



STONEFIELD
engineering & design

ENVIRONMENTAL IMPACT STATEMENT

**PROPOSED REDEVELOPMENT PLAN
BLOCK 541, LOT 2
750 WALNUT AVENUE
TOWNSHIP OF CRANFORD
UNION COUNTY, NEW JERSEY**

PREPARED FOR:

HARTZ MOUNTAIN INDUSTRIES, INC.

PREPARED BY:

**STONEFIELD ENGINEERING & DESIGN, LLC
OCTOBER 4, 2022
T-16509**

**ZACHARY E. CHAPLIN, PE
NEW JERSEY PROFESSIONAL ENGINEER LICENSE # 53605**



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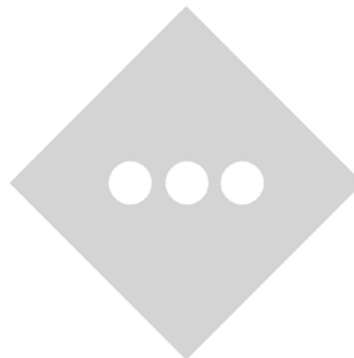
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1.0 PROJECT DESCRIPTION

Hartz Mountain Industries, Inc. is proposing the redevelopment of the above referenced property. The subject property is designated Block 541, Lot 2, commonly known as 750 Walnut Avenue. The subject property is located within the Township of Cranford Commercial-3 (C-3) District and is bounded by the Hyatt Hills Golf Complex to the southwest, the Conrail rail line to the north and northwest, and Walnut Avenue to the east. Single-family residential uses are located across Walnut Avenue to the east of the property and across the Conrail rail line to the north of the property. The total project area is 1,341,643 square feet (30.8 acres) and the limit of disturbance is 1,259,011 square feet (28.90 acres). Project Figures can be found in Appendix A of this Report.

The property is currently occupied by an approximately 420,000 square foot complex of office, lab, and industrial facilities. The redevelopment is proposed to accommodate 2 flex warehouse buildings at 132,000 square feet and 109,200 square feet, respectively, 2 multi-family residential buildings at 39,102 square feet each, 607 total parking spaces, 32 loading docks and 43 potential loading docks. Additional site improvements include amenity areas for residents, a park, stormwater management improvements, lighting, utilities, and landscaping. The existing development will be removed entirely as part of the proposed redevelopment.

This Environmental Impact Statement has been prepared per the Township of Cranford requirements for environmental impact statements under Township Code §255-24D(21) to investigate the existing conditions of the property, evaluate the potential impacts of the proposed redevelopment, and discuss the measures to mitigate environmental impacts, if any.

2.0 RELATIONSHIP TO LOCAL AND REGIONAL PLANNING DOCUMENTS

2.1 MUNICIPAL MASTER PLAN

Cranford Township's Master Plan, adopted in 2009, divided Cranford's commercial/industrial base into three zone districts. For the subject property, which at the time was zoned ORD-I, the Township introduced the C-3 zoning concept, which was described as follows:

The Commercial – 3 District is intended to provide for Class “A” office space in a campus-like setting, similar to the Commercial - I District. A separate Commercial – 3 District is recommended for the purpose of crafting bulk standards that recognize and continue the existing large lots in this area of the Township and the desire of retaining the existing land use pattern. Design standards

should be crafted to ensure that the existing campus-like environment is retained as part of any future development in the District.¹

As noted, a mix-use planned development use is not permitted within the C-3 zone. This being said, there are multiple goals in the Municipal Master Plan that are satisfied by the proposed project. A mix-use planned development furthers the Township's goal of "encourag[ing] the development of a diversified economic base that generates employment growth, increases property values, and promotes the improvement of underutilized properties."² The residential aspect of the mix-use plan development advances the Master Plan's #1 residential goal to "provide a wide range of housing to meet the needs of residents in diverse income groups." Furthermore, in consideration of the proposed shuttle service to the train station, the rezoning would also advance the Township's sustainability goal of "promoting development in existing non-residential areas that accommodate alternative modes of transportation and shared parking."³ The overall project also serves to satisfy the goal of "requiring all in-fill development to be done in a manner that is consistent and compatible with the surrounding neighborhood and environment"⁴.

2.2 UNION COUNTY MASTER PLAN

One of the main goals of the Union County Master Plan is to facilitate development by directing new growth to environmentally suitable areas while maintaining consistency and compatibility with existing settlement patterns.

The subject property has existing infrastructure and supporting facilities to accommodate redevelopment activities, and the proposed change of use and site improvements are consistent with the existing area. In short, the proposed development is wholly consistent with the goals and objectives of the Union County Master Plan.

2.3 THE STATE DEVELOPMENT AND REDEVELOPMENT PLAN

The proposed mix-use redevelopment plan both maintains an industrial use as well as proposes a high-quality residential community with affordable housing, and thus is consistent with the goals, strategies, and policies outlines in the 2001 New Jersey State Development and Redevelopment Plan (SDRP). The subject property is located in the Metropolitan Planning Area (PA-I).

¹ Master Plan, P. LU-30.

² Master Plan, p. G-2.

³ Master Plan, p. G-4.

⁴ Master Plan, p. G-3.

In regard to the proposed residential subdivision as a part of the greater mix-use development, the SDRP is largely supported. Providing affordable housing, integrating a diversity of housing types and units, and promoting “housing development and redevelopment which results in mixed-income neighborhoods” are overarching policy objectives in the SDRP. Recognizing the built-out nature and stability of communities within the PAI, the SDRP encourages compact development, brownfield remediation, and “efficient and beneficial utilization of scarce land resources” to protect and strengthen the character of existing communities. The provision of housing opportunities is a stated policy objective for the PAI area:

Provide a full range of housing choices through redevelopment, new construction, rehabilitation, adaptive reuse of nonresidential buildings, and the introduction of new housing into appropriate nonresidential settings. Preserve the existing housing stock through maintenance, rehabilitation, and flexible regulation.

As illustrated above, redevelopment activities to expand and provide a diverse housing mix, such as is the case for a section of the proposed mix-use development in Cranford, are firmly supported by the SDRP.

2.4 THE 750 WALNUT AVENUE REDEVELOPMENT PLAN

The 750 Walnut Avenue Redevelopment Plan (The “Plan”), prepared by Topology, dated November 18, 2021 proposes a comprehensive vision for the redevelopment of the Redevelopment Area. The Plan aims to combine all relevant planning documents and laws, as outlined in Appendix A, into one succinct report.

Hartz and the Township agreed to adopt The Plan as a response to the Township’s denial of a Rezoning Application to permit 905 multi-family housing units. Thus, the current multi-use development as outlined in the Plan is now permitted as of right, and all provisions set forth in the Plan supersede those set forth in the Township’s Land Development Ordinance.

The main goals of the Plan are to expand affordable housing options near the downtown core, create aesthetically pleasing and safe public open spaces and streetscapes, promote economic development, support old and new businesses, reduce negative impact on car circulation and traffic, eradicate underutilized and stagnant properties, and implement sustainable design. All other goals as outlined in the three aforementioned documents are also supported by the Plan. The current proposed development is not only consistent with the aforementioned documents, but also with the overall 750 Walnut Avenue Redevelopment Plan.

3.0 INVENTORY OF EXISTING ENVIRONMENTAL CONDITIONS

3.1 SOILS

The site is underlain by the following soil classifications, based upon the County Soil Survey (Appendix B), the Geotechnical Report, and the site survey:

TABLE II: ON-SITE SOIL GROUPS

Soil Description	Hydrologic Soil Group	Permeability Rate (in/hr)	Approximate Project Coverage
Boonton-Urban land-Haledon complex, 0 to 8 percent slopes (BovB)	C	0.06 to 0.20	37.5%
Haledon-Urban land-Hasbrouck complex, 0 to 8 percent slopes (HatB)	C or C/D	0.06 to 0.60	9.3%
Urban land (UR)	N/A	N/A	53.2%

3.2 TOPOGRAPHY

Existing topography onsite essentially slopes from the westernmost corner of the site adjacent to the rail line to the southeasternmost corner of the site adjacent to Walnut Avenue. Slight depressions onsite exist where site runoff is collected via catch basins and piped to an existing detention basin located at the northeast portion of Walnut Avenue. A bermed area is located along the center of the site frontage which is planted with trees. One aboveground detention basin is located in the northeasterly corner of the site along Walnut Avenue and a second aboveground detention basin is located in the southeasterly corner of the site along Walnut Avenue.

3.3 GEOLOGY

Per review of NJDEP Geoweb mapping, the site is underlain by Passaic Formation Mudstone facies. Per the County Soil Survey (Appendix B), the depth to fragipan is 18 to 36 inches. There is no evidence onsite of bedrock within 2 feet of the surface.

3.4 VEGETATION

Existing vegetation onsite consists of primarily landscaped areas which were planted around the existing site features. Some overgrowth is located in the northeastern-most corner of the property and along the northerly and

westerly property lines. A planted berm of shade and evergreen trees is located along the property frontage on Walnut Avenue. Shade and ornamental trees are planted throughout the site parking area.

3.5 WILDLIFE

Per review of NJDEP Geoweb mapping, there are no threatened or endangered species or habitats onsite. The nearest natural habitat is located approximately 130 feet southwest of the subject property in the area of the golf course pond. The species recorded in the nearby habitat are summarized in the following table:

TABLE III: RARE WILDLIFE SPECIES OR WILDLIFE HABITAT NEARBY

<i>Scientific Name</i>	<i>Common Name</i>	<i>State Status</i>	<i>State Rank</i>
Nycticorax nycticorax	Black-crowned Night-heron	Threatened	3
Egretta caerulea	Little Blue Heron	Special Concern	2
Egretta thula	Snowy Egret	Special Concern	2
Plegadis falcinellus	Glossy Ibis	Special Concern	2

Given the intensity of the existing development on the subject property and the lack of permanent water features it is unlikely that the threatened and special concern species would utilize the property as habitat.

3.6 SURFACE WATER

The Rahway River is located approximately 550 feet northeast of the subject property. Per FEMA and NJDEP flood mapping, the site does not lie within the Rahway River flood plain. There are no wetland areas located onsite. Two aboveground detention basins are located in the northeasterly corner and southeasterly corner of the site, respectively. Please refer to the Stormwater Management Report for existing runoff quantities.

3.7 SUBSURFACE WATER

A subsurface soil investigation was performed on September 19, 2018 by Melick-Tully and Associates. A total of 14 test pits were dug onsite to depths of 10 to 11 feet to evaluate the soil profile and depth to groundwater. Groundwater seepage was only encountered in two of the 14 test pits (Test Pits No. 10 and 11), located in the northeasterly portion of the site, nearest to the golf course and railroad, respectively. Slight groundwater seepage was encountered at 4 feet depths in both test pits. Please refer to the Soil Testing Map and Logs in Appendix C.

Per review of the County Soil Survey, the depth to groundwater for the soil types onsite can range from 6 inches to 36 inches. The depth to groundwater is not indicated for Urban Land.

Per request for public records from the Township of Cranford and Clark Township as well as review of NJDEP well data, there are no public wells within 500 feet of the subject property.

3.8 UNIQUE, SCENIC AND/OR HISTORIC FEATURES

There are no portions of the site which would be considered to have unique, scenic and/or historic qualities as the site is entirely developed with an office building complex. The Conrail rail line bounds the northwesterly property line and is listed as a National Registry Eligible Historic District, named the Lehigh Valley Railroad Historic District. In addition, the Rahway River Corridor is located approximately 500 feet northeast of the subject property and is listed as a National Registry Eligible Historic District under the Union County Park System Historic District.

Sunny Acres, a residential development built in 1940 to 1942, was designated the first Cranford Local Historic District on August 14, 2018 by the Cranford Township Committee. The District is located approximately 1,600 feet to the east of the subject property.

3.9 WATER QUALITY AND SUPPLY

Under existing conditions, the estimated water demand is 17,475 gallons per day for a 699 employee industrial facility. Water supply is available to the site via the 12" cast iron water main located within Walnut Avenue. Connection to the existing development is provided via a 6" water service connection to the main. The water main is under the jurisdiction of New Jersey American Water (NJAW).

Sanitary sewer service is available to the site via the sanitary main within Walnut Avenue. Connection to the existing development is provided via a 10" sanitary service connection to the main.

3.10 AIR QUALITY

A study on the existing air quality has not been performed for this site. It is anticipated that the most significant air quality impact is a result of the vehicles which access the property as well as the HVAC system which supports the building operations.

3.11 NOISE LEVELS

A study on the existing noise levels has not been performed for this site. It is anticipated that the most significant noise level contributors are traffic from the vehicles (passenger cars and trucks) which access the property as well as the HVAC system which supports the building operations.

4.0 ENVIRONMENTAL IMPACT ASSESSMENT

4.1 SOILS

There is no anticipated impact to the underlying soils on the subject property as a result of the proposed development. A structural geotechnical report will be performed to confirm the soils onsite can support the proposed structural improvements as well as to evaluate the properties of the soils for stormwater management system design. Per the subsurface soil investigation performed by Melick-Tully, soils onsite primarily consist of thin layers of fill and topsoil underlain by silt loam and clay loam. Please refer to the Soil Testing Map and Logs in Appendix C.

4.2 TOPOGRAPHY

Proposed topography will mimic the pattern of existing conditions in that the site will generally slope down towards Walnut Avenue. The existing detention basin and bermed area along the Walnut Avenue frontage provide stormwater management and screening of the proposed development, respectively. Localized depressions will be utilized to collect stormwater runoff via stormwater inlets through the property.

4.3 GEOLOGY

There is no anticipated impact to underlying geologic formations and features as part of the proposed development. A structural geotechnical report will be performed to confirm the soils onsite can support the proposed structural improvements as well as to evaluate the properties of the soils for stormwater management system design. Please refer to the Soil Testing Map and Logs in Appendix C.

4.4 VEGETATION

A full landscaping plan is proposed as part of the redevelopment of the subject property to aesthetically enhance the appearance of the site in accordance with the new site layout. Under proposed conditions 402 trees are proposed throughout the site.

4.5 WILDLIFE

There is no negative impact anticipated to wildlife as part of the proposed development as the site is currently fully developed and not mapped as a habitat for threatened or endangered species.

4.6 SURFACE WATER

The site is not impacted by flood hazard areas nor wetlands and the development is therefore not subjected to the associated New Jersey Department of Environmental Protection (NJDEP) regulations. A full stormwater management plan is proposed for the site development to provide the requisite reductions, groundwater recharge, and water quality measures as part of the major development requirements. All stormwater runoff onsite is proposed to ultimately be discharged to the stormwater system within Walnut Avenue. Please refer to the Grading & Drainage Plans (Sheets C-6 and C-7). Please refer to the Stormwater Management Report for runoff quantities and anticipated stormwater management requirements for the Site Plan. A Soil Erosion & Sediment Control Plan (Sheets C-10 and C-11) has been provided to prevent erosion of soils and sediment runoff offsite. As part of the Site Plan process, full drainage plans will be submitted inclusive of runoff detention and infiltration systems as appropriate and water quality measures as well as the associated stormwater calculations.

4.7 SUBSURFACE WATER

Per the subsurface soil investigation was performed on September 19, 2018 by Melick-Tully and Associates, groundwater was only encountered at 4 feet depths in the rear of the site abutting the golf course and railroad. Groundwater seepage was not encountered in any of the other test pits onsite. Please refer to the Soil Testing Map and Logs in Appendix C. The shallow groundwater in these areas will not impact the proposed stormwater management facilities onsite as there are no basins proposed in this area.

Overall the proposed development will reduce impervious coverage; therefore, groundwater recharge is naturally increased.

Per request for public records from the Township of Cranford and Clark Township as well as review of NJDEP well data, there are no public wells within 500 feet of the subject property.

4.8 UNIQUE, SCENIC AND/OR HISTORIC FEATURES

The proposed development will not have a negative impact on the nearby historic districts. A vegetative buffer is proposed between the proposed development and the Conrail rail line along the northerly property line. The site is located approximately 500 feet southwest of the Rahway River and will therefore have no negative impact

on this feature. Proposed stormwater management facilities are designed in accordance with Township and NJDEP requirements; therefore, all runoff which ultimately drains to the stream will be of a quality and quantity in accordance with local and state standards. It should be noted that overall the runoff volume from the site will be decreased due to a decrease in impervious surfaces.

The site is located approximately 1,600 feet west of the Sunny Acres Historic District and will not have a negative impact on the significant historic architecture of this area. The subject site and proposed development are not visible from the District boundaries.

4.9 WATER QUALITY AND SUPPLY

The development proposes the implementation of green infrastructure via bio-retention areas and bio-filter treatment devices to treat water quantities equal to the area of new motor vehicle surfaces.

Water supply is available to the site via the 12" cast iron water main located within Walnut Avenue. Connection to each subdivision of the development, respectively, is proposed via 6" water service connections to the main. The water main is under the jurisdiction of New Jersey American Water (NJAW).

Sanitary sewer service is available to the site via the sanitary main within Walnut Avenue. Connection to the residential subdivision is proposed via an 8" sanitary service connection to the main via an existing on-site manhole. Connection to the industrial subdivision is proposed via a 6" sanitary service connection to the main via an existing on-site manhole.

4.10 AIR QUALITY

No significant change to air quality is anticipated as part of the proposed development. The development will comply with all NJDEP requirements for air quality control measures as applicable.

4.11 NOISE LEVELS

No significant change to air quality is anticipated as part of the proposed development. The industrial nature of the development is a similar noise generator to the existing use, with the primary impactor of vehicle traffic. The development will comply with all NJDEP requirements for noise as applicable. The bermed areas along the site frontage will facilitate some buffer from any noise onsite to Walnut Avenue.

5.0 ALTERNATIVES ANALYSIS

5.1 NO BUILD

Under existing conditions, the site contains an approximately 420,000 square foot complex of office, lab, and industrial facilities. In the no build condition, the existing building, parking areas, and supporting improvements would remain as-is. Since the departure of the property's primary tenant, Bank of America, the property is approximately 59% vacant, which is likely to increase to at least 73% as LabCorp relocates its operations as well. This is consistent with the trend in the office market over the past decade, in which suburban office space vacancy rates are approaching 30% in New Jersey. Ultimately, maintaining the existing use will result in a property that is underutilized at best and obsolete at worst, as a result of the changing office landscape.

In addition, the site is currently 65.5% impervious, while the proposed development is 59.6% impervious. In the no build condition, the property would not receive the benefits of a reduction in impervious coverage and an increase in vegetated areas on the subject property.

6.0 LICENSES, PERMITS, AND APPROVALS REQUIRED

The following licenses, permits, and approvals are anticipated in conjunction with this application:

- Township of Cranford
 - Preliminary & Final Major Site Plan Approval
 - Building Permit
 - Subdivision Approval
- Union County
 - Site Plan Approval
- Somerset-Union Soil Conservation District
 - Soil Erosion and Sediment Control Plan Certification
- New Jersey Department of Environmental Protection (NJDEP)
 - Bureau of Water System Engineering (BWSE) Approval
 - Treatment Works Approval (TWA)

At the time of this Statement, all approvals are still pending.

APPENDIX A

PROJECT FIGURES

INVENTORY

USGS QUADRANGLE MAP

TAX AND ZONING MAP

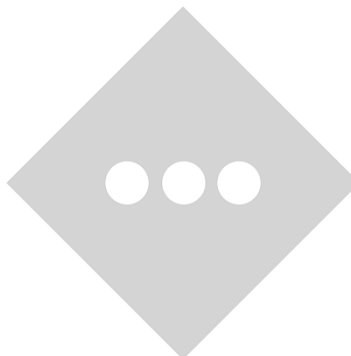
AERIAL MAP

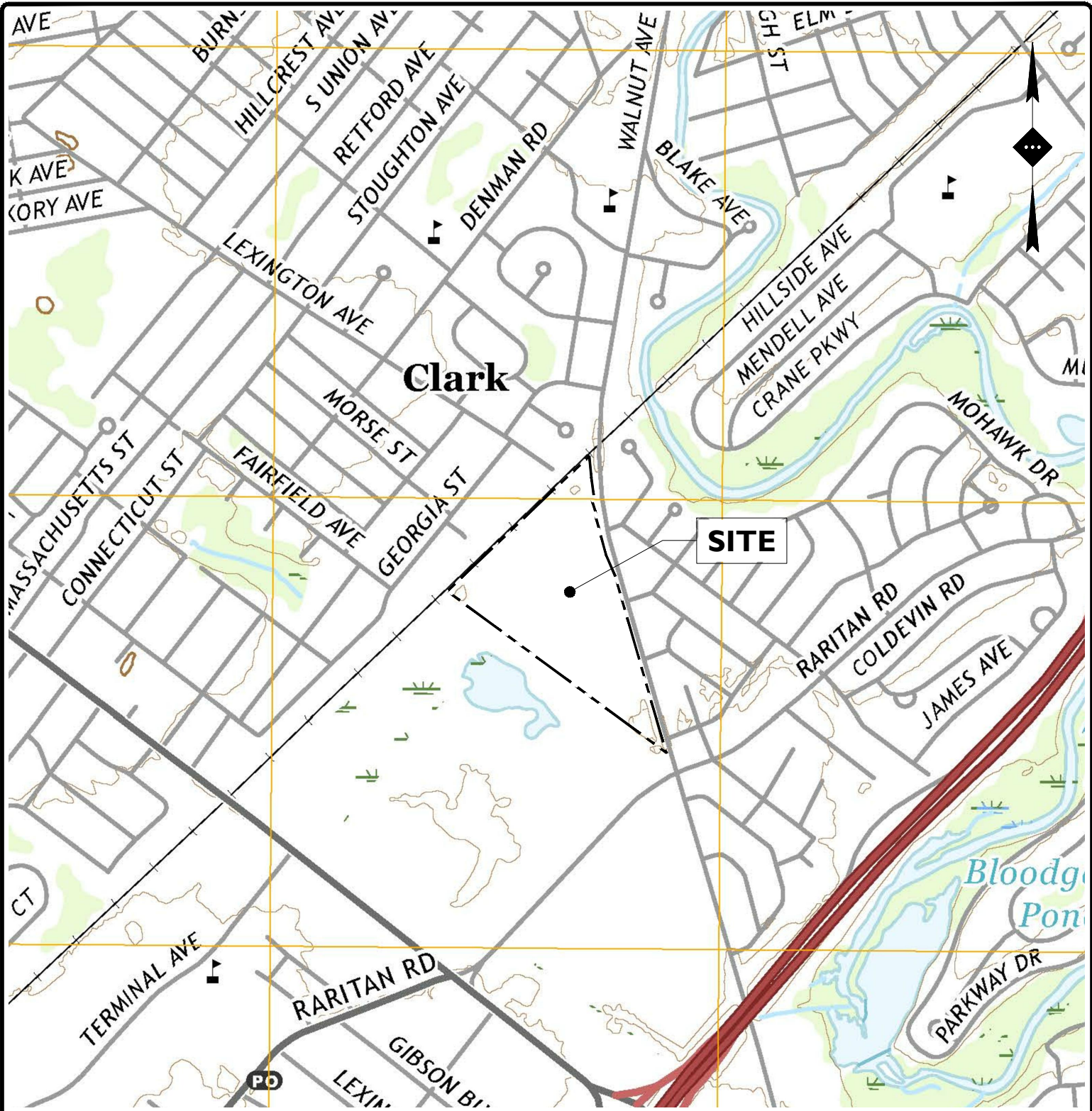
FEMA MAP

NJDEP GEOWEB MAP - WETLANDS

NJDEP GEOWEB MAP – SPECIES HABITATS

NJDEP GEOWEB MAP – WELLHEAD PROTECTION AREAS





USGS QUADRANGLE MAP



GRAPHIC SCALE IN FEET

1" = 1000'

SOURCE: USGS 7.5 MINUTE SERIES, ROSELLE, NJ QUADRANGLE MAP, DATED 2018 AND 7.5 MINUTE SERIES, PERTH AMBOY, NJ-NY QUADRANGLE MAP, DATED 2018

HARTZ MOUNTAIN PROPOSED RESIDENTIAL REDEVELOPMENT

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750 WALNUT AVENUE (COUNTY ROUTE 632)
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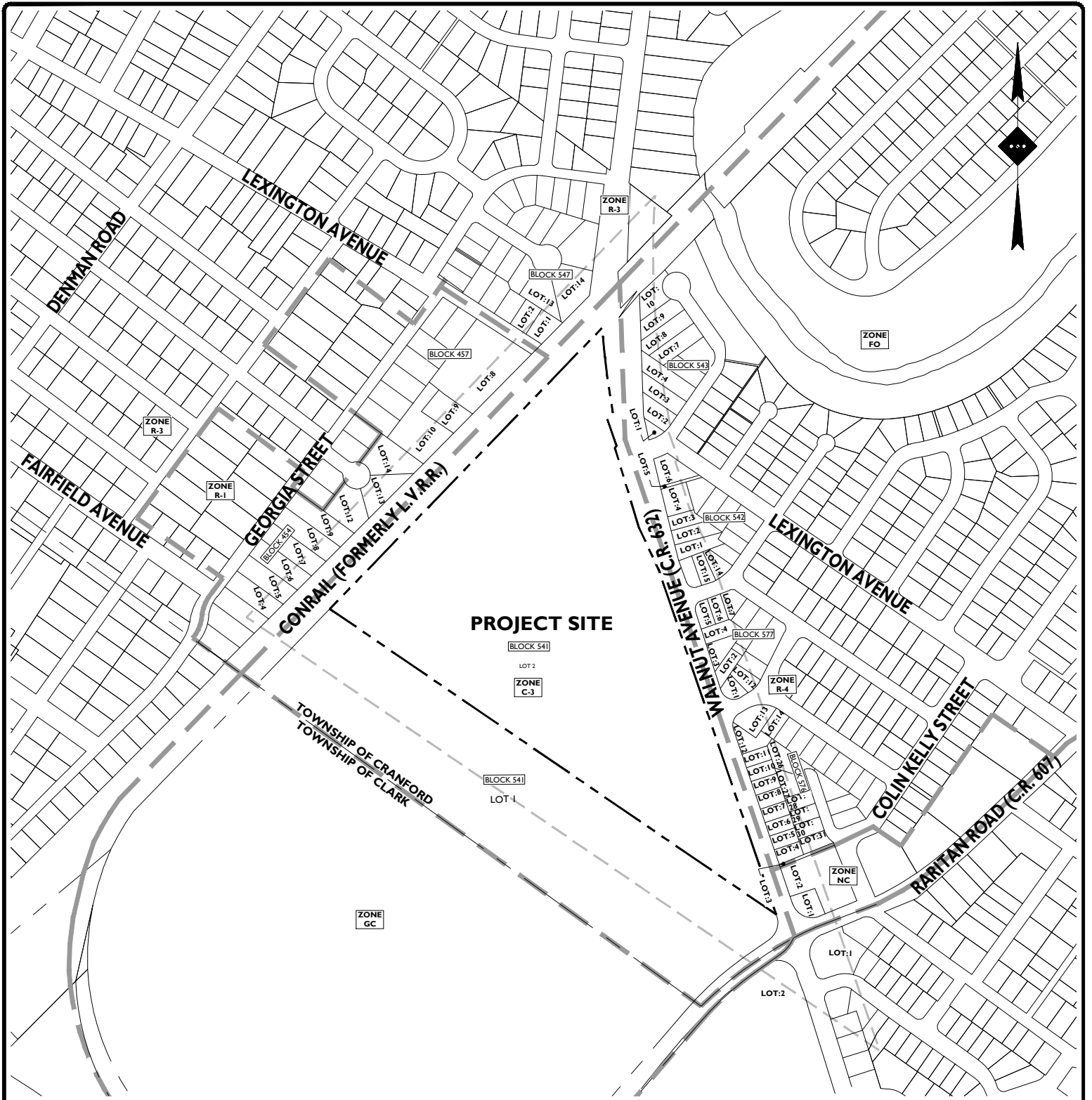
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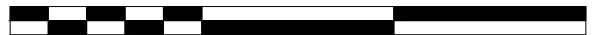
PROJECT SITE

BLOCK 541
LOT 2
ZONE C-3

BLOCK 541
LOT 1

ZONE CC

500' 0' 500' 1000'



GRAPHIC SCALE IN FEET

1" = 500'

TAX AND ZONING MAP

SOURCE: TOWNSHIP OF CRANFORD TAX MAP PAGES 96, 97, 129, 133, & 142, AND TOWNSHIP OF CRANFORD ZONING MAP

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GRAPHIC SCALE IN FEET
1" = 500'

AERIAL MAP

SOURCE: GOOGLE EARTH PRO, IMAGERY DATED 04/19/2016

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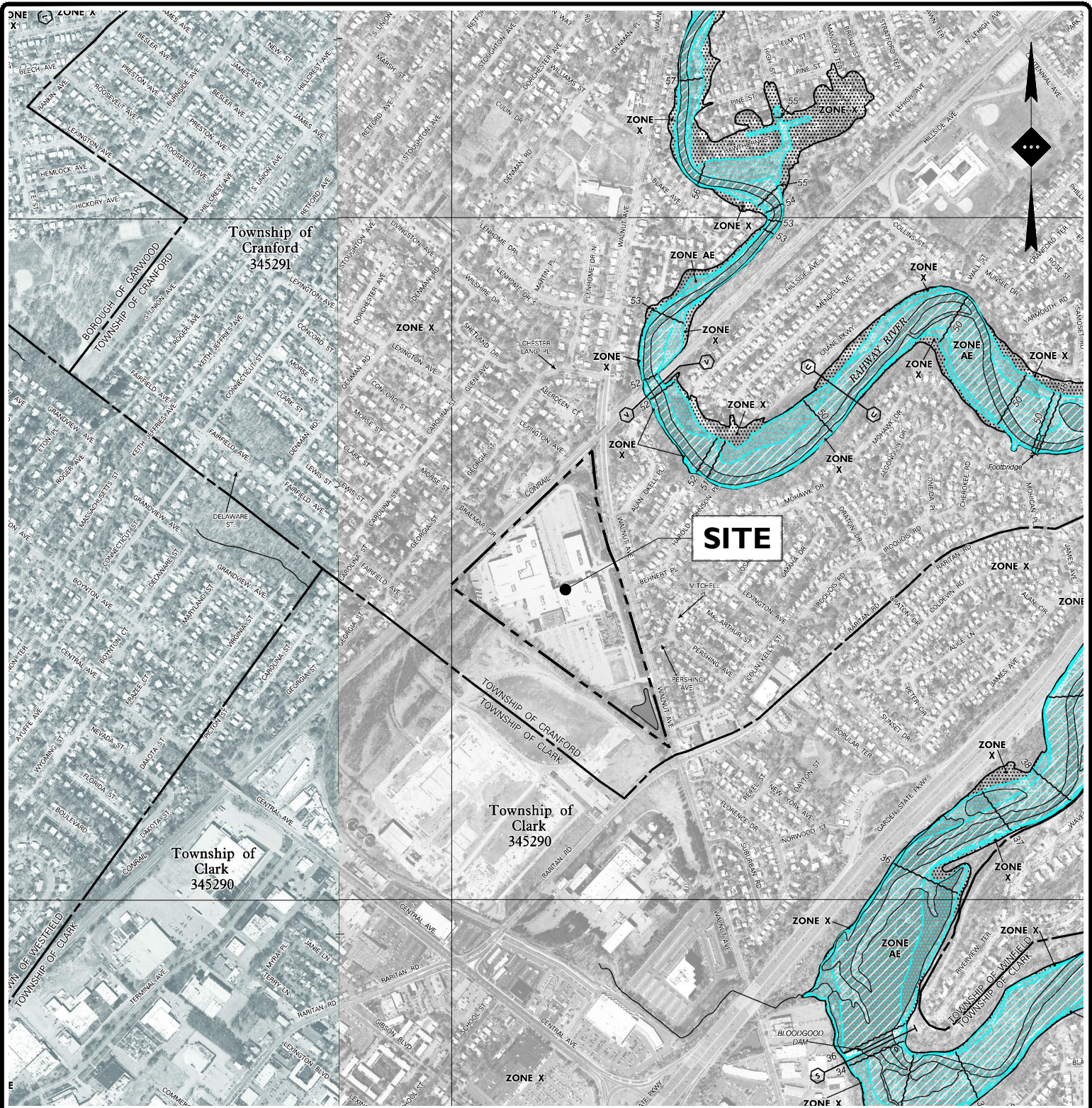
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FEMA FLOOD INSURANCE RATE MAP (FIRM)



GRAPHIC SCALE IN FEET
1" = 1000'

SOURCE: EFFECTIVE FEMA FIRM MAPS 34039C0031F & 34039C0032F, DATED 09/20/2006

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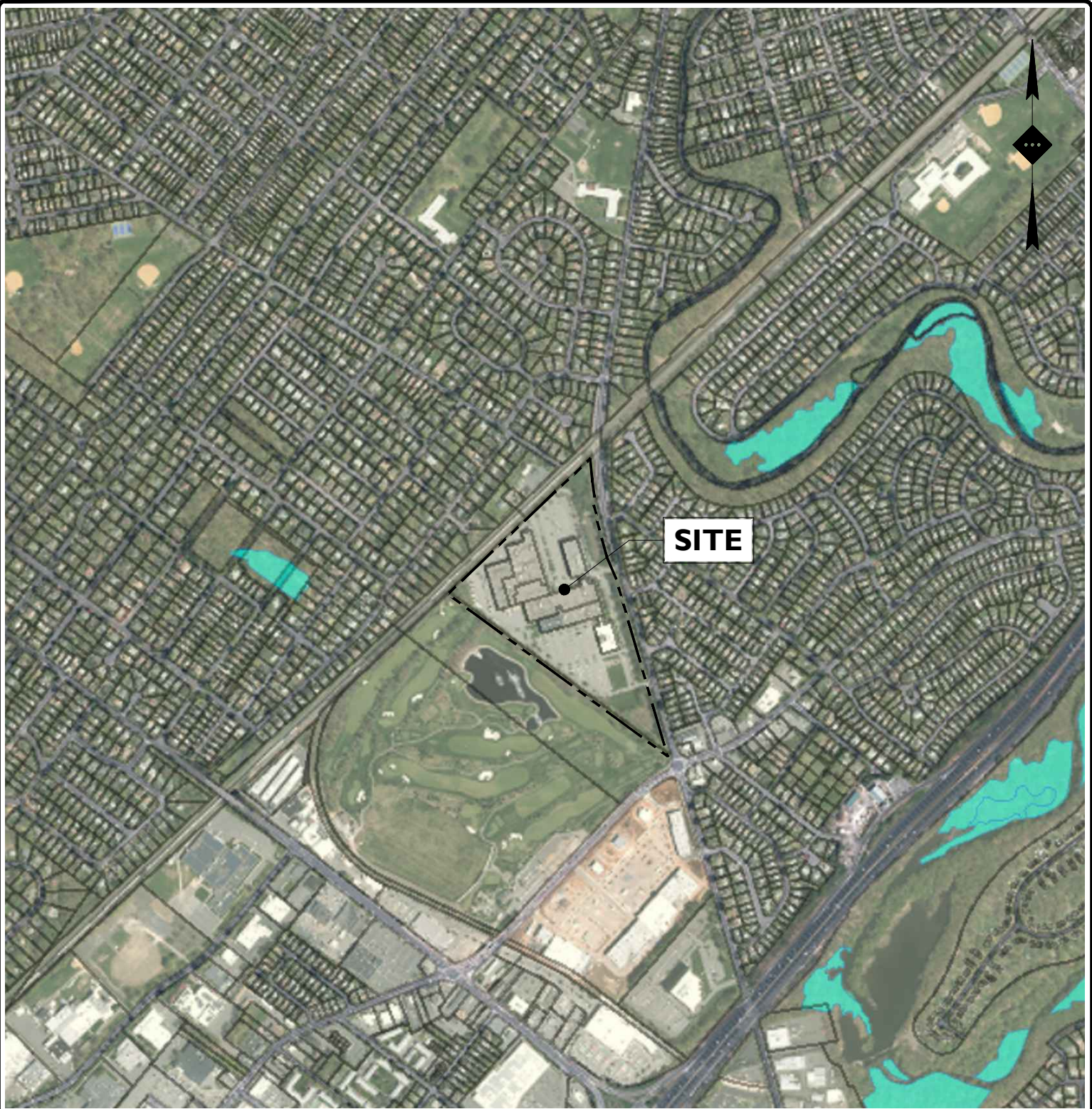
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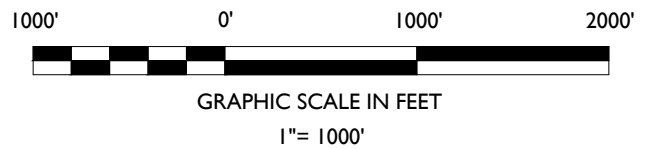


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NJDEP GEOWEB - FRESHWATER WETLANDS MAP



SOURCE: NJDEP GEOWEB

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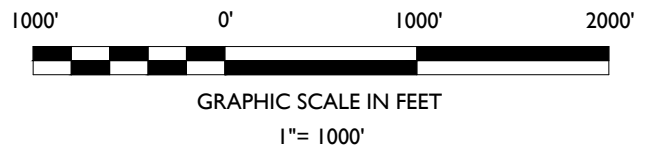
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NJDEP GEOWEB - WELLHEAD PROTECTION AREA MAP



SOURCE: NJDEP GEOWEB - WELLDRILLERS MAP

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NJDEP GEOWEB - SPECIES HABITAT MAP



GRAPHIC SCALE IN FEET

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SOURCE: NJDEP GEOWEB

HARTZ MOUNTAIN PROPOSED RESIDENTIAL REDEVELOPMENT

BLOCK 541, LOT 2
750 WALNUT AVENUE (COUNTY ROUTE 632)
TOWNSHIP OF CRANFORD,
UNION COUNTY, NJ

DRAWN BY:	CAM
CHECKED BY:	SO
DATE:	09/05/2018
SCALE:	1" = 1000'
PROJECT ID:	T-16509



STONEFIELD
engineering & design

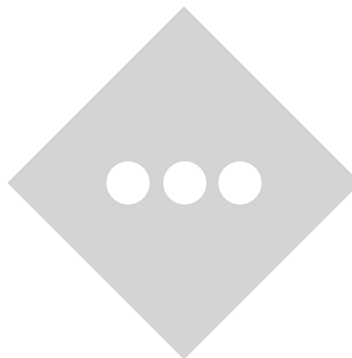
Rutherford, NJ · Princeton, NJ · Long Island City, NY · Royal Oak, MI
www.stonefielddeng.com

Headquarters: 92 Park Avenue, Rutherford, NJ 07070
Phone 201.340.4468 · Fax 201.340.4472

I:\edg01\Share\OneT\2018\T-16509 Hartz Mountain - 750 Walnut Avenue, Cranford, NJ\CADD\Exhibits\3018-09-06 Project Maps.dwg

APPENDIX B

NRCS COUNTY SOIL SURVEY





United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

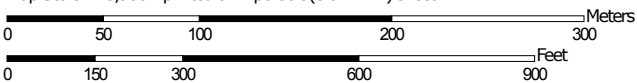
Custom Soil Resource Report for Union County, New Jersey



Custom Soil Resource Report Soil Map



Map Scale: 1:3,930 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Map Unit Legend

Union County, New Jersey (NJ039)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BovB	Boonton-Urban land-Haledon complex, 0 to 8 percent slopes	12.3	37.5%
HatB	Haledon-Urban land-Hasbrouck complex, 0 to 8 percent slopes	3.0	9.3%
UR	Urban land	17.5	53.2%
Totals for Area of Interest		32.9	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

Custom Soil Resource Report

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Union County, New Jersey

BovB—Boonton-Urban land-Haledon complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1kgnb
Elevation: 50 to 500 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Boonton, moderately well drained, and similar soils: 50 percent
Urban land: 30 percent
Haledon and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Boonton, Moderately Well Drained

Setting

Landform: Ground moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Upper third of mountainflank, center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from basalt

Typical profile

Ap - 0 to 8 inches: loam
Bt - 8 to 36 inches: gravelly fine sandy loam
Bx - 36 to 51 inches: loam
C - 51 to 60 inches: loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: About 36 inches to fragipan
Natural drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Urban Land

Setting

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Upper third of mountainflank, center third of mountainflank

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile

C - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: Unranked

Description of Haledon

Setting

Landform: Ground moraines

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Upper third of mountainflank, center third of mountainflank

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Coarse-loamy till derived from basalt

Typical profile

Ap - 0 to 9 inches: loam

Bt - 9 to 28 inches: silt loam

Bx - 28 to 44 inches: sandy loam

C - 44 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 24 to 36 inches to fragipan

Natural drainage class: Somewhat poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C

Hydric soil rating: No

HatB—Haledon-Urban land-Hasbrouck complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: b0tt
Elevation: 50 to 500 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Haledon and similar soils: 45 percent
Urban land: 25 percent
Hasbrouck and similar soils: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haledon

Setting

Landform: Ground moraines
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy basal till derived from basalt

Typical profile

Ap - 0 to 9 inches: loam
Bt - 9 to 28 inches: silt loam
Bx - 28 to 44 inches: sandy loam
C - 44 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 24 to 36 inches to fragipan
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Ground moraines

Down-slope shape: Linear, convex

Across-slope shape: Linear

Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile

C - 0 to 60 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8s

Hydric soil rating: Unranked

Description of Hasbrouck

Setting

Landform: Depressions, flood plains

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave, linear

Parent material: Fine-loamy eroded and redeposited glacial material over glacial till

Typical profile

Oa - 0 to 2 inches: highly decomposed plant material

A - 2 to 12 inches: silt loam

Eg - 12 to 18 inches: sandy loam

Btg1 - 18 to 26 inches: loam

Btg2 - 26 to 32 inches: clay loam

Bx - 32 to 54 inches: loam

C - 54 to 62 inches: loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 18 to 36 inches to fragipan

Natural drainage class: Poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)

Depth to water table: About 0 to 6 inches

Frequency of flooding: Rare

Frequency of ponding: None

Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D

Hydric soil rating: Yes

Minor Components

Udorthents, haledon substratum

Percent of map unit: 10 percent
Landform: Ground moraines
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Boonton

Percent of map unit: 5 percent
Landform: Ground moraines
Landform position (three-dimensional): Upper third of mountainflank, center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

UR—Urban land

Map Unit Setting

National map unit symbol: b0vf
Elevation: 0 to 170 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Udorthents

Percent of map unit: 5 percent

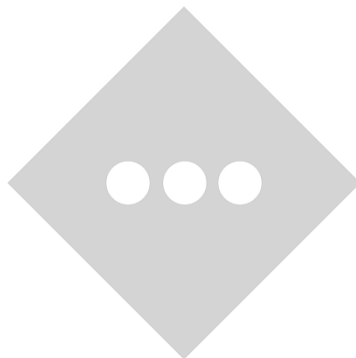
Landform: Low hills

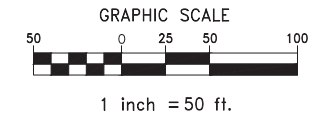
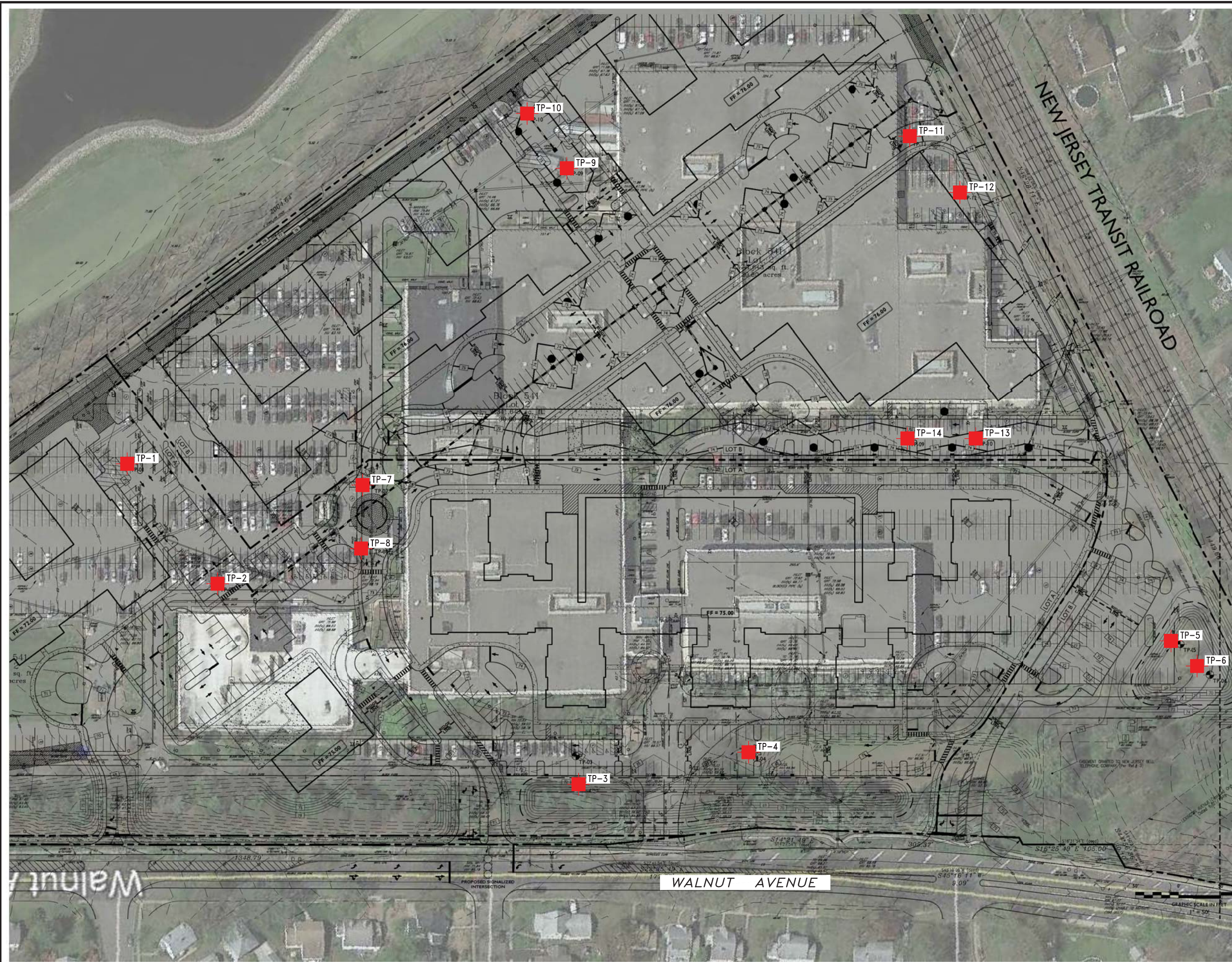
Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

APPENDIX C
SOIL TESTING MAP & LOGS





KEY:

TP-1
NUMBER AND APPROXIMATE LOCATION OF TEST PITS PERFORMED FOR THIS STUDY

NOTES:

1. This drawing is part of Melick-Tully and Associates, a Division of GZA, Report No. 26.0091513.00 and should be read together with the report for complete evaluation.
2. General layout was obtained from a drawing prepared by Stonefield Eng., entitled "Proposed Residential Redevelopment", dated 8/16/18, scale 1"= 50', and an aerial photo downloaded from Google Earth Pro.

PLOT PLAN
PROPOSED STORMWATER BASINS
CRANFORD, NEW JERSEY
HARTZ MOUNTAIN INDUSTRIES

MELICK-TULLY AND ASSOCIATES
A Division of GZA
 Geotechnical Engineers & Environmental Consultants
 117 Canal Road
 South Bound Brook, New Jersey 08880
 (732) 356-3400

JOB NO. 26.0091513.00		FILE NO. -		
DR. BY VJD	CHK. BY CDM	DATE 9/26/18	SCALE 1"=50'	PLATE 1

LOG OF TEST PIT

TEST PIT NO. 1

COMPLETION DATE: 9/19/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +71 ft. (±)

WATER LEVEL: *
READING DATE: 9/19/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
			0-10	Fill - 6" Asphalt atop 4" crushed stone	
5	S1, T1		10-123	Red (2.5YR, 4/6) silt loam, 10% gravel, 5% cobbles, weak fine massive, moist, friable, few coarse distinct pink (5YR, 7/4) mottles encountered @ 60 inches	5
10				Test pit completed @ 10'-3"	10
15					*Groundwater seepage not encountered
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3A

LOG OF TEST PIT

TEST PIT NO. 2

COMPLETION DATE: 9/19/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +73 ft. (±)

WATER LEVEL: *
READING DATE: 9/19/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
			0-11	Fill - 6" Asphalt atop 5" crushed stone	
5	S1, T1		11-120	Reddish brown (2.5YR, 4/4) silt loam, 5% cobbles, weak medium massive, moist, firm, common coarse distinct white (5YR, 8/1) mottles encountered @ 14 inches to 32 inches	5
10				Test pit completed @ 10'	10
15				*Groundwater seepage not encountered	15
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%

LITTLE 10 - 20%

SOME 20 - 35%

AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3B

LOG OF TEST PIT

TEST PIT NO. 3

COMPLETION DATE: 9/20/18
 JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +72 ft. (±)

WATER LEVEL: *
 READING DATE: 9/20/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
5	S1, T1 S2, T2 S3, T3		0-18	Fill - Reddish brown (5YR, 4/3) clay loam, moderate medium angular blocky, moist, friable, gradual irregular boundary, few fine roots	5
			18-66	Reddish gray (5YR, 5/2) clay loam, moderate medium angular blocky, moist, friable, gradual irregular boundary, few fine roots	
			66-132	Red (2.5YR, 4/6) clay loam, 15% gravel, moderate medium angular blocky, moist, friable, few fine faint gray (10YR, 6/1) mottles encountered @ 66 inches to 132 inches	
			Test pit completed @ 11' *Groundwater seepage not encountered		
10					10
15					15
20					20

NOTES FOR COLUMNS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH	SOIL DESCRIPTION MODIFIERS: TRACE 0 - 10% LITTLE 10 - 20% SOME 20 - 35% AND OVER 35%
Typist/Date: CDM/pm 9/18	Sheet: 1 of 1 PLATE: 3C

LOG OF TEST PIT

TEST PIT NO. 4

COMPLETION DATE: 9/21/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +71.5 ft. (±)

WATER LEVEL: *
READING DATE: 9/21/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
			4-48	Topsoil - Reddish brown (5YR, 4/4) silt loam, weak fine angular blocky, moist, friable, abrupt smooth boundary, few fine roots Fill - Reddish brown (2.5YR, 4/4) silt loam, 10% gravel, 10% cobbles, moderate medium angular blocky, moist, friable, gradual irregular boundary	
			48-54	Brown (10YR, 4/3) silt loam, weak fine angular blocky, moist, friable, clear wavy boundary	
5	S1, T1		54-72	Brownish yellow (10YR, 6/6) clay loam, moderate medium angular blocky, moist, friable, clear wavy boundary	5
			72-120	Reddish brown (2.5YR, 4/4) sandy loam to silt loam, 10% gravel, weak fine angular blocky, moist, friable, few fine faint gray (10YR, 6/1) mottles encountered @ 96 inches to 120 inches	
10	S2, T2			Test pit completed @ 10' *Groundwater seepage not encountered	10
15					15
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3D

LOG OF TEST PIT

TEST PIT NO. 5

COMPLETION DATE: 9/21/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +75 ft. (±)

WATER LEVEL: *
READING DATE: 9/21/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
	S1, T1		0-9	Topsoil - Reddish brown (5YR, 4/4) silt loam, weak fine angular blocky, moist, friable, abrupt smooth boundary, few fine roots	
			9-40	Weak red (10R, 4/4) clay loam, moderate medium angular blocky, moist, friable, clear wavy boundary, common medium distinct gray (10YR, 6/2) mottles encountered @ 36 inches to 40 inches	
5	S2, T2		40-128	Weak red (10R, 4/4) silt loam, 10% gravel, 10% cobbles, moderate medium angular blocky, moist, friable, few gray (10YR, 6/7) mottles encountered @ 40 inches to 128 inches	5
10				Test pit completed @ 10'-6"	10
15				*Groundwater seepage not encountered	15
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3E

LOG OF TEST PIT

TEST PIT NO. 6

COMPLETION DATE: 9/21/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +75 ft. (±)

WATER LEVEL: *
READING DATE: 9/21/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
	S1, T1		4-24	Topsoil - Reddish brown (5YR, 4/4) silt loam, weak fine angular blocky, moist, friable, abrupt smooth boundary, few fine to medium roots	
				Reddish brown (2.5YR, 4/4) silt loam, 10% gravel, moderate medium angular blocky, moist, friable, clear wavy boundary, few fine roots	
5	S2, T2		24-120	Reddish brown (2.5YR, 4/4) silt loam, 15% gravel, 10% cobbles, moderate medium angular blocky, moist, firm, common medium distinct gray (10YR, 6/1) mottles encountered @ 24 inches to 120 inches	5
10				Test pit completed @ 10'	10
15				*Groundwater seepage not encountered	15
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3F

LOG OF TEST PIT

TEST PIT NO. 7

COMPLETION DATE: 9/26/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +74 ft. (±)

WATER LEVEL: *
READING DATE: 9/26/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
	S1, T1		0-12	Topsoil - Weak red (2.5YR, 4/2) silt loam, weak fine angular blocky, moist, friable, abrupt smooth boundary, few fine roots	
5	S2, T2		12-84	Fill - Brown (10YR, 5/3) sandy loam to silt loam, moderate medium angular blocky, moist, friable, gradual irregular boundary	5
10	S3, T3		84-120	Dusky red (10R, 3/4) silt loam, 10% gravel, 5% cobbles, moderate medium angular blocky, moist, friable, few fine faint gray (10YR, 6/1) mottles encountered @ 84 inches to 120 inches	10
15				Test pit completed @ 10'	15
20				*Groundwater seepage not encountered	20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3G

LOG OF TEST PIT

TEST PIT NO. 8

COMPLETION DATE: 9/20/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +74 ft. (±)

WATER LEVEL: *
READING DATE: 9/20/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
	S1, T1		0-4	Topsoil - Weak red (2.5YR, 4/2) silt loam, moderate medium angular blocky, moist, friable, abrupt smooth boundary, few fine roots	
5	S2, T2		4-120	Dusky red (10R, 3/4) silt loam, 15% gravel, moderate medium, moist, friable, few fine faint gray (10YR, 6/1) mottles encountered @ 42 inches to 120 inches	5
10	T3			Test pit completed @ 10'	10
15				*Groundwater seepage not encountered	15
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3H

LOG OF TEST PIT

TEST PIT NO. 9

COMPLETION DATE: 9/20/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +75 ft. (±)

WATER LEVEL: *
READING DATE: 9/20/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
				6" Asphalt	
			6-24	Fill - 2.5" Crushed stone	
	S1, T1		24-36	Light reddish brown (2.5YR, 6/3) clay loam, moderate medium angular blocky, moist, firm, clear wavy boundary	
5	S2, T2		36-132	Weak red (10R, 4/4) silt loam, 10% gravel, 5% cobbles, moderate medium angular blocky, moist, friable, few fine faint gray (10YR, 5/1) mottles encountered @ 36 inches to 132 inches	5
	S3, T3				10
15				Test pit completed @ 11'	15
				*Groundwater seepage not encountered	
20					20

<p>NOTES FOR COLUMNS:</p> <p>1. SAMPLE AT AVERAGE SAMPLING DEPTH</p> <p>Typist/Date: CDM/pm 9/18</p>	<p>SOIL DESCRIPTION MODIFIERS:</p> <p>TRACE 0 - 10%</p> <p>LITTLE 10 - 20%</p> <p>SOME 20 - 35%</p> <p>AND OVER 35%</p> <p style="text-align: right;">Sheet: 1 of 1 PLATE: 3I</p>
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LOG OF TEST PIT

TEST PIT NO. 10

COMPLETION DATE: 9/20/18

SURFACE ELEVATION: +74 ft. (±)

WATER LEVEL: 4'

JOB NUMBER: 25.0091513.00

READING DATE: 9/20/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
	S1, T1		0-10	10" Asphalt	
			10-24	Fill - 2.5" Crushed stone	
			24-48	Brown (7.5YR, 4/4) clay loam, moderate medium angular blocky, moist, firm, gradual irregular boundary, many coarse prominent gray (10YR, 6/1) mottles encountered @ 24 inches to 48 inches	
5	S2, T2		48-132	Weak red (10R, 4/4) silt loam, 10% gravel, moderate medium angular blocky, moist to wet, friable, friable, few fine faint gray (10YR, 6/1) mottles encountered @ 48 inches to 132 inches	5
10	T3				10
15				Test pit completed @ 11' Slight groundwater seepage encountered @ 4'	15
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3J

LOG OF TEST PIT

TEST PIT NO. 11

COMPLETION DATE: 9/20/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +76 ft. (±)

WATER LEVEL: 4'
READING DATE: 9/20/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
			5-12	5" Asphalt	
	S1, T1		12-36	Topsoil - Dark Brown (7.5YR, 3/4) silt loam, moderate medium angular blocky, moist, friable, abrupt smooth boundary	
				Reddish brown (2.5YR, 4/4) clay loam, moderate medium angular blocky, moist, firm, clear wavy boundary, few fine faint gray (10YR, 6/1) mottles encountered @ 12 inches to 36 inches	
5	S2, T2		36-132	Weak red (10R, 4/4) sandy loam to silt loam, 10% gravel, moderate medium angular blocky, wet, friable, friable, few fine faint gray (10YR, 6/1) mottles encountered @ 36 inches to 132 inches	5
10	S3, T3				10
15				Test pit completed @ 11'	15
				Slight groundwater seepage encountered @ 4'	
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3K

LOG OF TEST PIT

COMPLETION DATE: 9/20/18
 JOB NUMBER: 25.0091513.00

TEST PIT NO. 12
 SURFACE ELEVATION: +75 ft. (±)

WATER LEVEL: *
 READING DATE: 9/20/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
			6-12	6" Asphalt	
	S1, T1		12-30	Reddish brown (5YR, 4/3) sandy loam, 10% gravel, moderate medium angular, moist, friable, abrupt smooth boundary, few fine roots	
5	S2, T2		30-132	Red (2.5YR, 4/6) clay loam, 15% gravel, moderate medium angular blocky, moist, firm, gradual irregular boundary, few fine faint gray (10YR, 6/1) mottles encountered @ 18 inches to 30 inches Reddish brown (2.5YR, 4/4) clay loam, 10% gravel, 5% cobbles, moderate medium angular blocky, moist, friable, few fine faint light gray (10YR, 7/1) mottles encountered @ 30 inches to 132 inches	5
10	T3				10
15				Test pit completed @ 11' *Groundwater seepage not encountered	15
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
 LITTLE 10 - 20%
 SOME 20 - 35%
 AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3L

LOG OF TEST PIT

TEST PIT NO. 13

COMPLETION DATE: 9/21/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +75 ft. (±)

WATER LEVEL: *
READING DATE: 9/21/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
				6" Asphalt	
	S1, T1		6-36	Fill - Reddish brown (5YR, 4/4) clay loam, moderate medium angular blocky moist, friable, gradual irregular boundary	
	S2		36-42	Fill - Crushed stone	
5	S3, T2		42-120	Reddish brown (2.5YR, 4/4) sandy clay loam, 10% gravel, 10% cobbles, moderate medium angular blocky, moist, firm, few fine faint light gray (10YR, 6/1) mottles encountered @ 66 inches to 120 inches	5
10				Test pit completed @ 10'	10
15				*Groundwater seepage not encountered	15
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%

LITTLE 10 - 20%

SOME 20 - 35%

AND OVER 35%

Typist/Date: CDM/pm 9/18

Sheet: 1 of 1 PLATE: 3M

LOG OF TEST PIT

TEST PIT NO. 14

COMPLETION DATE: 9/21/18
JOB NUMBER: 25.0091513.00

SURFACE ELEVATION: +75 ft. (±)

WATER LEVEL: *
READING DATE: 9/21/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH
			0-6	6" Asphalt	
	S1, T1		6-36	Fill - Reddish brown (5YR, 4/4) clay loam, moderate medium angular blocky moist, firm, gradual irregular boundary	
	S2		36-48	Fill - Crushed stone	
5	S3, T2		48-132	Reddish brown (2.5YR, 4/4) sandy clay loam, 20% gravel, 10% cobbles, moderate medium angular blocky, moist, friable, few fine faint light gray (10YR, 6/1) mottles encountered @ 68 inches to 132 inches	5
10					10
15				Test pit completed @ 11' *Groundwater seepage not encountered	15
20					20

NOTES FOR COLUMNS:

1. SAMPLE AT AVERAGE SAMPLING DEPTH

SOIL DESCRIPTION MODIFIERS:

TRACE 0 - 10%
LITTLE 10 - 20%
SOME 20 - 35%
AND OVER 35%

Typist/Date: CDM/pm 9/18

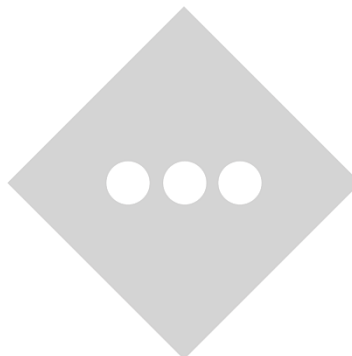
Sheet: 1 of 1 PLATE: 3N

APPENDIX D

OUTSIDE AGENCY CORRESPONDENCE

INVENTORY

NJDEP PUBLIC RECORDS REQUEST – NO WELLS WITHIN 500 FEET





State of New Jersey
Department of Environmental Protection
GOVERNMENT RECORDS REQUEST FORM



IMPORTANT NOTICE

Please read this entire form carefully as it contains important information concerning the response to your record request, accessing records, disputing denials, and your rights concerning government records. For further information, access WWW.NJ.GOV/DEP/OPRA.

Requestor Information

First Name:	SONJA	MI	Last Name	OMMUNDSEN
Company:	STONEFIELD ENGINEERING & DESIGN, LLC.			
Mailing Address:	92 PARK AVENUE			
City:	Rutherford	State:	NJ	Zip: 07070
		Email:	sommundsen@stonefieldeng.com	
Business Telephone:	(201) 340-4468	Extension		
Facsimile Telephone:	(201) 340-4472			

State Use Only

Tracking #	235808
Received Date	08/28/2018
Access Method	Send Electronic copies
<p>All matters relating to the response and access of any records identified for this request should be directed to:</p> <p>NJDEP – Office of Record Access 401 East State Street PO Box 420 Mail Code 401-06Q Trenton, New Jersey 08625-0420 Tele #: (609) 341-3121 Fax #: (609) 292-1177</p>	

Record Request Details:

Stonefield Engineering & Design requests documentation providing the location of private and public wells within 500 feet of the property at 750 Walnut Avenue.

Disposition Notes	Record Request Response
Based on the record request, no responsive records have been identified. Requester should contact the Office of Record Access at 609-341-3121 with any questions.	In Progress - Open
	Filled - Closed X
	Denied - Closed
	Partial - Closed
Addendum Disposition Notes: NONE	
	08/31/2018 Custodian Signature Date

Access to Government Records Under the New Jersey Open Public Records Act (N.J.S.A. 47:1A-1 et seq.)

1. The fees for duplication of a government record are specified below. We will notify you of any special charges, special service charges or other additional charges authorized by State law or regulation before processing your request. Payment shall be made by check or money order payable to the State of New Jersey and mailed to the address specified below.

Hard Copies:
Letter & Legal size = \$0.05 per page
Oversized Maps (Color) = \$5.00 per map
Oversized Maps (B&W) = \$3.00 per map

Electronic Records: CDs = \$0.55 per CD
DVDs = \$0.55 per DVD

2. Pursuant to OPRA (C.47:1A-5c & C47:1A-5d), the Department will apply special service charge for any extraordinary expenditure of time and effort to accommodate a request. The special service charge will be based on the actual direct cost of providing the records. The requester shall have the opportunity to review and object to the charge prior to it being incurred; however, in the event the requester objects to the special service charge, the request will be closed and access to the records will not be granted.
3. By law, the Department must notify you that it grants or denies a request for access to government records within seven business days after the custodian of the record requested receives the request, provided that the record is currently available and not in storage. If the record requested is not currently available or is in storage, the custodian will advise you within seven business days when the record can be made available and the estimated cost. You may agree with the custodian to extend the time for making records available, or granting or denying your request.
4. You may be denied access to a government record if your request would substantially disrupt agency operations and the custodian is unable to reach a reasonable solution with you.
5. If the Department was unable to comply with your request for access to a government record, the custodian will indicate the reasons for denial on the request form.
6. Except as otherwise provided by law or by agreement with the requester, if the custodian of the record requested fails to respond to you within seven business days of receiving a request form, the failure to respond will be considered a denial of your request.
7. **Resolution of Disputed Findings:**

In the event that a requester does not agree with the Department's record response, the requester should:

No Records - Reexamined the request details to evaluate if all of the information was provided that could aid the Department in locating records. The Department's ability to identify records of interest is in direct correlation to matching the Department information with the information provided on the request. Such important identifiers are Facility/Site Name, Address, Case #, Permit #, Block/Lot.

Denial - If your request for access to a government record has been denied or unfilled within the time permitted by law, you have a right to challenge the decision by the Department to deny access. The Department denies access to records only when those records do not meet the definition of a government record and/or public access is not allowed pursuant to the law. At your option, you may either:

- a. Contact the Office of Record Access to re-visit the matter or provide further explanation.
- b. Institute a proceeding in the Superior Court of New Jersey
- c. File a complaint in writing with the Government Records Council (GRC). You may contact the GRC by toll-free telephone at 866-850-0511, by mail at PO Box 819, Trenton, NJ, 08625, by e-mail at grc@dca.state.nj.us, or at their web site at www.state.nj.us/grc. The Council can also respond to other questions about the law.

8. Information provided on this form may be subject to disclosure under the Open Public Records Act.

Revised Addendum Disposition Notes: NONE

