



STORMWATER INFILTRATION TEST REPORT

Kernsville Road Industrial

Lowhill Township, Lehigh County, Pennsylvania

December 15, 2021

Revised April 20, 2022

Prepared For:

CORE5 INDUSTRIAL PARTNERS

1250 Mountain Road

Harrisburg, Pennsylvania 17112

Attn: Brian W. Reisinger, P.E.

Prepared By:

GEO-TECHNOLOGY ASSOCIATES, INC.

Geotechnical and Environmental Consultants

2405 John Fries Highway

Quakertown, Pennsylvania 18951

(215) 536-8363

GTA Job No: 31211548

GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND
ENVIRONMENTAL CONSULTANTS

A Practicing Geo professional Business Association Member Firm



December 15, 2021
Revised April 20, 2022

CORE5 Industrial Partners
1250 Mountain Road
Harrisburg, Pennsylvania 17112

Attn: Brian Reisinger, P.E.
Vice President of Development

Re: Stormwater Infiltration Test Report
Kernsville Road Industrial
Lowhill Township, Lehigh County, Pennsylvania

Dear Mr. Reisinger:

In accordance with our agreement, Geo-Technology Associates, Inc. (GTA) has performed infiltration testing at the above referenced property. The purpose of this investigation was to evaluate the on-site soils for stormwater infiltration. The study consisted of drilling 19 test borings and performing 18 borehole infiltration tests as well as five test pits with five corresponding in-situ double-ring infiltration tests. The stormwater testing was performed in general accordance with the *Pennsylvania Best Management Practices Manual*.

For our use in preparation of this report, GTA was provided with two plans titled *Infiltration Test Locations*, prepared by B&L Companies, dated August 4, 2021 and *Test Pit Location Exhibit* prepared by B&L Companies prepared on March 29, 2022. The plans depict the existing site features, proposed one story warehouse and associated parking/loading spaces, proposed infiltration areas, topography, and proposed test pit locations. This report summarizes the results of the field exploration, infiltration testing, and recommendations regarding the design and construction of stormwater infiltration facilities. Attached to this report are the *Site Location Map*, *Geology Map*, *Exploration Location Plans*, *Summary Infiltration Table* and *Test Pit Logs*.

Site Description

The subject property encompasses approximately 21.6 acres and is located at 7503 Kernsville Road in Lowhill Township, Lehigh County, Pennsylvania. The site is

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◆ Abingdon, MD ◆ Laurel, MD ◆ Frederick, MD ◆ Waldorf, MD ◆ Sterling, VA ◆ Somerset, NJ
◆ New Castle, DE ◆ Georgetown, DE ◆ York, PA ◆ Quakertown, PA ◆ Charlotte, NC

bound by Kernsville Road to the south, Orchard Road to the east, and residential/agricultural properties to the north and west. At the time of GTA's subsurface exploration, the majority of the site consisted of an agricultural field, a steeply sloped and densely wooded area, and an existing homestead with associated farm buildings.

The topography of the site is gently to steeply rolling, with the majority of the site draining to a pond (headwaters to Cherith Brook), located in the northeast corner of the site along Orchard Road. Ground surface elevations within the property range from approximately elevation (EL) 677 feet above mean sea level (ft. msl) along the topographical high ridge at the southern portion of the property, to a low of approximately EL 597 ft. msl at the northeastern corner of the property. Refer to the attached *Site Location Map* included as Figure 1 for additional information.

Site Geology and Mapped Soils

According to *The Geologic Map of Pennsylvania* (1980), and *Integrated Geologic Map Database Open-File Report (2005-1325)*, the site is indicated to be underlain by the Martinsburg Formation that consist of gray to dark-gray, buff-weathering shale.

Based on a review of the *USDA NRCS Web Soil Survey*, the site has been mapped as belonging to the Berks and Weiker, soil series. Descriptions of each soil series are as follows:

- Berks Series: Consists of moderately deep, well drained soils formed in residuum weathered from shale, siltstone and fined grained sandstone.
- Weiker Series: Consist of shallow, well drained soils formed in material that weathered from interbedded gray and brown acid shale, siltstone, and fine-grained sandstone.

Berks soils occur on summits, shoulders and backslopes with a lithic contact above 40 inches below ground surface (bgs), whereas the Weikert series has lithic contact within 20 inches bgs. The soils observed during the field exploration generally confirm the mapped soils, with the addition of soils that include fragipans, occurring along the topographical swale, centered in the property, running south to north and draining into the pond. Based on GTA's subsurface exploration and visual classifications the locations of the proposed stormwater infiltration facilities are underlain by the Berks, Comly and Brinkerton soil series. Refer to the above-referenced soil map for more detailed information.

Subsurface Exploration

Nineteen (19) test borings and eighteen (18) offset infiltration auger probes, as well as five (5) supplemental test pits with five (5) in-situ double-ring infiltration tests were performed at locations selected by B&L Companies. The boreholes were drilled between September 27th and 30th, 2021 using a Diedrich D-50, to depths of about 62 to 218 inches below the existing ground surface (bgs). The test pits were excavated on

March 31, 2022 using at Komatsu PC120 to depths of approximately 64 to 122 inches bgs. The approximate borehole and test pit locations are indicated on the attached *Exploration Location Plans*. The test boring and test pit logs are also included as attachments. Elevations provided on the profiles were estimated from the topographic contours indicated on the provided plans and should be considered approximate due to the sloping topography.

Subsurface Conditions

The boreholes and test pits typically encountered about 5 to 25 inches of topsoil/cultivated soils overlying colluvial, residual soils, highly-weathered rock, vertically and horizontally fractured bedrock, and more competent bedrock. Below the topsoil/cultivated soils, the test pits generally encountered silt loam and silty clay loam with varying percentages of gravel and channers within the soil matrix. A perched water table, identified by the delineation of a fragipan, redoximorphic features and/or very moist subsurface horizons was identified in Test Borings INF-201, INF-203, INF-204, INF-209, INF-214, and INF-217 at depths ranging from about 20 to 84 inches below the existing ground surface (bgs).

Groundwater was observed in test boring INF-214, and Test Pits TP-300 through TP-303 and TP-305 at depths of approximately 12 to 122 inches bgs. Highly weathered rock/fractured bedrock was encountered at each test pit location at depths beginning anywhere from 24 to 156 inches bgs. The highly weathered rock/fractured bedrock was observed to have very low/medium dense SPT-N values within the boreholes and friable to firm consistence within the test pit, which very easily crumbled into gravel with silt, by hand. Auger and excavator bucket refusal on more competent bedrock was encountered at all test boring locations at depths ranging from about 49 to 216 inches bgs. INF-214 was observed as the only test boring to not include highly-weathered rock.

Infiltration Testing

Infiltration tests via cased-borehole testing were performed within a five-foot offset to the SPT-boring locations. In-situ double-ring infiltrometer tests were performed within the soil profile pit locations. Test depths were selected by the design engineer and performed at depths selected by GTA's field scientist after observing indications of soil voids within the highly weathered bedrock above the proposed test depths. Refer to the attached *Summary of Infiltration* included as an attachment for additional information.

Design And Construction Considerations

Based on the results of our field exploration and infiltration testing, the infiltration of stormwater on the site is limited due to the thick depths of highly weathered and fractured rock encountered across the site. Excavation of the medium dense/friable highly weathered rock/fractured rock, will quickly degrade into silts with gravels and may cause clogging of the proposed subsurface stormwater infiltration basins. Recommendations related to the design and construction of proposed stormwater

infiltration facilities as well as recommendations for alternative stormwater BMP options are included in the following paragraphs.

When more than two infiltration tests are employed for design purposes within the infiltration facilities, the highest rate of the test results should be discarded and the geometric mean should be used to determine the average rate of the remaining test results. While the PA Stormwater BMP manual suggests a minimum safety factor of 2, GTA is recommending a safety factor of 3 to 4 should be applied to the raw infiltration rates for design purposes, to account for clogging and the borehole method of infiltration testing. Averaging of all tests across the site is not recommended.

According to the *Pennsylvania Stormwater Best Management Practices Manual* it is desirable to maintain a 2-foot clearance above limiting zones such as bedrock, groundwater, and seasonal high-water table. Where possible, GTA recommends setting infiltration bed elevations a minimum of 2 feet above where a limiting zone was observed.

Where 2 feet of separation from the observed limiting zone is not feasible, we recommend placing a processed infiltration media to maintain the required 2 feet of separation. Infiltration media can consist of quarry processed materials such as PennDOT Size No. 2A dense-graded aggregate or AASHTO Size No. 57 open-graded stone. Granular blended soil mixtures containing at least 70 percent sand have also been used as infiltration media. Quarry processed crushed stone materials will typically have an infiltration rate in excess of 6 inches per hour. An additional soil buffer/filter media may be required above the crushed stone infiltration media if the pollutant loading is expected to be significant. The addition of a soil buffer may not be necessary if additional BMP controls are provided. Engineered filter media should provide a minimum infiltration rate of 0.5 inch/hour or equal to the design rate with a maximum infiltration rate on the order of 6 inches per hour depending on the anticipated pollutant loading. For design purposes, the outlet flow rate should be modeled using the lowest anticipated infiltration rate of the system or filter media. We recommend that all infiltration/filter media be wrapped with a suitable filter fabric to reduce clogging.

A limiting zone consisting of bedrock was encountered at all of the test boring locations within close proximity or above the proposed bed elevations. Where more competent bedrock is encountered at or within 2 feet of the bottom of the bed, it is suggested that the elevation of the facility be raised a minimum of 24 inches above the limiting zone.

Localized water seepage from more granular lenses within the soil matrix may be encountered, particularly within the topographical swale that conducts source water for the Cherith Brook through the site, especially during the wet season of the year, and after precipitation events. If water seepage is encountered during construction, it may be necessary to construct a temporary trench or underdrain upgradient from the facility to divert the water away from the excavation to minimize sedimentation.

The design of infiltration systems should not be entirely dependent on infiltration for complete discharge. We recommend that the system be designed as an open system, with a positive overflow that discharges excess volume in a non-erosive manner. This design will allow for controlled discharge under situations such as extreme precipitation events or below-freezing conditions. The infiltration areas should be level, with a slope of less than one percent.

Infiltration areas should not be exposed to unstabilized runoff and construction disturbance that may decrease infiltration rates. It will be important to limit disturbance and compaction of the infiltration surface during construction. Where possible, the operation of heavy, rubber tire equipment directly on the infiltration area subgrades should be avoided or kept to a minimum. After grubbing and rough grading, infiltration areas should be tilled with a disc or chisel plow followed by a leveling drag, to restore the soils to a loose condition. Construction oversight by competent engineering personnel during installation of stormwater management facilities is critical to successful functioning of the system. Ideally, construction oversight should be provided by the geotechnical engineer, or qualified representative, retained by the project owner to document construction operations and assure that project specifications and special construction requirements are met. Periodic inspection and maintenance of the infiltration systems will be required to maximize the efficiency and design life of the system.

Alternate Stormwater Management Considerations and Recommendations

As previously noted, infiltration of stormwater on this site will be limited due to possible clogging by degraded fine-grained highly weathered rock/fractured rock observed across the site. Given the slow infiltration rates at the proposed bed elevations considerations should be given using a Managed Release Concept (MRC) that was recently approved by the Pennsylvania Department of Environmental Protection (PADEP), stormwater irrigation spray fields, and/or detention basins/wet ponds.

Managed Release Concept

MRC is a post-construction stormwater management (PCMS) strategy that involves the collection, storage, and filtration of captured runoff through a BMP that is preferably vegetated and includes a release of a portion of the captured runoff through an underdrain within the BMP, or from a pool protected from solar radiation. If the MRC BMP is not vegetated, then pretreatment is required to meet water quality requirements. According to the PADEP, the MRC is intended to be used for project areas or subareas where infiltration is not feasible to meet regulatory requirements. The PADEP intends for the use of MRC to be limited to sites where infiltration is extremely limited and/or undesirable such as where groundwater and/or regularly occurring seasonally high-water tables are present within one foot of the bottom of the BMP's soil media.

Spray Irrigation

Spray irrigation is also considered feasible for the undisturbed areas of this project. Only infiltration rates within the stormwater spray irrigation fields should be used for design of the individual spray fields. Averaging of all tests across the site is not recommended. It will be important to limit disturbance and compaction of the infiltration surface during construction. Fencing and erosion control should be set around the spray irrigation fields to reduce clogging from sediment runoff during construction.

Given the variable infiltration results, GTA recommends subsoiling to a depth of 18 to 24 inches within spray irrigation fields to improve infiltration characteristics of the surface soils.

Detention Basin / Wet Ponds

A PVC liner should be considered if the basin is designed to hold water at a specified elevation. Localized water seepage from more granular lenses within the soil matrix and immediately above fragipans may be encountered, particularly in low lying areas of the site, during the wet season of the year, and after precipitation events. If water seepage is encountered during construction, it may be necessary to construct a temporary trench upgradient from the facility to divert the water away from the excavation to minimize sedimentation. PVC liner elevation should be set above the observed groundwater elevations.

Closing

Once the final configuration and design of the stormwater facilities for the proposed development is complete, GTA should be provided with the opportunity to review final site plans to evaluate if they conform to the intent of this report. In addition, depending on the final design, additional evaluation and infiltration testing may be required to conform to stormwater regulations.

Limitations

This report has been prepared in accordance with generally accepted engineering practice. The analysis and conclusions contained in this report are based on the data obtained from limited observations and testing. The observations do not necessarily reflect variations in geologic or hydrogeologic conditions that may exist beneath the site.

In the event that any changes in the nature, design, or location of the facilities are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report are verified in writing. Geo-Technology Associates, Inc. is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the


subsurface data or engineering analysis without the expressed written authorization of Geo-Technology Associates, Inc.

At completion, the test borings were backfilled with the excavated material and leveled off with the surrounding grades. No additional compaction effort or site restoration was performed. Future settlement and consolidation of the soil replaced in the test pits may occur, resulting in a depression or hole that may require maintenance or restoration. Geo-Technology Associates, Inc. is not responsible for additional maintenance and restoration of the test pit locations.

This report and the attachments are instruments of service. The subject matter of this report is limited to the facts and matters stated herein. Absence of a reference to any other conditions or subject matter shall not be construed by the reader to imply approval by the writer.

We appreciate the opportunity to have been of assistance to you on this project. Please contact our office if you have questions regarding this report.

Sincerely,
GEO-TECHNOLOGY ASSOCIATES, INC.


Michael W. Derr, P.E.
Vice President



CML/MWD/mwd
31211548

Attachments:

- Site Location Map
- Geology Map
- Exploration Location Plans (Figure 3 & 3B)
- Summary of Infiltration Test Results
- Test Exploration Logs
(INF-201 through INF-219, TP-300 – TP-303, and TP-305)

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

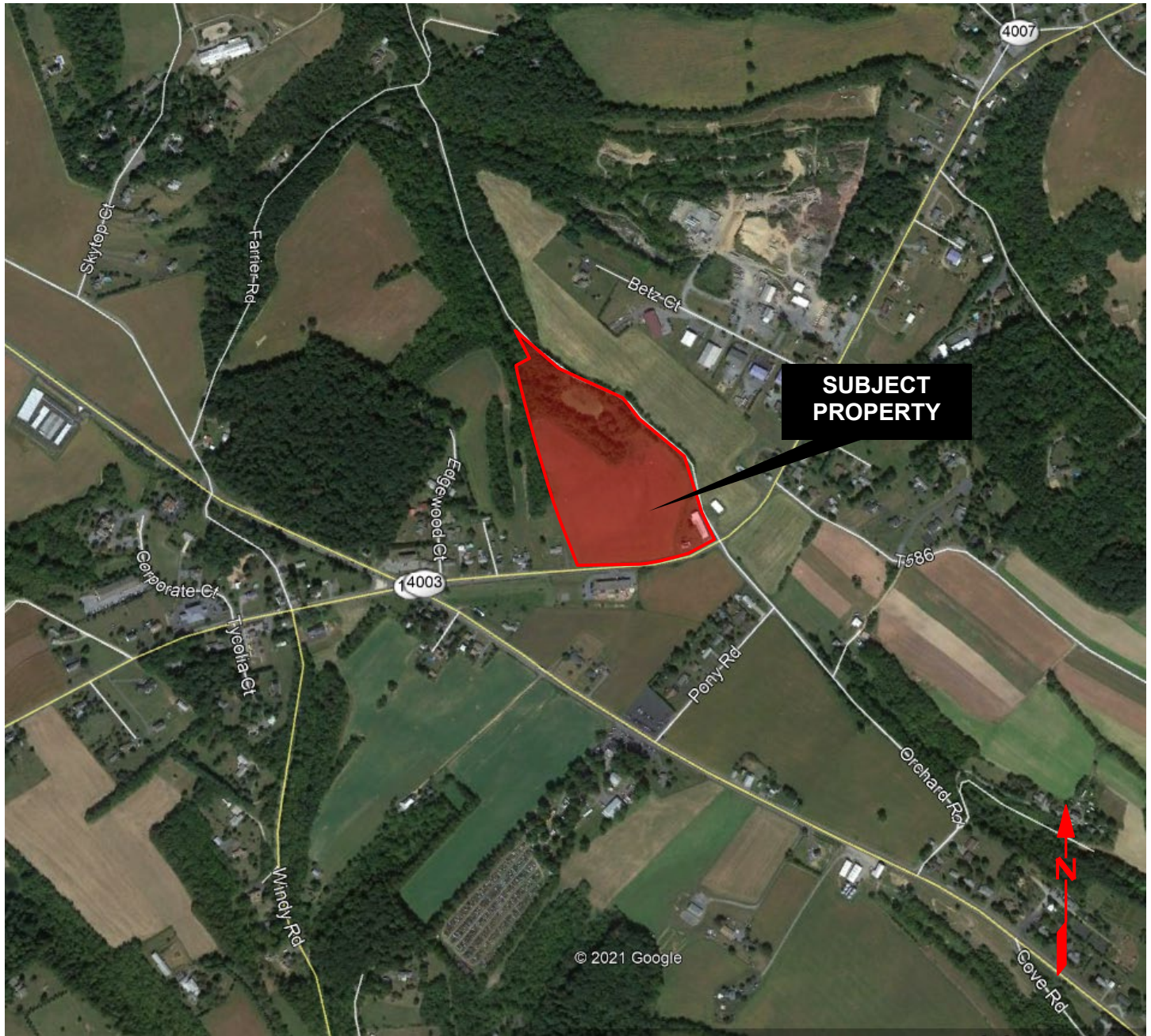
Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



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**SUBJECT
PROPERTY**

Notes:

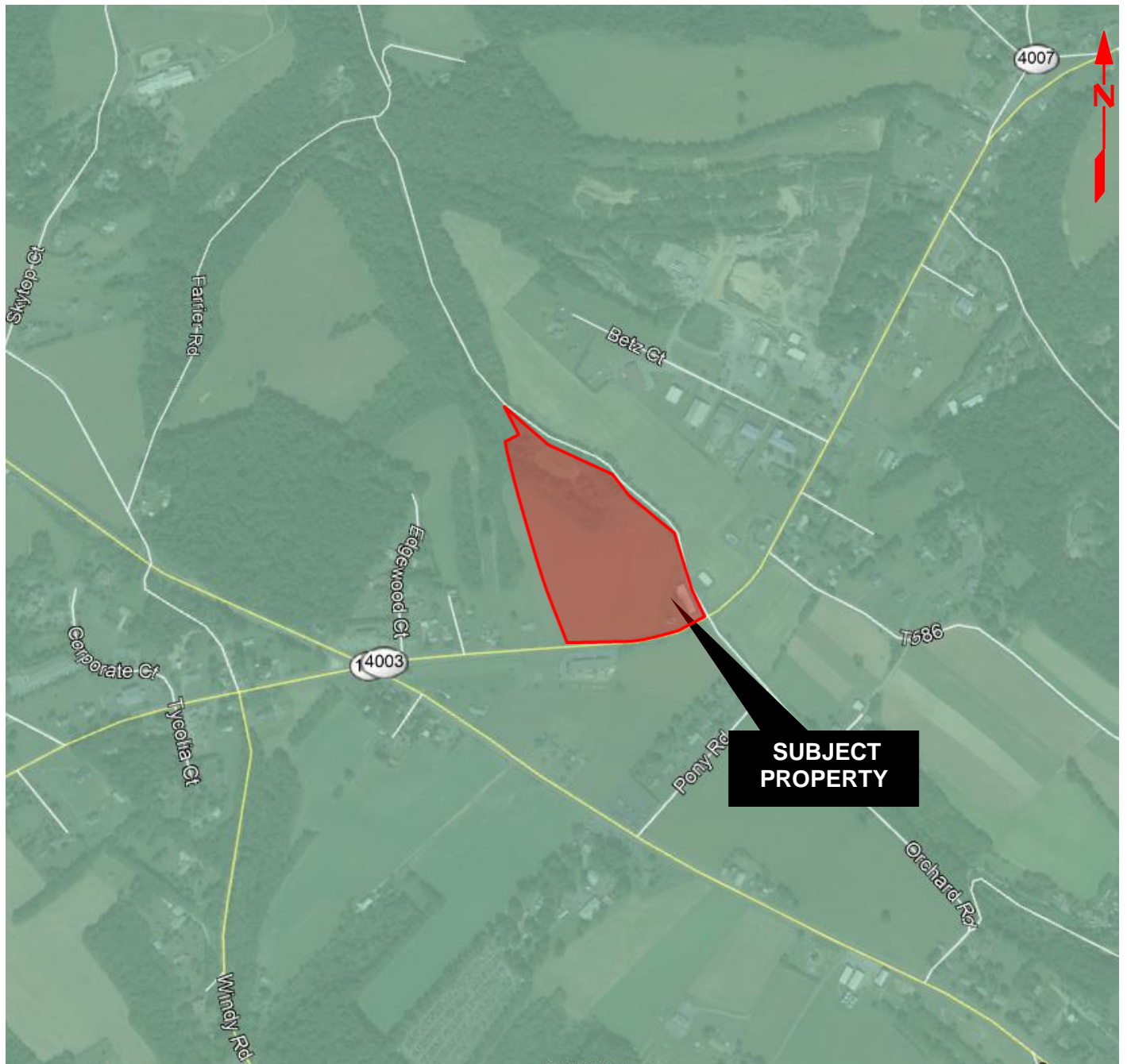
- 1) Base map obtained from Google Earth, 2021.



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SITE LOCATION MAP
 7503 KERNSVILLE ROAD
 LEHIGH COUNTY, PENNSYLVANIA

SCALE NTS	DATE AUG 2021	DRAWN BY CML	REVIEW BY MWD	JOB NO. 31211548	FIGURE NO. 1
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Notes:

- 1) **Green Shading:** Consists of gray to dark-gray, buff-weathering shale of the Ordovician Age Martinsburg Formation
- 2) Base map obtained by Google Earth, 2021; Geological Units of Pennsylvania.



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SITE GEOLOGY MAP

7503 KERNSVILLE ROAD

LEHIGH COUNTY, PENNSYLVANIA

SCALE
NTS

DATE
AUG 2021

DRAWN BY
CML

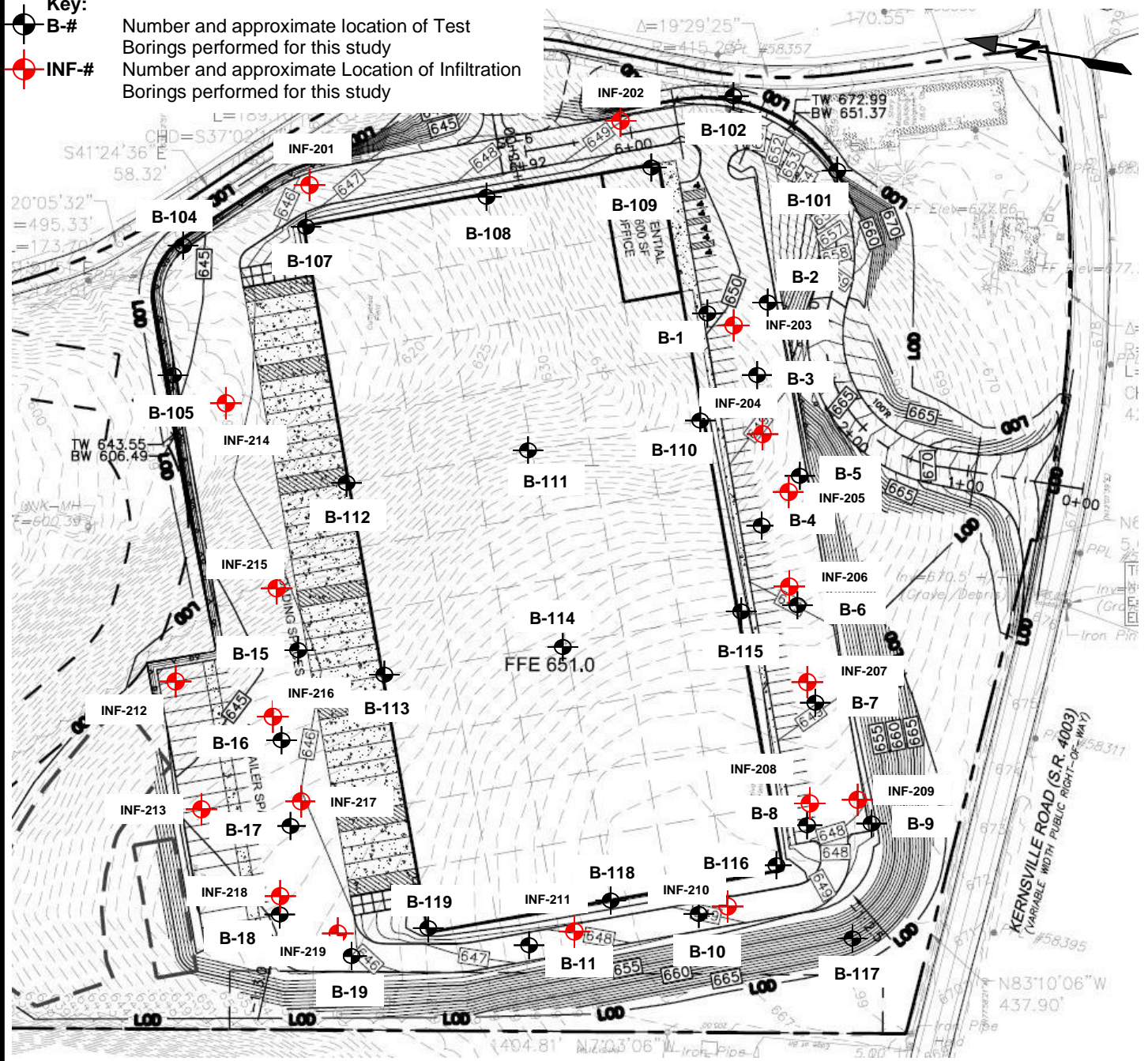
REVIEW BY
MWD

JOB NO.
31211548

FIGURE NO.
2

Key:
B-#
INF-#

Number and approximate location of Test Borings performed for this study
 Number and approximate Location of Infiltration Borings performed for this study



Notes: (1) Layout was obtained from a drawing titled "Overall Grading and Drainage Plan" prepared by BL Companies, dated July 21, 2021.
 (2) Exploration Location Plan should be read together with GTA Report, Job No. 31211548 for complete evaluation.



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EXPLORATION LOCATION PLAN
7503 KERNSVILLE ROAD
LEHIGH COUNTY, PENNSYLVANIA

SCALE
 NTS

DATE
 OCT 2021

DRAWN BY
 TJF

REVIEW BY
 MWD

JOB NO.
 31211548

FIGURE:
 3

JOB NUMBER:
31211548

FIGURE:
3B

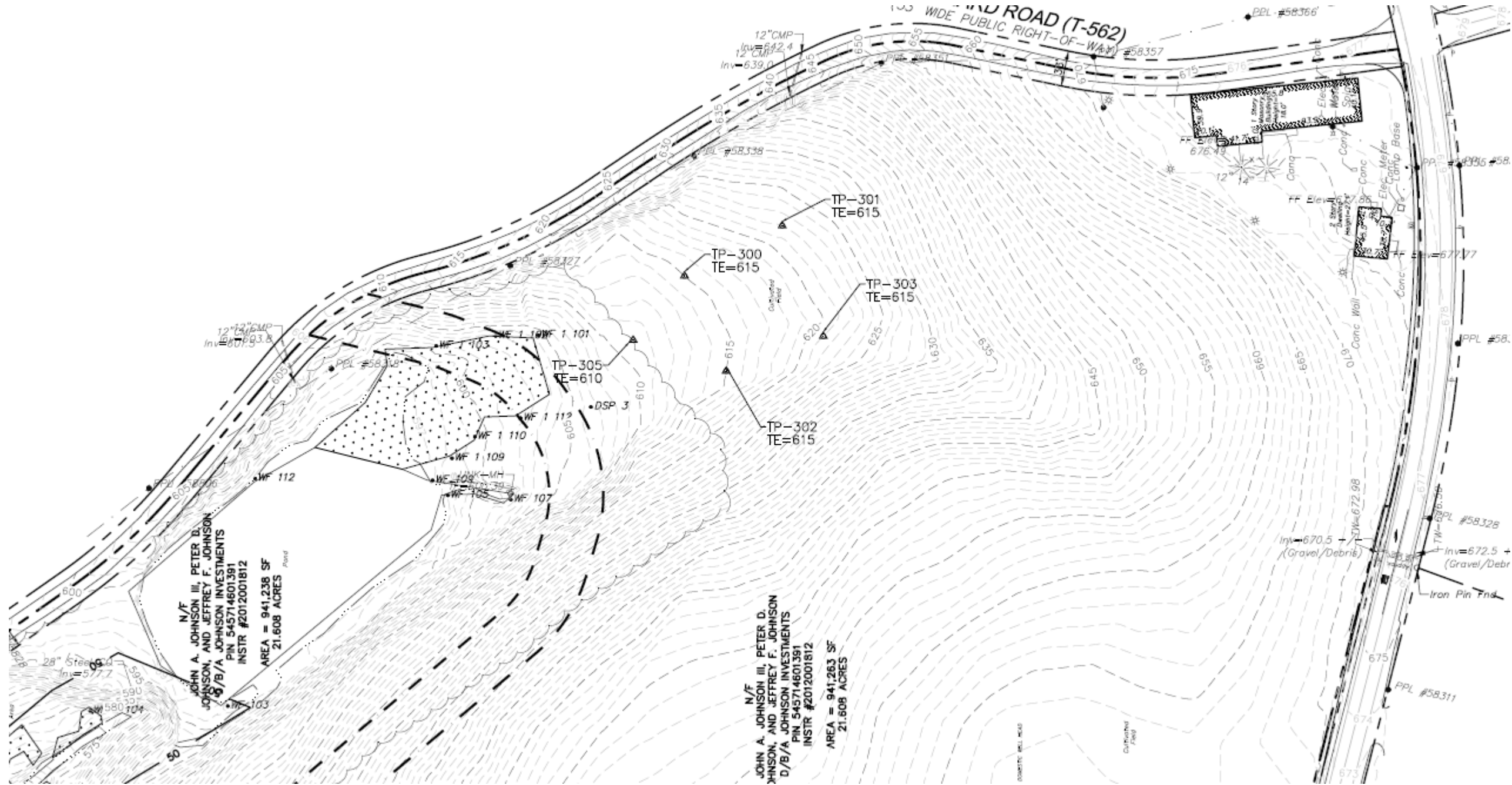
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MWD

SCALE:
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DATE:
MAR 2022

EXPLORATION LOCATION PLAN
Kernsville-Core 5
Lehigh County, Pennsylvania

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- Notes: (1) Layout was obtained from a drawing titled *Test Pit Location Exhibit* prepared by B&L Companies prepared on March 29, 2022.
(2) Exploration Location Plan should be read together with GTA Report Job No. 31211548 for complete evaluation.



SUMMARY OF INFILTRATION TEST RESULTS

Kernsville Road Industrial
7503 Kernsville Road, Lowhill Township, Pennsylvania
GTA Project Number: 31211548

Infiltration Test Number	Ground Surface Elevation (ft)	Infiltration Test Elevation (ft)	Infiltration Test Depth (ft)	Final Recorded Rate (in/hr)
INF-201	625.52	621.52	4.0	2.45
INF-202	661.95	657.45	4.5	4.02
INF-203	651.60	647.60	4.5	1.79
INF-204	648.43	644.43	4.0	0.25
INF-205	652.44	648.44	4.0	1.83
INF-206	659.49	655.49	4.0	1.22
INF-207	663.74	660.74	3.0	4.16
INF-208	666.54	662.54	4.0	0.68
INF-209	666.80	662.80	4.0	2.14
INF-210	667.69	664.69	3.0	4.64
INF-211	665.25	662.25	3.0	4.66
INF-212	643.94	641.44	2.5	0.78
INF-213	651.41	648.91	2.5	1.79
INF-214	N/A	N/A	N/A	N/A
INF-215	645.85	643.45	2.5	0.21
INF-216	650.72	647.72	3.0	1.56
INF-217	653.57	649.57	4.0	0.1
INF-218	651.41	649.41	2.0	1.26
INF-219	656.87	652.87	4.0	4.41
INF-300	615.0	615.0	0.0	2.94
INF-301	622.0	615.0	7.0	> 20
INF-302	615.0	615.0	0.0	1.75
INF-303	621.0	615.0	6.0	> 20
INF-305	611.0	610.0	1.0	0.94

NOTES:

- Infiltration testing performed using borehole infiltration and double-ring infiltrometer methodology in general accordance with the Pennsylvania *Stormwater BMP Manual*, dated 2006.
- A one-hour presoak was performed prior to starting the infiltration testing.
- The infiltration test locations were field-located by GTA on the day of the exploration.
- The infiltration elevations are based on the topographical contours on the *Infiltration Test Location Plan* provided by B & L Companies dated August 4, 2021 and *Test Pit Location Exhibit* prepared by B&L Companies prepared on March 29, 2022.
- A minimum safety factor of 4.0 is recommended for design purposes.

GTA Representative: C. Limbert



TEST BORING LOG: INF-201

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/30/2021
 DATE COMPLETED: 09/30/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 1%
 LANDSCAPE POSITION: Backslope
 COVER: Manicured grass
 DATUM: Topo
 ELEVATION: 625.52

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep: X		Well-Drained: X		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained:			
Depth: 106 inches		Moderately Deep:		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-5	10YR 3/4	Gravelly Silt Loam	Granular	Very Friable SPT-N Value 4		Cultivated Topsoil
B t1	5-24	7.5YR 5/4	Gravelly Silt Loam	Subangular Blocky	Friable SPT-N Value 5		Residual
B t2	24-49	7.5YR 6/4	Gravelly Silt Loam	Subangular Blocky	Friable SPT-N Value 6		Residual
B t3	49-60	7.5YR 7/3	V Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 14		Residual
C r	60-106	7.5YR 7/2	X Channery Silt Loam	Angular Blocky	Friable SPT-N Value 8		Weathered Rock
R	106-123			Massive	Firm SPT-N Value 14		Bedrock
R	123-126				Very Firm SPT-N Value 50/3		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 126 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 60 inches Bedrock Depth: 106 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: 24 inches		Infiltration Results: Proposed Infiltration Depth: 36 inches Performed Infiltration Depth: 48 inches Final Raw Infiltration Rate (in/hr): 2.45	



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TEST BORING LOG: INF-202

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/30/2021
 DATE COMPLETED: 09/30/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 1%
 LANDSCAPE POSITION: Backslope
 COVER: Manicured grass
 DATUM: Topo
 ELEVATION: 661.95

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained:		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep: X		Mod. Well-Drained: X			
Depth: 87 inches		Moderately Deep:		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-7	10YR 3/4	Gravelly Silt Loam	Granular	Very Friable SPT-N Value 5		Cultivated Topsoil
B t1	7-22	7.5YR 6/4	V Channery Silt Loam	Subangular Blocky	Friable		Colluvium
B t2	22-48	7.5YR 5/4	V Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 12	FF	Redox Concentrations Colluvium
C	48-58	7.5YR 4/4	V Channery Silt Loam	Angular Blocky	Firm SPT-N Value 12		Colluvium
C r	58-87	7.5YR 5/4	X Channery Silt Loam	Massive	Firm SPT-N Value 14		Weathered Rock
R	87-92				Very Firm SPT-N Value 50/5		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 92 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 58 inches Bedrock Depth: 87 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 35.4 inches Performed Infiltration Depth: 54 inches Final Raw Infiltration Rate (in/hr): 4.02	



TEST BORING LOG: INF-203

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/30/2021
 DATE COMPLETED: 09/30/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Backslope
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 651.60

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:					
Comly Series		Very Deep:		Well-Drained:		Residuum from martinsburg gray shale					
LIMITING ZONE:		Deep:		Mod. Well-Drained: X							
Depth: 216 inches		Moderately Deep: X		Somewhat Poorly-Drained:							
Type: Bedrock		Shallow:		Poorly-Drained:							
HORIZON	DEPTH (in.)	COLOR		TEXTURE		STRUCTURE	CONSISTENCE	REDOX FEATURES		COMMENTS	
A p	0-6	10YR	4/4	Gravelly	Silt Loam	Granular	Friable SPT-N Value 6			Cultivated Topsoil	
B t	6-24	7.5YR	5/4	Channery	Silt Loam	Subangular Blocky	Friable			Colluvium	
B tx1	24-53	7.5YR	6/4	V Channery	Silt Loam	Prismatic	Firm SPT-N Value 8	CD	Redox Concentrations	Colluvium	
B tx2	53-90	7.5YR	6/6	Channery	Silty Clay Loam	Prismatic	Firm SPT-N Value 7	MP	Redox Concentrations	Residual	
C	90-156	7.5YR	7/6	V Channery	Silt Loam	Subangular Blocky	Firm SPT-N Value 9			Residual	
C r	156-216	10R	7/4	X Channery	Silt Loam	Massive	Firm SPT-N Value 22			Weathered Rock	
R	216-218						Very Firm SPT-N Value 50/2			Bedrock	
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 218 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 156 inches Bedrock Depth: 216 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: 24 inches				Infiltration Results: Proposed Infiltration Depth: 91.2 inches Performed Infiltration Depth: 54 inches Final Raw Infiltration Rate (in/hr): 1.79			



TEST BORING LOG: INF-204

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/29/2021
 DATE COMPLETED: 09/29/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Backslope
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 648.43

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained:		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep: X		Mod. Well-Drained: X			
Depth: 80 inches		Moderately Deep:		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-7	10YR 4/3	Channery Silt Loam	Granular	Friable SPT-N Value 8		Cultivated Topsoil
B t	7-34	7.5YR 5/4	V Channery Silt Loam	Subangular Blocky	Friable		Colluvium
B tx	34-52	7.5YR 7/3	V Channery Silt Loam	Prismatic	Firm SPT-N Value 12	CF	Redox Concentrations Residual
C	52-68	7.5YR 6/4	V Channery Silt Loam	Massive	Firm SPT-N Value 28		Residual
C r	68-80	7.5YR 5/2	X Channery Silt Loam	Angular Blocky	Firm		Weathered Rock
R	80-102			Massive	Very Firm SPT-N Value 29		Bedrock
R	102-104				Very Firm SPT-N Value 50/2		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 104 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 68 inches Bedrock Depth: 80 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Pched Water Table Depth: 34 inches		Infiltration Results: Proposed Infiltration Depth: 52.8 inches Performed Infiltration Depth: 48 inches Final Raw Infiltration Rate (in/hr): 0.25	



TEST BORING LOG: INF-205

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/29/2021
 DATE COMPLETED: 09/29/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Backslope
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 652.44

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained: X		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained:			
Depth: 72 inches		Moderately Deep: X		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-5	10YR 3/4	Channery Silt Loam	Granular	Friable SPT-N Value 8		Cultivated Topsoil
B t1	5-32	10YR 5/4	V Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 19		Residual
B t2	32-58	10YR 6/3	V Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 23		Residual
C r	58-72	7.5YR 5/4	X Channery Silt Loam	Massive	Very Firm		Weathered Rock
R	72-114			Massive	Very Firm SPT-N Value 29		Bedrock
R	114-116				Very Firm SPT-N Value 50/2		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 116 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 58 inches Bedrock Depth: 72 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 100.8 inches Performed Infiltration Depth: 48 inches Final Raw Infiltration Rate (in/hr): 1.83	



TEST BORING LOG: INF-206

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/29/2021
 DATE COMPLETED: 09/29/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Backslope
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 659.49

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained: X		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained:			
Depth: 72 inches		Moderately Deep: X		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-5	10YR 4/3	Channery Silt Loam	Granular	Friable SPT-N Value 6		Cultivated Topsoil
B t1	5-32	7.5YR 6/4	Channery Silt Loam	Subangular Blocky	Friable		Residual
B t2	32-52	7.5YR 7/3	V Channery Silt Loam	Subangular Blocky	Friable SPT-N Value 8		Residual
C r	52-72	7.5YR 6/4	X Channery Silt Loam	Massive	Firm SPT-N Value 31		Weathered Rock
R	72-114			Massive	Firm SPT-N Value 27		Bedrock
R	114-116				Very Firm SPT-N Value 50/2		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 116 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 52 inches Bedrock Depth: 72 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 186 inches Performed Infiltration Depth: 48 inches Final Raw Infiltration Rate (in/hr): 1.22	



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TEST BORING LOG: INF-207

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/29/2021
 DATE COMPLETED: 09/29/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Backslope
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 663.74

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained: X		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained:			
Depth: 67 inches		Moderately Deep: X		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-6	10YR 4/3	Gravelly Silt Loam	Granular	Friable SPT-N Value 5		Cultivated Topsoil
B t1	6-30	5YR 6/4	V Channery Silt Loam	Subangular Blocky	Friable		Colluvium
B t2	30-60	7.5YR 5/4	Channery Silt Loam	Subangular Blocky	Friable SPT-N Value 8		Residual
C r	60-67	10YR 6/3	X Channery Silt Loam	Massive	Firm SPT-N Value 18		Weathered Rock
R	67-102			Massive	Firm SPT-N Value 16		Bedrock
R	102-104				Very Firm SPT-N Value 50/2		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 104 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 60 inches Bedrock Depth: 67 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 236.4 inches Performed Infiltration Depth: 36 inches Final Raw Infiltration Rate (in/hr): 4.16	



TEST BORING LOG: INF-208

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/28/2021
 DATE COMPLETED: 09/28/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Summit
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 666.54

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained: X		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained:			
Depth: 72 inches		Moderately Deep: X		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-5	10YR 4/3	Channery Silt Loam	Granular	Very Friable SPT-N Value 6		Cultivated Topsoil
B t1	5-27	10YR 5/4	Gravelly Silt Loam	Subangular Blocky	Friable		Residual
B t2	27-68	7.5YR 6/4	V Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 15		Residual
C r	68-72	7.5YR 5/1	Channers	Massive	Firm SPT-N Value 15		Weathered Rock
R	72-91			Massive	Very Firm SPT-N Value 29		Bedrock
R	91-92				Very Firm SPT-N Value 50/1		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 92 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 68 inches Bedrock Depth: 72 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 270 inches Performed Infiltration Depth: 48 inches Final Raw Infiltration Rate (in/hr): 0.68	



TEST BORING LOG: INF-209

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/29/2021
 DATE COMPLETED: 09/29/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Summit
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 666.80

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:			
Comly Series		Very Deep:		Well-Drained:		Residuum from martinsburg gray shale			
LIMITING ZONE:		Deep:		Mod. Well-Drained: X					
Depth: 80 inches		Moderately Deep: X		Somewhat Poorly-Drained:					
Type: Bedrock		Shallow:		Poorly-Drained:					
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES		COMMENTS	
A p	0-6	10YR 3/4	Channery Silt Loam	Granular	Friable SPT-N Value 6			Cultivated Topsoil	
B t1	6-20	7.5YR 5/4	V Channery Silt Loam	Subangular Blocky	Friable			Residual	
B t2	20-38	7.5YR 6/4	V Channery Silt Loam	Subangular Blocky	Friable SPT-N Value 4			Residual	
B t3	38-58	7.5YR 4/6	V Channery Silt Loam	Prismatic	Friable	FF	Redox Concentrations	Residual	
C r	58-80	5YR 5/4	X Channery Silt Loam	Massive	Friable SPT-N Value 11			Weathered Rock	
R	80-108			Massive	Firm SPT-N Value 12			Bedrock	
R	108-111				Very Firm SPT-N Value 50/3			Bedrock	
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 111 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 58 inches Bedrock Depth: 80 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 264 inches Performed Infiltration Depth: 48 inches Final Raw Infiltration Rate (in/hr): 2.14			



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 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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TEST BORING LOG: INF-210

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/28/2021
 DATE COMPLETED: 09/28/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Summit
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 667.69

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained: X		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained:			
Depth: 59 inches		Moderately Deep: X		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-6	10YR 4/3	Channery Silt Loam	Granular	Friable SPT-N Value 10		Cultivated Topsoil
B t	6-31	7.5YR 5/4	Channery Silt Loam	Subangular Blocky	Friable SPT-N Value 14		Residual
C r	31-59	7.5YR 5/2	Channers	Massive	Friable SPT-N Value 15		Weathered Rock
R	59-90			Massive	Very Firm SPT-N Value 24		Bedrock
R	90-92			Massive	Very Firm SPT-N Value 50/2		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 92 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 31 inches Bedrock Depth: 59 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 344.4 inches Performed Infiltration Depth: 36 inches Final Raw Infiltration Rate (in/hr): 4.64	



TEST BORING LOG: INF-211

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/28/2021
 DATE COMPLETED: 09/28/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Summit
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 665.25

SOIL TYPE: Comly Series		SOIL DEPTH CLASS: Very Deep:		SOIL DRAINAGE CLASS: Well-Drained:		PARENT MATERIAL: Residuum from martinsburg gray shale	
LIMITING ZONE: Depth: 60 inches Type: Bedrock		Deep:		Mod. Well-Drained: X			
		Moderately Deep: X		Somewhat Poorly-Drained:			
		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-6	10YR 3/4	V Channery Silt Loam	Granular	Friable SPT-N Value 7		Cultivated Topsoil
B t1	6-28	10YR 4/6	V Channery Silt Loam	Subangular Blocky	Friable SPT-N Value 8		Residual
B t2	28-52	10YR 5/2	X Channery Silt Loam	Angular Blocky	Firm SPT-N Value 18	FF	Redox Concentrations Residual
C r	52-60	7.5YR 7/4	Channers	Massive	Very Firm SPT-N Value 29		Weathered Rock
R	60-132			Massive	Very Firm SPT-N Value 24		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 132 inches below the existing ground surface.			Soil Features: Weathered Rock Depth: 52 inches Bedrock Depth: 60 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Pched Water Table Depth: N/E			Infiltration Results: Proposed Infiltration Depth: 315 inches Performed Infiltration Depth: 36 inches Final Raw Infiltration Rate (in/hr): 4.66	



TEST BORING LOG: INF-212

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/27/2021
 DATE COMPLETED: 09/27/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Backslope
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 643.94

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Berks Series		Very Deep:		Well-Drained: X		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained:			
Depth: 69 inches		Moderately Deep: X		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-5	10YR 4/3	Silt Loam	Granular	Friable SPT-N Value 6		Cultivated Topsoil
B w	5-25	10YR 4/4	Channery Silt Loam	Subangular Blocky	Friable		Residual
C	25-51	10YR 4/6	V Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 10		Residual
C r	51-69	10YR 5/4	X Channery Silt Loam	Angular Blocky	Firm		Weathered Rock
R	69-84			Massive	Firm SPT-N Value 23		Bedrock
R	84-87				Very Firm SPT-N Value 50/3		
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 87 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 51 inches Bedrock Depth: 69 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 112 inches Performed Infiltration Depth: 30 inches Final Raw Infiltration Rate (in/hr): 0.78	



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TEST BORING LOG: INF-213

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/27/2021
 DATE COMPLETED: 09/27/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Shoulder
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 651.41

SOIL TYPE: Berks Series		SOIL DEPTH CLASS: Very Deep:		SOIL DRAINAGE CLASS: Well-Drained: X		PARENT MATERIAL: Residuum from martinsburg gray shale	
LIMITING ZONE: Depth: 55 inches Type: Bedrock		Deep:		Mod. Well-Drained:			
		Moderately Deep: X		Somewhat Poorly-Drained:			
		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-6	10YR 4/4	Channery Silt Loam	Granular	Friable SPT-N Value 10		Cultivated Topsoil
B w	6-27	10YR 4/6	X Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 17		Residual
C r	27-55	10YR 5/3	Channers	Massive	Firm SPT-N Value 16		Weathered Rock
R	55-114				Very Firm SPT-N Value 44		Bedrock
R	114-117				Very Firm SPT-N Value 50/3		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 117 inches below the existing ground surface.			Soil Features: Weathered Rock Depth: 72 inches Bedrock Depth: 55 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E			Infiltration Results: Proposed Infiltration Depth: 202.8 inches Performed Infiltration Depth: 30 inches Final Raw Infiltration Rate (in/hr): 1.79	



TEST BORING LOG: INF-214

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/27/2021
 DATE COMPLETED: 09/27/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Foothlope
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 610.26

SOIL TYPE: Brickerton Series	SOIL DEPTH CLASS: Very Deep:	SOIL DRAINAGE CLASS: Well-Drained:	PARENT MATERIAL: Residuum from martinsburg gray shale
LIMITING ZONE: Depth: 84 inches Type: Bedrock	Deep: Moderately Deep: X Shallow:	Mod. Well-Drained: Somewhat Poorly-Drained: Poorly-Drained: X	

HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p^	0-8	10YR 3/3	Gravelly Silt Loam	Granular	Friable SPT-N Value 11		Fill
B tg^	8-21	10YR 4/2	Gravelly Silt Loam	Subangular Blocky	Friable	FD Redox Depletions	Fill
O e	21-24	10YR 2.5/1		Single Grain	Very Friable		Oragnic Matter
B tgx1	24-48	10YR 5/2	Gravelly Silt Loam	Subangular Blocky	Friable SPT-N Value 7	MP Redox Concentrations	Colluvium
B tgx2	48-84	10YR 7/1	Channery Silty Clay Loam	Angular Blocky	Friable SPT-N Value 8	MP Redox Concentrations	Residual
R	84-87			Massive	Very Firm SPT-N Value 50/3		Bedrock

NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 87 inches below the existing ground surface.	Soil Features: Weathered Rock Depth: N/E Bedrock Depth: 84 inches Groundwater: 12 inches Seasonal High Water Table Depth: N/E Peched Water Table Depth: 8 inches	Infiltration Results: Proposed Infiltration Depth: 27 inches Performed Infiltration Depth: N/A Final Raw Infiltration Rate (in/hr): N/A
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TEST BORING LOG: INF-215

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/27/2021
 DATE COMPLETED: 09/27/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Backslope
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 645.85

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained:		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained: X			
Depth: 56 inches		Moderately Deep: X		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-6	10YR 4/3	Silt Loam	Granular	Friable SPT-N Value 7		Cultivated Topsoil
B t1	6-18	10YR 4/4	Channery Silt Loam	Subangular Blocky	Friable		Residual
B t2	18-48	10YR 4/6	V Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 23	CF Redox Depletions	Residual
C r	48-56	10YR 5/4	X Channery Silt Loam	Angular Blocky	Firm SPT-N Value 41		Weathered Rock
R	56-66			Massive	Very Firm		Bedrock
R	66-67				Very Firm SPT-N Value 50/1		
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 67 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 48 inches Bedrock Depth: 56 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 136.2 inches Performed Infiltration Depth: 30 inches Final Raw Infiltration Rate (in/hr): 0.21	



TEST BORING LOG: INF-216

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/27/2021
 DATE COMPLETED: 09/27/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Shoulder
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 650.72

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained:		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained: X			
Depth: 72 inches		Moderately Deep: X		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-6	10YR 4/4	Channery Silt Loam	Granular	Friable SPT-N Value 8		Cultivated Topsoil
B w	6-28	10YR 4/6	V Channery Silt Loam	Subangular Blocky	Friable		Residual
B t	28-40	10YR 5/4	X Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 14		Residual
C r	40-72	10YR 5/2	Channers	Massive	Firm SPT-N Value 15		Weathered Rock
R	72-91			Massive	Very Firm SPT-N Value 41		Bedrock
R	91-92				Very Firm SPT-N Value 50/1		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 92 inches below the existing ground surface.			Soil Features: Weathered Rock Depth: 40 inches Bedrock Depth: 72 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E			Infiltration Results: Proposed Infiltration Depth: 194.6 inches Performed Infiltration Depth: 36 inches Final Raw Infiltration Rate (in/hr): 1.56	



TEST BORING LOG: INF-217

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/27/2021
 DATE COMPLETED: 09/27/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Shoulder
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 653.57

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:			
Comly Series		Very Deep:		Well-Drained:		Residuum from martinsburg gray shale			
LIMITING ZONE:		Deep: X		Mod. Well-Drained: X					
Depth: 90 inches		Moderately Deep:		Somewhat Poorly-Drained:					
Type: Bedrock		Shallow:		Poorly-Drained:					
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES		COMMENTS	
A p	0-6	10YR 4/4	Channery Silt Loam	Granular	Friable SPT-N Value 9			Cultivated Topsoil	
B t	6-38	7.5YR 4/6	V Channery Silt Loam	Subangular Blocky	Friable			Colluvium	
B tx	38-56	7.5YR 5/6	V Channery Silt Loam	Subangular Blocky	Friable SPT-N Value 18	CD	Redox Concentrations	Residual	
C x	56-67	7.5YR 7/3	X Channery Silt Loam	Massive	Friable SPT-N Value 25	MP	Redox Concentrations	Residual	
C r	67-90	7.5YR 5/4	X Channery Silt Loam	Massive	Firm SPT-N Value 39			Weathered Rock	
R	90-114			Massive	Very Firm SPT-N Value 30			Bedrock	
R	114-116				Very Firm SPT-N Value 50/3			Bedrock	
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 116 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 67 inches Bedrock Depth: 90 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: 56 inches Pched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 228 inches Performed Infiltration Depth: 48 inches Final Raw Infiltration Rate (in/hr): 0.1			



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TEST BORING LOG: INF-218

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/27/2021
 DATE COMPLETED: 09/27/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Shoulder
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 651.41

SOIL TYPE: Comly Series		SOIL DEPTH CLASS: Very Deep:		SOIL DRAINAGE CLASS: Well-Drained: X		PARENT MATERIAL: Residuum from martinsburg gray shale	
LIMITING ZONE: Depth: 49 inches Type: Bedrock		Deep:		Mod. Well-Drained:			
		Moderately Deep:		Somewhat Poorly-Drained:			
		Shallow: X		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-6	10YR 4/4	V Channery Silt Loam	Granular	Friable SPT-N Value 10		Cultivated Topsoil
B t	6-24	10YR 6/4	V Channery Silt Loam	Subangular Blocky	Friable		Residual
C r	24-49	10YR 4/6	X Channery Silt Loam	Massive	Firm SPT-N Value 21		Weathered Rock
R	49-60				Very Firm SPT-N Value 24		Bedrock
R	60-62				Very Firm SPT-N Value 50/2		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 62 inches below the existing ground surface.			Soil Features: Weathered Rock Depth: 24 inches Bedrock Depth: 49 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Pched Water Table Depth: N/E			Infiltration Results: Proposed Infiltration Depth: 248.2 inches Performed Infiltration Depth: 24 inches Final Raw Infiltration Rate (in/hr): 1.26	



TEST BORING LOG: INF-219

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: Colleen Limbert
 CHECKED BY: Michael Derr

CONTRACTOR: Eichelbergers Inc.
 EQUIPMENT: Diedrich D-50
 DATE STARTED: 09/28/2021
 DATE COMPLETED: 09/28/2021

TEST LOCATION: Proposed Subsurface Infiltration Basin
 SLOPE: 4 to 6%
 LANDSCAPE POSITION: Shoulder
 COVER: Soybean
 DATUM: Topo
 ELEVATION: 656.87

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:	
Comly Series		Very Deep:		Well-Drained:		Residuum from martinsburg gray shale	
LIMITING ZONE:		Deep:		Mod. Well-Drained: X			
Depth: 69 inches		Moderately Deep: X		Somewhat Poorly-Drained:			
Type: Bedrock		Shallow:		Poorly-Drained:			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES	COMMENTS
A p	0-6	10YR 4/4	Gravelly Silt Loam	Granular	Friable SPT-N Value 6		Cultivated Topsoil
B t1	6-28	10YR 4/6	V Gravelly Silt Loam	Subangular Blocky	Friable		Colluvium
B t2	28-51	10YR 5/4	V Channery Silt Loam	Subangular Blocky	Firm SPT-N Value 13	FF	Redox Concentrations Residual
C r	51-69	10YR 6/2	X Channery Silt Loam	Massive	Firm SPT-N Value 25		Weathered Rock
R	69-94			Massive	Very Firm SPT-N Value 15		Bedrock
R	94-97				Very Firm SPT-N Value 50/3		Bedrock
NOTES: The ground surface elevation should be considered approximate. Auger refusal on bedrock was encountered at a depth of about 97 inches below the existing ground surface.				Soil Features: Weathered Rock Depth: 51 inches Bedrock Depth: 69 inches Groundwater Seeps: N/E Seasonal High Water Table Depth: N/E Peched Water Table Depth: N/E		Infiltration Results: Proposed Infiltration Depth: 268.4 inches Performed Infiltration Depth: 48 inches Final Raw Infiltration Rate (in/hr): 4.41	



TEST PIT LOG: INF-300

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: C. Limbert
 CHECKED BY: M. Derr

CONTRACTOR: Broad Excavating, Inc.
 EQUIPMENT: Komatsu PC120
 DATE STARTED: 03/31/2022
 DATE COMPLETED: 03/31/2022

TEST LOCATION: Proposed Stormwater Basin
 SLOPE: 1 to 6%
 LANDSCAPE POSITION: Toeslope
 COVER: Winter Cover Crop
 DATUM: Topo
 ELEVATION: 615

SOIL TYPE: Comly Series		SOIL DEPTH CLASS: Very Deep, >54 in: X Deep, 36-54 in: Moderately Deep 18-36 in: Shallow, <18 in:		SOIL DRAINAGE CLASS: Well-Drained: X Mod. Well-Drained: Somewhat Poorly-Drained: Poorly-Drained:		PARENT MATERIAL: Gray shale overlain by colluvium derved from Residuum			
HORIZON	DEPTH (in.)	COLOR	TEXTURE		STRUCTURE	CONSISTENCE	REDOX FEATURES		COMMENTS
A 1	0-14	10YR 4/3	V Gravelly	Silt Loam	Granular	Very Friable			Topsoil
A 2	14-25	10YR 5/4	V Gravelly	Silt Loam	Subangular Blocky	Friable			Colluvium
B C	25-53	10YR 6/3	V Channery	Silty Clay Loam	Subangular Blocky	Friable			Colluvium
C	53-76	10YR 5/3	X Channery	Silt Loam	Single Grain	Firm	C/D	Conc/Depl	Residuum
NOTES: The ground surface elevation should be considered approximate. The test pit was terminated at a depth of about 76 inches below the existing ground surface.				Soil Features: Bedrock Depth: NE Groundwater Seeps: 76 inches Seasonal High Water Table Depth: 76 inches Fragipan Depth: NE		Infiltration Results: Proposed Infiltration Depth: Surface Performed Infiltration Depth: Surface Final Raw Infiltration Rate (in/hr): 2.94			

Coarse Fragments by Volume

No modifier: >15%
 Gravelly (ex.): 15-35%
 V: Very: 36-65%
 X: Extremely 65-90%
 Gravel (ex.) >90%

Redoxomorphic Features:

Quantity: Contrast:
 F/: <2% /F: Faint
 C/: 2-20% /D: Distinct
 M/: >20% /P: Prominent

Redoximorphic Concentration: accumulation of Iron-Mn Oxides due to water cycling
 Redoximorphic Depletions: loss of Iron-Mn Oxides due to prolonged aquic conditions
 Clay Films: Illuviation of clay particles
 Clay Depletion: Loss of clay due to prolonged aquic elluviation processes
 Reduced Matrix: Anaerobic soil that oxides/changes matrix color upon presence of air



TEST PIT LOG: INF-301

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: C. Limbert
 CHECKED BY: M. Derr

CONTRACTOR: Broad Excavating, Inc.
 EQUIPMENT: Komatsu PC120
 DATE STARTED: 03/31/2022
 DATE COMPLETED: 03/31/2022

TEST LOCATION: Proposed Stormwater Basin
 SLOPE: 1 to 6%
 LANDSCAPE POSITION: Foothlope
 COVER: Winter Cover Crop
 DATUM: Topo
 ELEVATION: 622

SOIL TYPE: Comly Series		SOIL DEPTH CLASS: Very Deep, >54 in: X Deep, 36-54 in: Moderately Deep 18-36 in: Shallow, <18 in:		SOIL DRAINAGE CLASS: Well-Drained: X Mod. Well-Drained: Somewhat Poorly-Drained: Poorly-Drained:		PARENT MATERIAL: Gray shale overlain by colluvium derved from Residuum				
HORIZON	DEPTH (in.)	COLOR		TEXTURE		STRUCTURE	CONSISTENCE	REDOX FEATURES		COMMENTS
A 1	0-12	10YR	3/3	V Gravelly	Silt Loam	Platy	Very Friable			Topsoil
A 2	12-24	10YR	3/4	V Gravelly	Silt Loam	Subangular Blocky	Friable			Colluvium
B C	24-86	10YR	6/4	V Channery	Silt Loam	Subangular Blocky	Friable			Colluvium
C 1	86-98	10YR	6/3	X Channery	Silty Clay Loam	Subangular Blocky	Firm	F/P	Depletions	Colluvium
C 2	98-122	10YR	5/4	X Channery	Silt Loam	Subangular Blocky	Friable			Residuum
NOTES: The ground surface elevation should be considered approximate. The test pit was terminated at a depth of about 122 inches below the existing ground surface.				Soil Features: Bedrock Depth: NE Groundwater Seeps: 122 inches Seasonal High Water Table Depth: 122 inches Fragipan Depth: NE			Infiltration Results: Proposed Infiltration Depth: 7.0 feet Performed Infiltration Depth: 7.0 Final Raw Infiltration Rate (in/hr): 34.9			

Coarse Fragments by Volume

No modifier: >15%
 Gravelly (ex.): 15-35%
 V: Very: 36-65%
 X: Extremely 65-90%
 Gravel (ex.) >90%

Redoxomorphic Features:

Quantity: Contrast:
 F/: <2% /F: Faint
 C/: 2-20% /D: Distinct
 M/: >20% /P: Prominent

Redoximorphic Concentration: accumulation of Iron-Mn Oxides due to water cycling
 Redoximorphic Depletions: loss of Iron-Mn Oxides due to prolonged aquic conditions
 Clay Films: Illuviation of clay particles
 Clay Depletion: Loss of clay due to prolonged aquic elluviation processes
 Reduced Matrix: Anaerobic soil that oxides/changes matrix color upon presence of air



TEST PIT LOG: INF-302

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: C. Limbert
 CHECKED BY: M. Derr

CONTRACTOR: Broad Excavating, Inc.
 EQUIPMENT: Komatsu PC120
 DATE STARTED: 03/31/2022
 DATE COMPLETED: 03/31/2022

TEST LOCATION: Proposed Stormwater Basin
 SLOPE: 1 to 6%
 LANDSCAPE POSITION: Toeslope
 COVER: Winter Cover Crop
 DATUM: Topo
 ELEVATION: 615

SOIL TYPE: Comly Series		SOIL DEPTH CLASS: Very Deep, >54 in: X Deep, 36-54 in: Moderately Deep 18-36 in: Shallow, <18 in:		SOIL DRAINAGE CLASS: Well-Drained: X Mod. Well-Drained: Somewhat Poorly-Drained: Poorly-Drained:		PARENT MATERIAL: Gray shale overlain by colluvium derved from Residuum			
HORIZON	DEPTH (in.)	COLOR	TEXTURE	STRUCTURE	CONSISTENCE	REDOX FEATURES		COMMENTS	
A	0-14	10YR 4/4	X Gravelly Silt Loam	Granular	Friable			Topsoil	
A B	14-39	10YR 4/3	V Gravelly Silt Loam	Subangular Blocky	Friable			Colluvium	
B t	39-62	10YR 5/4	X Gravelly Silt Loam	Angular Blocky	Friable			Colluvium	
C x	62-69	10YR 5/6	X Gravelly Silty Clay Loam	Prismatic	Firm	M/P	Conc/Depl	Residuum	
NOTES: The ground surface elevation should be considered approximate. The test pit was terminated at a depth of about 69 inches below the existing ground surface. 3 inches of water in bottom of test pit after 1.5 hours.				Soil Features: Bedrock Depth: NE Groundwater Seeps: 62 inches Seasonal High Water Table Depth: 62 inches Fragipan Depth: NE		Infiltration Results: Proposed Infiltration Depth: Surface Performed Infiltration Depth: Surface Final Raw Infiltration Rate (in/hr): 1.75			

Coarse Fragments by Volume

No modifier: >15%
 Gravelly (ex.): 15-35%
 V: Very: 36-65%
 X: Extremely 65-90%
 Gravel (ex.) >90%

Redoxomorphic Features:

Quantity: Contrast:
 F/: <2% /F: Faint
 C/: 2-20% /D: Distinct
 M/: >20% /P: Prominent

Redoximorphic Concentration: accumulation of Iron-Mn Oxides due to water cycling
 Redoximorphic Depletions: loss of Iron-Mn Oxides due to prolonged aquic conditions
 Clay Films: Illuviation of clay particles
 Clay Depletion: Loss of clay due to prolonged aquic elluviation processes
 Reduced Matrix: Anaerobic soil that oxides/changes matrix color upon presence of air



TEST PIT LOG: INF-303

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: C. Limbert
 CHECKED BY: M. Derr

CONTRACTOR: Broad Excavating, Inc.
 EQUIPMENT: Komatsu PC120
 DATE STARTED: 03/31/2022
 DATE COMPLETED: 03/31/2022

TEST LOCATION: Proposed Stormwater Basin
 SLOPE: 1 to 6%
 LANDSCAPE POSITION: Foothlope
 COVER: Winter Cover Crop
 DATUM: Topo
 ELEVATION: 621

SOIL TYPE:		SOIL DEPTH CLASS:		SOIL DRAINAGE CLASS:		PARENT MATERIAL:				
Comly Series		Very Deep, >54 in: X		Well-Drained: X		Gray shale overlain by colluvium derved from Residuum				
		Deep, 36-54 in:		Mod. Well-Drained:						
		Moderately Deep 18-36 in:		Somewhat Poorly-Drained:						
		Shallow, <18 in:		Poorly-Drained:						
HORIZON	DEPTH (in.)	COLOR		TEXTURE		STRUCTURE	CONSISTENCE	REDOX FEATURES		COMMENTS
A	0-8	10YR	4/4	V Gravelly	Silt Loam	Granular	Very Friable			Topsoil
A B	8-22	10YR	5/4	V Gravelly	Silt Loam	Subangular Blocky	Friable			Colluvium
B t1	22-42	10YR	6/4	V Gravelly	Silt Loam	Subangular Blocky	Friable			Colluvium
B t2	42-6	10YR	5/4	V Channery	Silty Clay Loam	Subangular Blocky	Friable			Colluvium
B tx	64-82	10YR	5/3	X Channery	Silty Clay Loam	Prismatic	Friable	C/P	Conc/Depl	Residuum
C g	82-91	10YR	6/3	X Channery	Silt Loam	Angular Blocky	Firm	C/D	Concentrations	Residuum
NOTES: The ground surface elevation should be considered approximate. The test pit was terminated at a depth of about 91 inches below the existing ground surface. 10 inches of water in bottom of test pit after 1.5 hours.				Soil Features: Bedrock Depth: NE Groundwater Seeps: 82 inches Seasonal High Water Table Depth: 82 inches Fragipan Depth: NE			Infiltration Results: Proposed Infiltration Depth: 6.0 feet Performed Infiltration Depth: 6.0 feet Final Raw Infiltration Rate (in/hr): 40.86			

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Redoximorphic Concentration: accumulation of Iron-Mn Oxides due to water cycling
 Redoximorphic Depletions: loss of Iron-Mn Oxides due to prolonged aquic conditions
 Clay Films: Illuviation of clay particles
 Clay Depletion: Loss of clay due to prolonged aquic elluviation processes
 Reduced Matrix: Anaerobic soil that oxides/changes matrix color upon presence of air



TEST PIT LOG: INF-305

PROJECT NAME: 7503 Kernsville Road
 PROJECT NUMBER: 31211548
 PROJECT LOCATION: Lowhill Township,
 Lehigh County, Pennsylvania
 CLIENT: CORE5 Industrial Partners
 LOGGED BY: C. Limbert
 CHECKED BY: M. Derr

CONTRACTOR: Broad Excavating, Inc.
 EQUIPMENT: Komatsu PC120
 DATE STARTED: 03/31/2022
 DATE COMPLETED: 03/31/2022

TEST LOCATION: Proposed Stormwater Basin
 SLOPE: 1 to 6%
 LANDSCAPE POSITION: Toeslope
 COVER: Winter Cover Crop
 DATUM: Topo
 ELEVATION: 611

SOIL TYPE: Comly Series		SOIL DEPTH CLASS: Very Deep, >54 in: X Deep, 36-54 in: Moderately Deep 18-36 in: Shallow, <18 in:		SOIL DRAINAGE CLASS: Well-Drained: X Mod. Well-Drained: Somewhat Poorly-Drained: Poorly-Drained:		PARENT MATERIAL: Gray shale overlain by colluvium dervied from Residuum			
HORIZON	DEPTH (in.)	COLOR	TEXTURE		STRUCTURE	CONSISTENCE	REDOX FEATURES		COMMENTS
A 1	0-10	10YR 3/4	V Gravelly	Silt Loam	Granular	Very Friable			Topsoil
A 2	10-22	10YR 4/4	V Gravelly	Silt Loam	Subangular Blocky	Friable			Colluvium
B A	22-44	10YR 5/4	V Channery	Silty Clay Loam	Subangular Blocky	Friable			Colluvium
C	44-64	10YR 6/4	X Channery	Silty Clay Loam	Single Grain	Firm	M/P	Conc/Depl	Colluvium
NOTES: The ground surface elevation should be considered approximate. The test pit was terminated at a depth of about 91 inches below the existing ground surface. 18 inches of water in bottom of test pits after 1.5 hours.				Soil Features: Bedrock Depth: NE Groundwater Seeps: 64 inches Seasonal High Water Table Depth: 64 inches Fragipan Depth: NE		Infiltration Results: Proposed Infiltration Depth: 1 foot Performed Infiltration Depth: 1 foot Final Raw Infiltration Rate (in/hr): 0.94			

Coarse Fragments by Volume

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Redoxomorphic Features:

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 Clay Films: Illuviation of clay particles
 Clay Depletion: Loss of clay due to prolonged aquic elluviation processes
 Reduced Matrix: Anaerobic soil that oxides/changes matrix color upon presence of air