FT)	2-3	SOIL TYPE	2

SWELL CONSOLIDATION



SWELL/COLLAPSE TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 100
NATURAL MOISTURE CONTENT: 9.7%
SWELL/COLLAPSE (%): -2.3%

ENTECH ENGINEERING, INC.

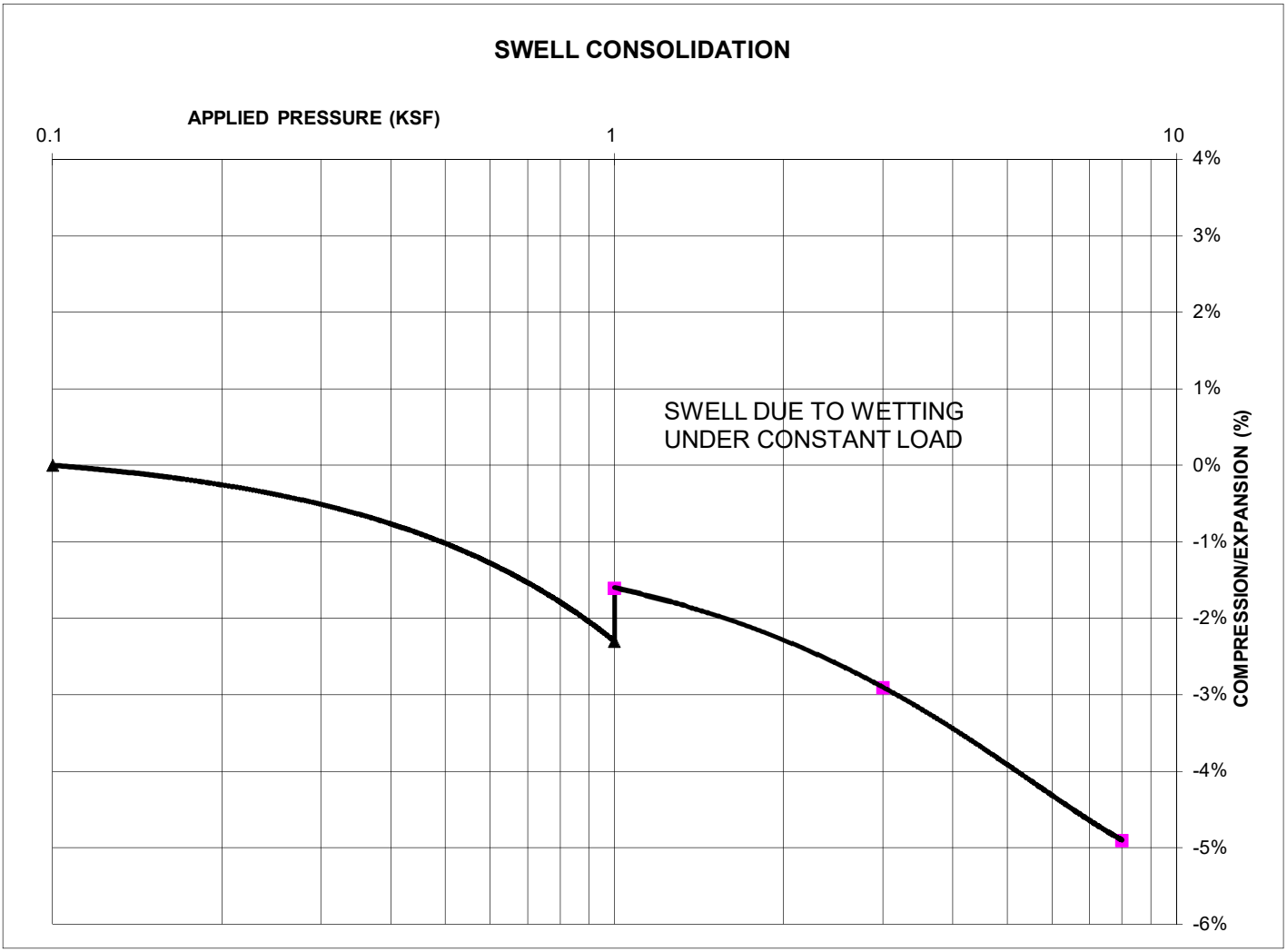
SWELL TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-21

TEST BORING	7	SOIL DESCRIPTION	SAND, CLAYEY
DEPTH (FT)	15	SOIL TYPE	1



SWELL/COLLAPSE TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 116
NATURAL MOISTURE CONTENT: 16.3%
SWELL/COLLAPSE (%): 0.7%

ENTECH ENGINEERING, INC.

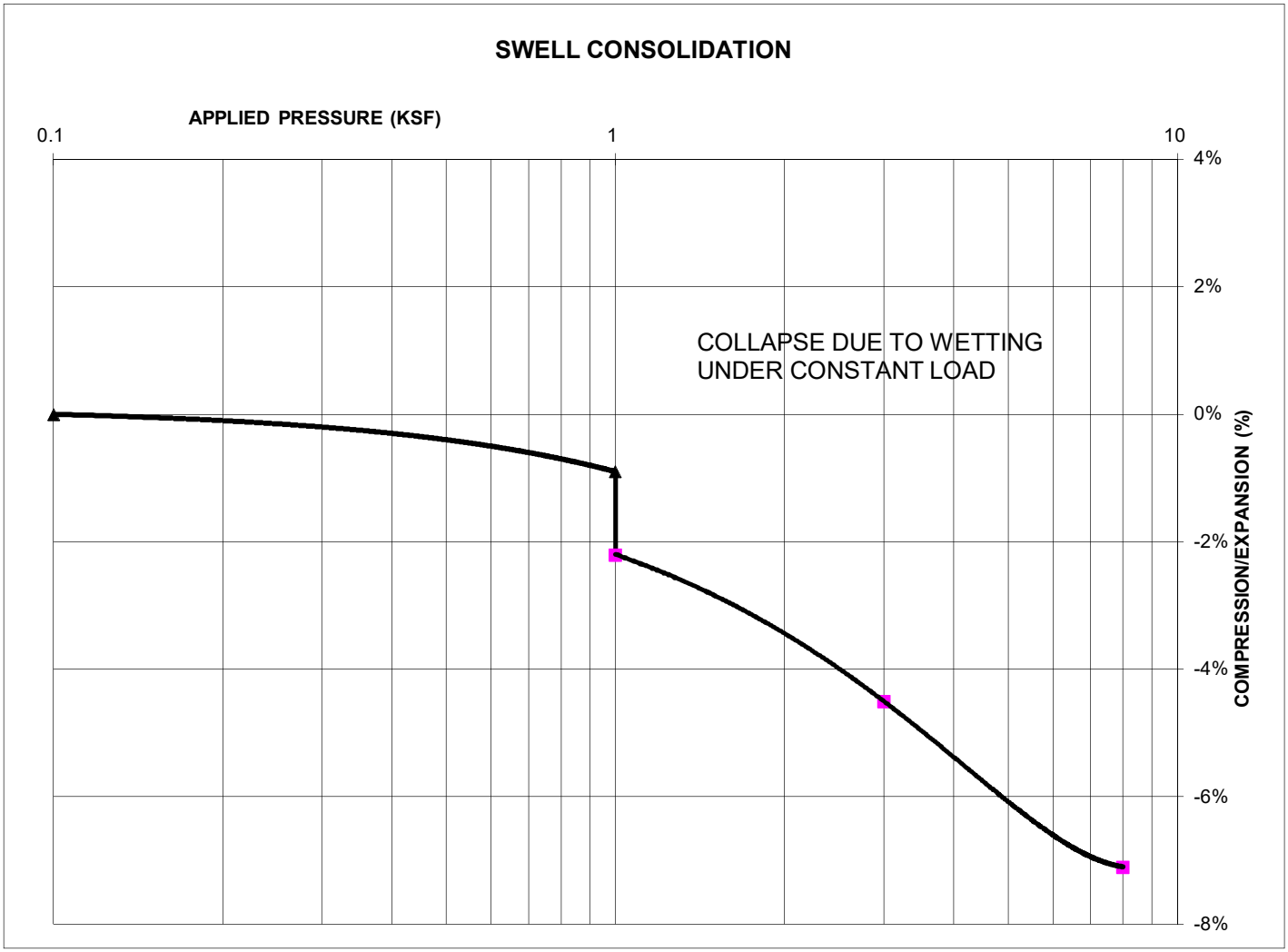
SWELL TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-22

TEST BORING	10	SOIL DESCRIPTION	CLAY, WITH SAND
DEPTH (FT)	10	SOIL TYPE	2



SWELL/COLLAPSE TEST RESULTS

NATURAL UNIT DRY WEIGHT (PCF): 102
NATURAL MOISTURE CONTENT: 9.1%
SWELL/COLLAPSE (%): -1.3%

ENTECH ENGINEERING, INC.

SWELL TEST RESULTS

IRON RIDGE
ATTICUS LAND, LLC

JOB NO. 251117

FIG. C-23

Client: Atticus Land, LLC Job Number: 251117
Test Location: Iron Ridge

TEST BORING NO. 11

Date Holes Prepared: 7/14/2025

Hole No. P1 (POND 1)
Depth: 29"

Trial	Time (min.)	Water Level Change (in.)
1	10	1/2
2	10	1/2
3	10	1/4

Perc Rate (min./in.): 40

Hole No. P2 (POND 1)
Depth: 48"

Trial	Time (min.)	Water Level Change (in.)
1	10	1/8
2	10	1/8
3	10	1/8

Perc Rate (min./in.): 80

Average Perc Rate (min./in.) 60

PROFILE HOLE

Date Profile Hole Completed: 7/14/2025

Depth	Visual Classification	Remarks
0-8'	Sand, silty, brown to tan	
8-20'	Sandstone, clayey, tan	Sandstone Bedrock at 8' No Groundwater

12 Blows / ft. @ 2'
24 Blows / ft. @ 4'
50 Blows / ft. @ 11'

Observer: L. Langford By:

ENTECH ENGINEERING, INC.

PERCOLATION TEST RESULTS

JOB NO. 251117

FIG. C-24

Client: Atticus Land, LLC
Test Location: Iron Ridge

Job Number: 251117

Infiltration Rate (I) = Percolation Rate (P)/ Reduction Factor(R_F)
$I=P/R_F$

$R_f = [(2d_1 - \Delta d) / dia] + 1$

d_1 = initial water depth (in.)

Δd = final water level drop (in.)

dia = diameter of the percolation hole (in.)

Test No. P1 (TB-11)			**Test No. P2 (TB-11)**		
Perc Rate	1.50	in/hr	Perc Rate	0.75	in/hr
diameter	8		diameter	8	
P1	(inches)		**P2**	(inches)	
d_1 =	20.5		d_1 =	36.4	
Δd =	1/4		Δd =	1/8	
R_f =	6.1		R_f =	10.1	
I =	**0.246**	**in/hr**	**I =**	**0.074**	**in/hr**

I_{AVG}= 0.160 in/hr

ENTECH ENGINEERING, INC.

INFILTRATION TEST RESULTS

JOB NO. 251117

FIG. C-25

Client: Atticus Land, LLC
Job Number: 251117
Test Location: Iron Ridge

TEST BORING NO. 12

Date Holes Prepared: 7/14/2025

Hole No. 1
Depth: 50"

Trial	Time (min.)	Water Level Change (in.)
1	10	1/8
2	10	1/8
3	10	1/8

Perc Rate (min./in.): 80

Hole No. 2
Depth: 35"

Trial	Time (min.)	Water Level Change (in.)
1	10	1/8
2	10	1/4
3	10	1/4

Perc Rate (min./in.): 40

Average Perc Rate (min./in.) 60

PROFILE HOLE

Date Profile Hole Completed: 7/14/2025

Depth	Visual Classification	Remarks
0-9'	Sand, silty, brown	
9-20'	Sand, clayey, brown	No Bedrock No Groundwater

12 Blows / ft. @ 2'
18 Blows / ft. @ 4'
7 Blows / ft. @ 9'

Observer: L. Langford
By:

ENTECH ENGINEERING, INC.

PERCOLATION TEST RESULTS

JOB NO. 251117

FIG. C-26

Client: Atticus Land, LLC Job Number: 251117
Test Location: Iron Ridge

Infiltration Rate (I) = Percolation Rate (P)/ Reduction Factor(R_F)
$I=P/R_F$

$R_f = [(2d_1 - \Delta d) / dia] + 1$
d_1 = initial water depth (in.)
Δd = final water level drop (in.)
dia = diameter of the percolation hole (in.)

Test No. P1 (POND 2)			**Test No. P2 (POND 2)**		
Perc Rate	0.75	in/hr	Perc Rate	1.50	in/hr
diameter	8		diameter	8	
P1	(inches)		**P2**	(inches)	
d_1 =	20.6		d_1 =	27.1	
Δd =	1/8		Δd =	1/4	
R_f =	6.1		R_f =	7.8	
I =	**0.122**	**in/hr**	**I =**	**0.194**	**in/hr**

I_{AVG}= 0.158 in/hr

ENTECH ENGINEERING, INC.

INFILTRATION TEST RESULTS

JOB NO. 251117

FIG. C-27

APPENDIX D: USDA Soil Survey Descriptions

El Paso County Area, Colorado

67—Peyton sandy loam, 5 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369d
Elevation: 6,800 to 7,600 feet
Mean annual air temperature: 43 to 45 degrees F
Frost-free period: 115 to 125 days
Farmland classification: Not prime farmland

Map Unit Composition

Peyton and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peyton

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Arkosic alluvium derived from sedimentary rock and/or arkosic residuum weathered from sedimentary rock

Typical profile

A - 0 to 12 inches: sandy loam
Bt - 12 to 25 inches: sandy clay loam
BC - 25 to 35 inches: sandy loam
C - 35 to 60 inches: sandy loam

Properties and qualities

Slope: 5 to 9 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 7.3 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

Pleasant

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

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 22, Sep 3, 2024

El Paso County Area, Colorado

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

Map Unit Setting

National map unit symbol: 369g
Elevation: 6,800 to 7,600 feet
Farmland classification: Not prime farmland

Map Unit Composition

Peyton and similar soils: 40 percent
Pring and similar soils: 30 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Peyton

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Arkosic alluvium derived from sedimentary rock and/or arkosic residuum weathered from sedimentary rock

Typical profile

A - 0 to 12 inches: sandy loam
Bt - 12 to 25 inches: sandy clay loam
BC - 25 to 35 inches: sandy clay loam
C - 35 to 60 inches: sandy loam

Properties and qualities

Slope: 8 to 9 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 7.3 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 Pring

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Arkosic alluvium derived from sedimentary rock

Typical profile

A - 0 to 14 inches: coarse sandy loam
C - 14 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 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 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R048AY222CO - Loamy Park
Hydric soil rating: No

Minor Components

Pleasant

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

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 22, Sep 3, 2024

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

Description of Tomah

Setting

Landform: Alluvial fans, hills
Landform position (three-dimensional): Side slope, crest
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): Side slope, crest
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

Pleasant

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

Other soils

Percent of map unit:
Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 22, Sep 3, 2024