

ENVIRONMENTAL IMPACT STATEMENT

PROPOSED RESIDENTIAL 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 NOVEMBER 28, 2018 T-16509

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I.0 PROJECT DESCRIPTION

Hartz Mountain Industries, Inc. is proposing the construction of a multi-family residential development with 5 residential buildings and two community clubhouses. 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 1,327,759 square feet (30.5 acres), which is proposed to be subdivided into Lot A (15.5 acres; 675,440 square feet) and Lot B (15.0 acres; 652,319 square feet). 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 of the existing facility is proposed to take place in two phases. Under Phase I, approximately half of the site (proposed Lot B) will remain operational as the two Phase I residential buildings and community clubhouse are constructed. The two multi-family residential buildings (Buildings A and B) consist of a total of 433 residential units and the community clubhouse totals 8,076 square feet and includes a pool and recreation facilities. Supporting improvements include 860 parking spaces, lighting, utilities, and stormwater management facilities. Under Phase 2, the remainder of the existing building on Lot B would be demolished and three additional residential buildings would be constructed with 472 residential units as well as one community clubhouse with a floor area of 5,576 square feet. Supporting improvements include 915 parking spaces, lighting, utilities, and stormwater management facilities.

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 DEMOGRAPHIC IMPACTS

Based on demographic multipliers developed by the Center for Urban Policy Research at Rutgers University, the proposed development is estimated to generate 832 residents in Phase I and additional 929 residents in Phase II, totaling 1,761 residents at full build-out.

During Phase I, as the existing industrial space will be retained, the development will generate approximately 399 employees. After the industrial space is redeveloped into the proposed multifamily residential development, there will be no employees remaining.

The proposed development consists entirely of private residential dwellings, and as such, will not generate a substantial number of visitors. The Table below summarizes overall demographic impacts of the proposed development.

	Residents	Employees
Phase I	832	399
Full Build-Out	1.761	0

Table I: Demographic Impacts as Result of Proposed Development

2.2 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-1, 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 -1 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

Please refer to the Planning Report by Phillips Preiss Grygiel LLC which provides a full description of the current zoning as it relates to the 2009 Master Plan.

As noted, residential use is not permitted within the C-3 zone. Thus, the proposed rezoning of the property is not consistent with the Land Use Element of the Master Plan. However, the proposed rezoning would advance a number of goals and objectives of the Master Plan. For example, the rezoning would advance the Master Plan #I residential goal to "provide a wide range of housing to meet the needs of residents in diverse income groups." It

¹ Master Plan, P. LU-30.

also satisfies 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."² To the extent the proposed rezoning provides the option of creating a mixed-use planned development, it also furthers the Township's focus on "encourag[ing] the development of a diversified economic base that generates employment growth, increases property values, and promotes the improvement of underutilized properties."³ 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."⁴

The Planning Report by Phillips Preiss Grygiel LLC likewise provides a justification for the rezoning of the property in accordance with NJSA 40:55D-26, which addresses the Master Plan goals and traffic and circulation concerns, as well as the fiscal impact of redevelopment of the site. Per testimony provided by Keenan Hughes, AICP, PP, CRE at the Township hearing on September 5, 2018, the proposal from the applicant includes a request to adopt an amendment to the Master Plan document which deems the proposed rezoning as consistent with the Master Plan, as it is in accordance with the Master Plan goals.

2.3 UNION COUNTY MASTER PLAN

One of the main goals of the Union County Master Plan is to "promote the provision of a broad range of housing opportunities for all income levels and household types by encouraging the maintenance or rehabilitation of the existing housing stock and through the construction of new housing units." Specifically, the Plan encourages "municipalities to zone for a variety of housing types and densities" as well as "the construction of multi-family apartment and townhouse units in either rental, condominium or fee simple ownership for all age groups, household types and income levels." In addition, the overall development goals of the Master Plan are to facilitate redevelopment and adaptive reuse and direct development activities to areas with existing essential infrastructure and support facilities.

The subject property has existing infrastructure and supporting facilities to accommodate redevelopment activities, and the proposed rezoning would provide multi-family dwelling units with a 15% set-aside for low- and moderate-income households. In short, the proposed development is wholly consistent with the goals and objectives of the Union County Master Plan relative to the provision of housing opportunities.

² Master Plan, p. G-3.

³ Master Plan, p. G-2.

⁴ Master Plan, p. G-4.

2.4 THE STATE DEVELOPMENT AND REDEVELOPMENT PLAN

The proposed rezoning and redevelopment of the current industrial site into a high-quality residential community with affordable housing is consistent with the goals, strategies, and policies outlined in the 2001 New Jersey State Development and Redevelopment Plan (SDRP). The subject property is located in the Metropolitan Planning Area (PA-1).

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 the proposed development in Cranford, are firmly supported by the SDRP.

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:

Soil Description	Hydrologic Soil Group	Permeability Rate (in/hr)	Approximate Project Coverage
Boonton-Urban land-Haledon complex, 0 to 8 percent slopes (BovB)	С	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%

TABLE II: ON-SITE SOIL GROUPS

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:

Scientific Name	Common Name	State Status	State Rank
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

TABLE III: RARE WILDLIFE SPECIES OR WILDLIFE HABITAT NEARBY

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 Executive Stormwater Management Statement 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. Detention basins and bermed areas will be provided along the Walnut Avenue frontage for 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 and in accordance with the new site layout. Wherever feasible, existing full grown trees onsite are proposed to remain and protected, specifically within the bermed area along the site frontage and along the property boundaries where feasible. Under Phase I, 356 new trees are proposed onsite to provide screening, parking area shade, and aesthetic enhancement of proposed features. Under Phase 2, 166 additional trees are proposed throughout the Lot B area for a similar purpose. The bermed areas along the site frontage will be maintained and modified where necessary to accommodate the changes along the frontage, such as removal of existing driveways and proposed new driveways. The modified berms will be of similar height and width as the existing berms and will be planted with additional trees, shrubs, and other vegetation to screen 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 Phase I and Phase 2 Grading & Drainage Plans (Sheets C-8 and C-9). Please refer to the Executive Stormwater Management Statement for runoff quantities and anticipated stormwater management requirements for the Site Plan phase. A Phase I and Phase 2 Soil Erosion & Sediment Control Plan (Sheets C-14 and C-15) 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.

There are no wells in the vicinity of the property which will be impacted by the proposed development.

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 proposed development has an anticipated water demand of 74,760 gallons per day under Phase I and I38,985 gallons per day under Phase II. A will serve letter has been obtained from NJAW which states that water service is available to the property utilizing the I2" cast iron water main within Walnut Avenue. Please refer to the Outside Agency Correspondence in Appendix E. It should be noted that a Bureau of Water System Engineering

(BWSE) permit will be required from the NJDEP due to the domestic demand over 12,000 gpd or 30 residential units.

The proposed development has an anticipated sewer discharge of 97,635 gallons per day under Phase I and 175,575 gallons per day under Phase II. The proposed development will connect to the existing 10" sanitary service that discharges to Walnut Avenue. Treatment Works Approval (TWA) will be required from the NJDEP for an increase in sanitary discharge by 8,000 gallons per day and service to over two buildings.

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 residential nature of the development is a similar noise generator to the residences in the surrounding area, 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 59.7% 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.

5.2 REDEVELOPMENT AS PERMITTED USE

As described above, the permitted office uses are not in keeping with the current trends in suburban development. Other permitted uses in the Commercial C-3 District include essential services, golf courses, health care facilities, office distribution services, and research laboratories. Despite the property's listing on the market for several years, there have not been any offers by alternate, permitted uses to use and redevelop the property.

6.0 LICENSES, PERMITS, AND APPROVALS REQUIRED

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

- Township of Cranford
 - Change of Zone Approval
 - o Subdivision Approval
 - Preliminary & Final Major Site Plan Approval
 - o Building Permit
- Union County
 - Site Plan Approval
- Somerset-Union Soil Conservation District
 - o Soil Erosion and Sediment Control Plan Certification
- New Jersey Department of Environmental Protection (NJDEP)
 - o 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





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:	
	I" = 500'
PROJECT ID:	
	T-16509



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APPENDIX B NRCS COUNTY SOIL SURVEY





United States Department of Agriculture

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 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

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







TEST PIT NO. 1 SURFACE ELEVATION: +71 ft. (±)

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

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	
- - 10-					- - 10-
				Test nit completed @ 10'-3"	
					1
- 27-				*Groundwater seepage not encountered	-
3 7					-
			1		
					1
15-					15-
e					-
					1
-					-
20-					20-
NOTE 1. SA	S FOR C	OLUMN AVERA	S: GE SAMPLII	SOIL DESCRIPTION MODIFIERS: NG DEPTH TRACE 0 - 10% LITTLE 10 - 20% SOME 20 - 35% AND OVER 35%	
i ypist/	Date: CD	wi/pm §	9/18	Sheet: 1 of 1 PLATE: 3A	

TEST PIT NO. 2 SURFACE ELEVATION: +73 ft. (±)

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

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

r							
DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH		
			0-11	Fill - 6" Asphalt atop 5" crushed stone			
	S1, T1	т.	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							
10-				Test pit completed @ 10'	10-		
				*Groundwater seenage not encountered	-		
-					6		
- 25					-		
-					3		
15-					15-		
-							
-							
9					_		
-							
20-					20-		
NOTE	NOTES FOR COLUMNS: SOIL DESCRIPTION MODIFIERS:						
1, SAI	I SAMPLE AT AVERAGE SAMPLING DEPTH TRACE 0 - 10% LITTLE 10 - 20%						
_	.			SOME 20 - 35% AND OVER 35%			
I ypist/	ypist/Date: CDM/pm 9/18 AND OVER 35 / Sheet: 1 of 1 PLATE: 3B						

TEST PIT NO. 3 SURFACE ELEVATION: +72 ft. (±)

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

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

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH		
			0-18	Fill - Reddish brown (5YR, 4/3) clay loam, moderate medium angular blocky, moist, friable, gradual irregular boundary, few fine roots	-		
- - 5-	S1, T1		18-66	Reddish gray (5YR, 5/2) clay loam, moderate medium angular blocky, moist, friable, gradual irregular boundary, few fine roots	- - 5-		
-	S2, T2		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	-		
- 10-	S3, T3				- 10-		
				Test pit completed @ 11' *Groundwater seepage not encountered			
15- - -					15- - -		
- 20-					- 20-		
NOTE: 1. SAI	Image: Solic period Solic period Solic period NOTES FOR COLUMNS: SOIL DESCRIPTION MODIFIERS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH TRACE 0 - 10% LITTLE 10 - 20% SOME 20 - 35% SOME 20 - 35% AND						
. , , , , , , , , , , , , , , , , , , ,				Sneet: 1 OF 1 PLATE: 3C			

COMPLETION DATE: 9/21/18

TEST PIT NO. 4 SURFACE ELEVATION: +71.5 ft. (±)

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

JOB	JOB NUMBER: 25.0091513.00 READING DATE: 9/21/18						
DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	рертн		
-			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,	1		
5-	S1, T1		54-72	Clear wavy boundary Brownish yellow (10YR, 6/6) clay loam, moderate medium angular	5-		
-	S2, T2		72-120	blocky, moist, friable, clear wavy boundary 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-					10-		
-				Test pit completed @ 10'			
-				*Groundwater seepage not encountered	-		
e					-		
-				с. 	-		
15-					15-		
-					-		
-					8		
-					-		
-					-		
20-					20-		
NOTES FOR COLUMNS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH SOIL DESCRIPTION MODIFIERS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH LITTLE 10 - 20% SOME 20 - 35% AND OVER 35%							
Typist/Date: CDIM/pm 9/18 Sheet: 1 of 1 PLATE: 3D							

TEST PIT NO. 5 SURFACE ELEVATION: +75 ft. (±)

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

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

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DЕРТН			
			0-9	Topsoil - Reddish brown (5YR, 4/4) silt loam, weak fine angular				
-	S1, T1		9-40	blocky, moist, friable, abrupt smooth boundary, few fine roots 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			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-			
			40-128		-			
- 10-					- 10-			
-								
. 1				Test pit completed @ 10'-6"	1			
				*Groundwater seepage not encountered	1			
15-					15			
-								
-					-			
e					-			
20-					20-			
NOTE 1. SA	Image: Notes for columns: Soil description modifiers: 1. SAMPLE AT AVERAGE SAMPLING DEPTH TRACE 0 - 10% Little 10 - 20% SOME 20 - 35% Typist/Date: CDM/pm 9/18 AND OVER 35%							
1,0130	/pist/Date: CDM/pm 9/18 Sheet: 1 of 1 PLATE: 3E							

TEST PIT NO. 6 SURFACE ELEVATION: +75 ft. (±)

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

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

		(%)						
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	-			
	S2, T2		24-120	Reddish brown (2.5YR, 4/4) silt loam, 10% gravel, moderate medium angular blocky, moist, friable, clear wavy boundary, few fine roots 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				
10-		4			10-			
8-				Test pit completed @ 10'	-			
-				*Groundwater seepage not encountered	-			
-					-			
15-					15-			
					-			
-					2.5			
20-					20-			
NOTE 1. SAI	NOTES FOR COLUMNS: SOIL DESCRIPTION MODIFIERS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH TRACE 0 - 10% LITTLE 10 - 20% SOME 20 - 35% Typist/Date: CDM/pm_9/18 AND OVER 35%							
71.00	ypist/Date: CDIVI/pm 9/18 Sheet: 1 of 1 PLATE: 3F							

TEST PIT NO. 7 SURFACE ELEVATION: +74 ft. (±)

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

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

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH		
			0-12	Topsoil - Weak red (2.5YR, 4/2) silt loam, weak fine angular blocky,			
	S1, T1 S2, T2		12-84	Fill - Brown (10YR, 5/3) sandy loam to silt loam, moderate medium angular blocky, moist, friable, gradual irrgular boundary	- - 5-		
-	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-					10-		
4				Test pit completed @ 10'	-		
-		ł		*Groundwater seepage not encountered	-		
3					-		
-					-		
15-					15-		
-					-		
-					-		
-					-		
20]		
20-1					20-		
1. SAI	NOTES FOR COLUMNS: SOIL DESCRIPTION MODIFIERS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH TRACE 0 - 10% LITTLE 10 - 20% SOME 20 - 35%						
Typist/	ypist/Date: CDM/pm 9/18 AND OVER 35% Sheet: 1 of 1 PLATE: 3G						

TEST PIT NO. 8 SURFACE ELEVATION: +74 ft. (±)

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

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

рертн	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	рертн		
			0-4	Topsoil - Weak red (2.5YR, 4/2) silt loam. moderate medium			
-	S1, T1			angular blocky, moist, friable, abrupt smooth boundary, few fine roots 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			
			4 120				
5-	S2, T2		4-120		5-		
-					ŝ		
					1		
-	Т3				-		
10							
10-		0			10-		
				Test pit completed @ 10'	-		
-				*Groundwater seepage not encountered	-		
-					-		
-					1		
15-					15-		
1					-		
-					-		
				ă.			
1					1		
-					-		
20-					20-		
NOTE	S FOR C	OLUMN	S:	SOIL DESCRIPTION MODIFIERS:	Ĩ		
1. SAI	MPLE AT	AVERA	GE SAMPLI	NG DEPTH TRACE 0 - 10%			
				LITTLE 10-20%			
-	D / T =			AND OVER 35%			
I ypist/	Typist/Date: CDM/pm 9/18 OVER 35% Sheet: 1 of 1 PLATE: 3H						

TEST PIT NO. 9 SURFACE ELEVATION: +75 ft. (±)

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

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

<u> </u>						
DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	ОЕРТН	
				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			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-	
-			36-132		2	
-	S3, T3				-	
10-					10-	
				Test pit completed @ 11'	-	
2.				*Groundwater seepage not encountered	-	
- 15-					- 15-	
37					-	
-					1	
-					-	
20-					20-	
NOTES FOR COLUMNS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH SOIL DESCRIPTION MODIFIERS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH LITTLE 10 - 20% SOME 20 - 35% AND OVER 25%						
Typist/	ypist/Date: CDM/pm 9/18 AND OVER 35% Sheet: 1 of 1 PLATE: 3I					

TEST PIT NO. 10 SURFACE ELEVATION: +74 ft. (±)

COMPLETION DATE: 9/20/18 JOB NUMBER: 25.0091513.00 WATER LEVEL: 4' READING DATE: 9/20/18

			1				
DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH		
			0-10	10" Asphalt			
,			10-24	Fill - 2.5" Crushed stone	-		
-	S1, T1		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			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-		
-			48-132		-		
- 10-	Т3				- 10-		
-				Test pit completed @ 11'			
-				Slight groundwater seepage encountered @ 4'	-		
- 15-					15-		
-					-		
-			1		-		
					-		
20-					20-		
NOTE 1. SA	NOTES FOR COLUMNS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH SOIL DESCRIPTION MODIFIERS: TRACE 0 - 10% LITTLE 10 - 20% SOME 20 - 35% AND OVER 25%						
Typist	ypist/Date: CDM/pm 9/18 AND OVER 35% Sheet: 1 of 1 PLATE: 3J						

TEST PIT NO. 11 SURFACE ELEVATION: +76 ft. (±)

COMPLETION DATE: 9/20/18 JOB NUMBER: 25.0091513.00 WATER LEVEL: 4' READING DATE: 9/20/18

					_		
DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	рертн		
				5" Asphalt			
1	S1, T1		5-12 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,	-		
5-	S2, T2			6/1) mottles encountered @ 12 inches to 36 inches 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-		
-			36-132				
- 10-	S3 T3				10-		
-	1			Test pit completed @ 11'	-		
			2	Slight groundwater seepage encountered @ 4'	-		
15-					15-		
-							
-							
20-					20-		
Image: Solution of the second state							
Typist	Typist/Date: CDM/pm 9/18 AND OVER 35% Sheet: 1 of 1 PLATE: 3K						

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

COMPLETION DATE: 9/20/18 JOB NUMBER: 25.0091513.00 WATER LEVEL: * READING DATE: 9/20/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DEPTH		
				6" Asphalt			
-	S1, T1		6-12 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			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-		
			30-132				
-	Т3				-		
10-					10-		
-				Test pit completed @ 11'			
ŝ.				*Groundwater seepage not encountered	-		
15–					15-		
-					-		
					-		
20-	20- 20-						
NOTES FOR COLUMNS:SOIL DESCRIPTION MODIFIERS:1. SAMPLE AT AVERAGE SAMPLING DEPTHTRACE 0 - 10%LITTLE 10 - 20%SOME 20 - 35%							
Typist	Sypist/Date: CDM/pm 9/18 AND OVER 35% Sheet: 1 of 1 PLATE: 3L						

TEST PIT NO. 13 SURFACE ELEVATION: +75 ft. (±)

COMPLETION DATE: 9/21/18 JOB NUMBER: 25.0091513.00 WATER LEVEL: * READING DATE: 9/21/18

DEPTH	SAMPLES (1)	MOISTURE CONTENT (%)	DEPTH (INCHES)	DESCRIPTION	DЕРТН		
				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 Cruched stope	- 14		
- 5-	- S3, T2			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-		
-			42-120		-		
-					3		
10-					10-		
				Test pit completed @ 10'	-		
				*Groundwater seepage not encountered	2		
: 3-					-		
-			0				
4.5							
15-					15-		
-					-		
_							
1					-		
-		-			-		
20-					20-		
NOTE	S FOR C		S [.]		_		
1. SAI	MPLE AT	AVERA	GE SAMPLI	NG DEPTH TRACE 0 - 10%			
				LITTLE 10 - 20%			
	_			SUME 20 - 35% AND OVER 35%			
Typist/	ypist/Date: CDM/pm 9/18 AND OVER 35% Sheet: 1 of 1 PLATE: 3M						

TEST PIT NO. 14 SURFACE ELEVATION: +75 ft. (±)

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

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		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				
-			48-132		-		
10-					10-		
-				Test pit completed @ 11'	E		
				*Groundwater seepage not encountered			
15-					15-		
-					-		
-					-		
20-	20- 20-						
NOTE 1. SAI	NOTES FOR COLUMNS: SOIL DESCRIPTION MODIFIERS: 1. SAMPLE AT AVERAGE SAMPLING DEPTH TRACE 0 - 10% LITTLE 10 - 20% SOME 20 - 35%						
Typist/	ypist/Date: CDM/pm 9/18 AND OVER 35% Sheet: 1 of 1 PLATE: 3N						

APPENDIX D Sanitary & Water Demand Summary Memorandum





SANITARY & WATER DEMAND SUMMARY MEMORANDUM

То:	Hartz Mountain Industries Inc.
Project:	Proposed Residential Redevelopment Tax Block 541, Lot 2 Township of Cranford, Union County, New Jersey
Dated:	February 23, 2017

Reference: <u>Concept Site Plans</u>, prepared by Minno & Wasko Architects and Planners, dated February 06, 2017

The purpose of this memorandum is to summarize the sanitary sewer and water demand as a result of the proposed residential redevelopment. All demand calculations are based on the regulations set forth by the New Jersey Administrative Code (NJAC) Chapter 7, Sub-Chapter 14A and 10.

SANITARY SEWER DEMAND

TABLE I: EXISTING SEWER DEMAND

Use Type	Unit Type	Gallons Per Day Per Unit	Units	Gallons Per Day
Warehouse (without showers)	Employee	40	699	27,960
TOTAL FLOW				27,960

The existing number of employees is estimated based on the square footage of the warehouses and number of parking spaces.

TABLE II: PROPOSED SEWER DEMAND (PHASE I)

Use Type	Unit Type	Gallons Per Day Per Unit	Units	Gallons Per Day
Garden Apartment I bedroom	Dwelling	150	224	33,600
Garden Apartment 2 bedroom	Dwelling	225	195	43,875
Garden Apartment 3 bedroom	Dwelling	300	14	4,200
Warehouse (without showers)	Employee	40	399	15,960
TOTAL FLOW				97,635



TABLE III: PROPOSED SEWER DEMAND (PHASE II)

Use Type	Unit Type	Gallons Per Day Per Unit	Units	Gallons Per Day
Garden Apartment I bedroom	Dwelling	150	409	61,350
Garden Apartment 2 bedroom	Dwelling	225	469	105,525
Garden Apartment 3 bedroom	Dwelling	300	29	8,700
TOTAL FLOW				175,575

WATER DEMAND

TABLE IV: EXISTING WATER DEMAND

Type of Establishment	Number of Measurement Units	Gallons per day per Unit	Projected Flow (GPD)
Industrial Facility	699 employees	25	17,475
TOTAL FLOW			17,475

TABLE V: PROPOSED WATER DEMAND (PHASE I)

Type of Establishment	Number of Measurement Units	Gallons per day per Unit	Projected Flow (GPD)
Garden Apartment I bedroom	224 units	120	26,880
Garden Apartment 2 bedroom	195 units	175	34,125
Garden Apartment 3 bedroom	I4 units	270	3,780
Industrial Facility	399 employees	25	9,975
TOTAL FLOW			74,760

TABLE VI: SUMMARY OF PROPOSED WATER DEMAND (PHASE II)

Type of Establishment	Number of Measurement Units	Gallons per day per Unit	Projected Flow (GPD)
Garden Apartment I bedroom	409 units	120	49,080
Garden Apartment 2 bedroom	469 units	175	82,075
Garden Apartment 3 bedroom	29 units	270	7,830
TOTAL FLOW			138,985

APPENDIX E OUTSIDE AGENCY CORRESPONDENCE

INVENTORY

New Jersey American Water – Will Serve Letter Rahway Valley Sewerage Authority – Will Serve Letter NJDEP Public Records Request – No Wells within 500 Feet





Zachary Chaplin 27-02 41st Ave, Long Island City, NY 11101

08/22/2018

Re: 750 Walnut Ave, Cranford, NJ

Dear Mr. Chaplin,

While New Jersey American Water Company does not guarantee flows and pressures, based upon your request please be advised that the Water Company has a 12 inch diameter water main fronting the property located on Walnut Ave.

Water service to the above-mentioned property is available off this main. Actual requirements regarding the means of providing service (including the need for potential system improvements, if any) would be determined at the time of application for service when domestic and fire demands are presented. Typically, if improvements are required, then that cost is borne by the customer requesting service.

Applications can be completed at our Plainfield or Hillsborough Operations center during normal working hours. Upon completion and approval of a domestic and fireline service application, the Water Company would then procure the necessary road-opening permit. Applications for domestic demand over 12,000 gpd or 30 residential units will require a BSDW permit from the NJDEP, which the applicant is required to obtain. New Jersey American Water Company would then procure the necessary road opening permit.

I trust this answers your questions. Please realize that any letter to serve is conditioned upon receipt of all federal, state or local permits (if required). If you need additional information, please do not hesitate to contact me.

Very Truly Yours,

Geneva Molina Network Operations Supervisor – Netherwood 908-791-3522



New Jersey American W American W



1050 East Hazelwood Avenue Rahway, New Jersey 07065 www.rahwayvalleysa.com Phone: 732-388-0868 Fax: 732-382-0774 CHAIRMAN Robert B. LaCosta VICE CHAIRMAN Robert Rachlin EXECUTIVE DIRECTOR James J. Meehan

SECRETARY-TREASURER Robert J. Materna

September 15, 2017

Zachary Chaplin, PE Stonefield Engineering & Design, LLC 92 Park Avenue Rutherford, NJ 07070

Re: Proposed Residential Redevelopment Sewer Connection – 171,000 GPD 750 Walnut Avenue Cranford, New Jersey

Dear Mr. Chaplin:

In response to your email dated September 12, 2017, regarding the above proposed project, be advised that at this time, the Rahway Valley Sewerage Authority's (Authority) conveyance and treatment facilities have adequate capacity and the Township of Cranford has adequate flow rights.

Please note however that the Authority operates a trunk sewer system <u>only</u> and is not responsible for the collection system within the member municipality. Therefore the Authority is unable to provide verification of the adequacy of the Township's internal collection system capacity and/or any information regarding the location of existing facilities in the vicinity of the site in question, or design, connection, usage, or frontage fees imposed by the Township. Consequently this information must be provided by Woodbridge Township.

The endorsement of a project is based on the submittal and review process at such time that an application is received by this Authority. An **original** completed, signed, sealed, NJDEP Treatment Works Application (TWA) should be submitted to the Authority by the first Thursday of the month in order to be placed on the agenda for consideration in that month. There is a \$250.00 application fee payable to the Authority which must be submitted with your application. Forms can be downloaded from our website at: http://www.rahwayvalleysa.com/rvsa_service_area/sewer_connect.shtml.

If you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,

Rahway Valley Sewerage Authority

John Buohocore, P.E. Chief Engineer

cc: James J. Meehan, Executive Director Joanne Grimes, Office Administrator Louis C. Lambe, Commissioner – Cranford

Clark Cranford Garwood Kenilworth Mountainside Rahway Roselle Park Scotch Plains Springfield Westfield Woodbridge Member of: Association of Environmental Authorities • NJ Business & Industry Association



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 <u>WWW.NJ.GOV/DEP/OPRA</u>.

Requestor Information	State	Use Only
First Name: SONJA MI Last Name OMMUNDSEN	Tracking #	235808
Company: STONEFIELD ENGINEERING & DESIGN, LLC.	Received Date	08/28/2018
Mailing Address: 92 PARK AVENUE	Access Method	Send Electronic copies
sommundsen@stonef City: Rutherford State: NJ Zip: 07070 Email: ieldeng.com	All matters rel access of any request should	ating to the response and records identified for this be directed to:
Business Telephone: (201) 340-4468 Extension	NJDEP – Of 401 E	fice of Record Access ast State Street
Facsimile Telephone: (201) 340-4472	Trenton, Ne	ew Jersey 08625-0420
	Tele # Fax #	: (609) 341-3121 : (609) 292-1177

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 - Open Progress
	Filled – Closed X
	Denied – Closed
	Partial - Closed
Addendum Disposition Notes: NONE	Matthew J. Coefer 08/31/2018
	Custodian Signature Date

Information Regarding the Requested Records		
If your request is in reference to a single facility, please provide the name of the facility, and the name of the operator name of the facility:	Facility Name:	
Please provide the owner name the facility or parcel of land:	Owner Name: Hartz Mountain Industries, Inc.	
If your request is in reference to a specific parcel of land, please provide the street	Street Address 1: 750 Walnut Avenue	
address, block, lot and property owner of the parcel of land: (Note: if the property in question is over multiple blocks and lots, please list all in	Street Address 2:	
the description field below)	Block: 541	Lot: 2
If your request is in reference to a facility, site or parcel of land, please provide the	County: Union	
Municipality and County where the facility, site or parcel of land is located:	Municipality: Cranford Twp	
If the request is in reference to a particular permit issued by NJDEP, please provide the type of permit and any identifying numbers such as permit, incident or case numbers. (i.e. Fishing, Hunting, Hazardous Waste, Solid Waste, Land Use, NJPDES, Pesticides, Stream Encroachment, TWA, UST, Water Allocation)	List Permit Type:	List ID Numbers:
If your request is in reference to an individual, please provide the individual's	Individual's name:	
name and type, and if the individual is a DEP employee, your relationship with the individual	Type of Individual:	
	Relationship:	
If the an individual was specified above, the individual was DEP Licensed, please specify the license type the individual holds:	License Type:	

The New Jersey Department of Environmental Protection has responded to your submitted Open Public Records Act (OPRA) record request. The following information will help you understand the response and your next available actions.

Tracking #: This is the Department's assigned Tracking # to your OPRA record request, which should be used in all corresponding matters.

Record Request Response:

- In Progress Based on the nature of the request, the records sought, and/or the manner to which the records may exists, the Department requires additional time to investigate and respond to the request.
- Filled Based on the information provided in your request, the Department was able to investigate and respond to your record request.
- **Denied** Based on the nature of the request and/or the records sought, the Department has denied your request pursuant to a specific exemption(s) cited in N.J.S.A. 47:1A-1 seq.
- **Partial** The Department has identified both responsive government records and records being denied based on the nature of the request and/or the records sought, that do not meet the definition of a government record pursuant to a specific exemption(s) cited in N.J.S.A. 47:1A-1 seq.

Disposition Notes: Provides detailed information concerning the Department's response to your request.

Accessing Records: Dependent on the volume of records and your interest, there are five (5) methods available to access the responsive government records:

- File Review Schedule a file review with the Department to directly access the records and take notes or tag records of interest for copying. Copying can be performed by either the Department's onsite Copying Unit at State duplication fee costs or by the requester employing a Copy Vendor Service. If there are records stored in archives, a five-day processing period will be included prior to scheduling a review.
- Copy Request All records of interest will be copied by the Department's onsite Copying Unit at State duplication fee costs unless a Copy Vendor Service is employed.
- Electronic Records Request Dependent on the size & nature of the e-records, the Department will email the records or provide a CD or DVD.
- Fax Request Based on the number of pages, the Department faxes the responsive records.
- Web Access The responsive records can be access directly through the Department's web site. Web address will be provided.

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	Electronic Records: CDs = \$0.55 per CD
	Oversized Maps (Color)	= \$5.00 per map	DVDs = \$0.55 per DVD
	Oversized Maps (B&W)	= \$3.00 per map	

- 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

