BLOCK 56 REDEVELOPMENT INVESTIGATION

HARRISON TOWNSHIP, NEW JERSEY

Preliminary Investigation (Resolution 205 - 2017)
Non-Condemnation
DRAFT: October 2, 2017

BLOCK 56
LOTS 1.03, 1.04, 1.05, 2, 3.01, 3.02, 4, 4.01, & 4.02

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1.0 Introduction

1.1. Study Authorization

Harrison Township, through Resolution No. 205-2017 (Appendix A), passed September 5, 2017, has requested that Group Melvin Design perform a Preliminary Investigation into the following parcels to ascertain whether this area qualifies under N.J.S.A. 40A:12A-5 as an "Area in Need of Redevelopment":

Block 56, Lots 1.03, 1.04, 1.05, 2, 3.01, 3.02, 4, 4.01, and 4.02

Figures 1 and 2 identify the location and surrounding environs of the Investigation Parcels.

1.2. Summary of Findings

1.2.a. Block 56, Lots 3.01, 3.02, 4, 4.01 and 4.02: Criterion C

The analysis presented within this document serves as the basis for the recommendation that the Study Parcels of Block 56, Lots 3.01, 3.02, 4, 4.01, and 4.02 qualify as an Area in Need of Redevelopment.

It is the determination of this report that the Study Parcels of Block 56, Lots 3.01, 3.02, 4.01, and 4.02 meet Criterion C. Because of the soils' acidity (pH level) or potential for acidification, corrosive qualities, and developmental and agricultural limitations, these parcels are not likely to be developed through the instrumentality of private capital.

Criterion C only applies to publicly owned land, or unimproved privately owned that has remained as unimproved vacant land for a period of at least 10 years. Lots 3.01 and 3.02 are owned by Harrison Township. The privately-owned Lots 4.01 and 4.02 have been vacant and unimproved for over 10 years.

1.2.b. Block 56, Lot 4: Section 3 Criteria

This investigation concludes that the Block 56, Lot 4 should be included in the Redevelopment Area, under Section 3 of the LRHL, as its inclusion is necessary for the effective redevelopment of Block 56, Lots 3.01, 3.02, 4, 4.01 and 4.02. Lot 4 is surrounded on three sides by Lots 3.01 and 4.02, but provides a crucial frontage along Bridgeton Pike. Because Lot 4.02 is a "flag lot" largely separated from Bridgeton Pike by Lot 4, and because Lots 4 and 4.02 have the same owner, and essentially operate as one property, the inclusion of Block 56, Lot 4 is found necessary for the effective development of the area of which it is a part.

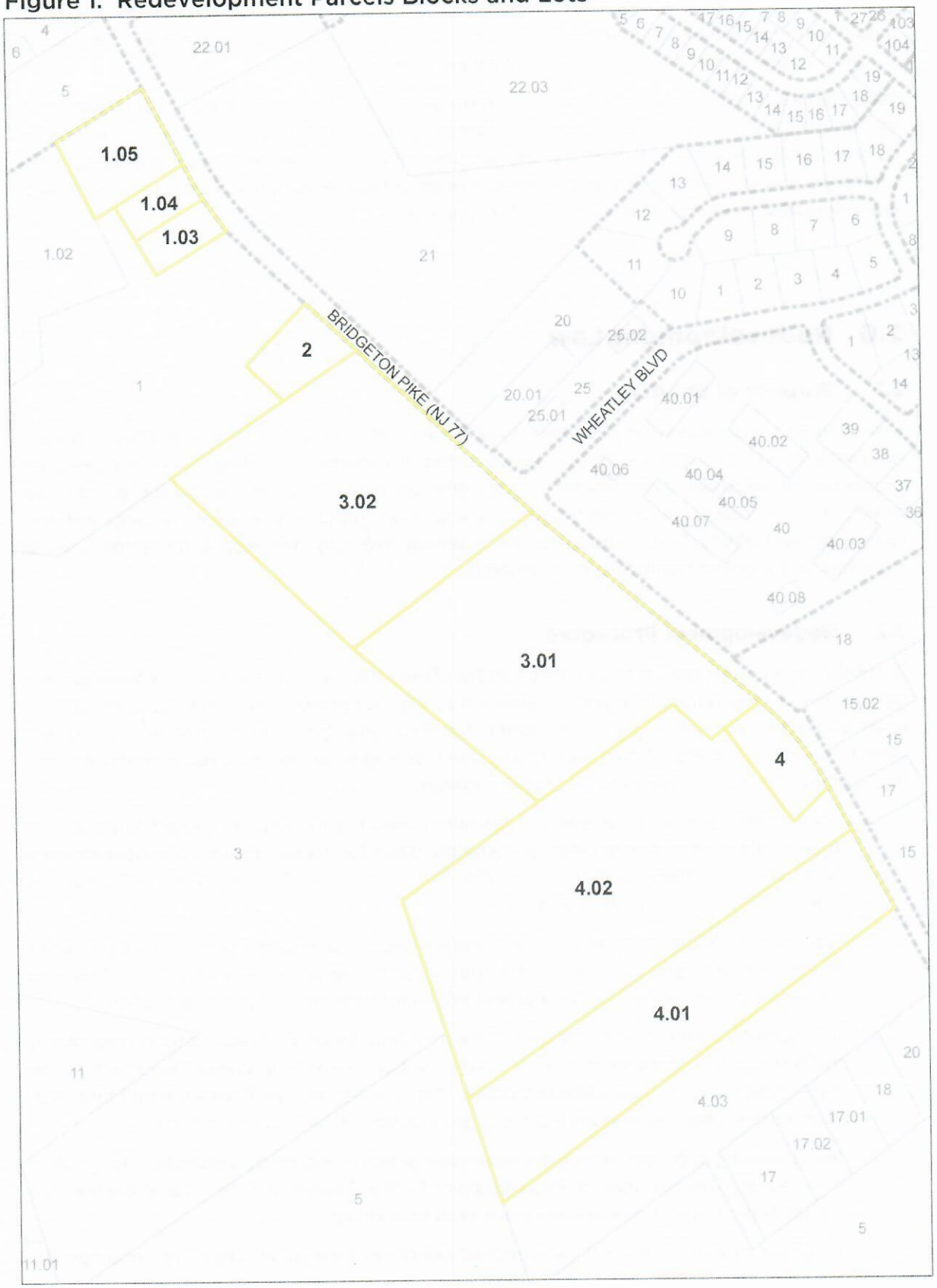
1.2.c. Block 56, Lots 1.03, 1.04, 1.05, 2: No Finding for Redevelopment

At the time of this investigation, no evidence has been found to qualify Block 56, Lots 1.03, 1.04, 1.05, and 2 as an Area in Need of Redevelopment. Although these parcels have soil conditions similar to those Lots 3.01, 3.02, 4.01, and 4.02, Criterion C can not apply because they are privately-owned, occupied, and improved.

1.3. Non-Condemnation

As of 2013, the Legislature requires that Preliminary Investigations state whether the redevelopment

Figure 1. Redevelopment Parcels Blocks and Lots



area determination shall authorize the municipality to use all those powers provided by the Legislature for use in a redevelopment area, including eminent domain.

Resolution #205 - 2017 states that if the Study Area qualifies as an Area in Need of Redevelopment, the Township of Harrison is authorized to further qualify the area as a "Non-condemnation Redevelopment Area," such that the municipality may use all those powers provided in the Legislature for the use in the designated area in need of redevelopment excluding only the use of eminent domain pursuant to N.J.S.A. 40A: 12A-1 et seq.

2.0 Redevelopment Law

2.1. Purpose of the Act

New Jersey's Local Redevelopment and Housing Law (LRHL), empowers municipalities and local governments with the ability to initiate a process that transforms underutilized or poorly designed properties into healthier, more vibrant, or economically productive land areas. The process has been used successfully across New Jersey to creatively improve properties meeting statutory redevelopment criteria. Projects approved for redevelopment are often eligible for certain types of technical and financial assistance from the State.

2.2. Redevelopment Procedure

The LRHL requires municipalities to perform a number of steps before it may exercise its Redevelopment powers. This process is meant, in part, to ensure that the Governing Body acts in concert with the goals and objectives of the Township's Master Plan. Recognizing the Planning Board's role as the steward of the Master Plan, these steps require the Planning Board to make recommendations to the Township Council. The required steps are as follows:

A. The Governing Body must adopt a resolution directing the Planning Board to perform a preliminary investigation to determine whether a specified area is in need of redevelopment according to criteria set forth in the LRHL (N.J.S.A. 40A:12A-5). The Township Council has adopted Resolution No. 2013-6-14.

B. The Planning Board must prepare and make available a map delineating the boundaries of the proposed redevelopment area, specifying the parcels to be included in it. This map should be accompanied by a statement setting forth the basis of the investigation.

C. The Planning Board must then conduct the investigation and produce a report presenting the findings. The Board must also hold a duly noticed hearing to present the results of the investigation and to allow interested parties to give testimony. The Planning Board then may adopt a resolution recommending a course of action to the Governing Body.

D. The Governing Body may act on this recommendation by adopting a resolution designating the area an "Area in Need of Redevelopment". The Governing Body must make the final determination as to the Redevelopment Area boundaries.

E. A Redevelopment Plan must be prepared establishing the goals, objectives, and specific

Figure 2. Redevelopment Parcel Aerial

actions to be taken with regard to the "Area in Need of Redevelopment."

F. The Governing Body may then act on the Plan by passing an ordinance adopting the Plan as an amendment to the Township's Zoning Ordinance.

Only after completion of this process is the Township able to exercise the powers granted to it under the State Redevelopment Statute.

3.0 Statutory Criteria

A study area qualifies as being an "Area in Need of Redevelopment" if it meets at least one of the eight statutory criteria listed in Section 40A:12A-5 of the Local Redevelopment and Housing Law:

A. The generality of buildings are substandard, unsafe, unsanitary, dilapidated, or obsolescent, or poses any of such characteristics, or are so lacking in light, air, or space, as to be conducive to unwholesome living or working conditions.

B. The discontinuance of the use of buildings previously used for commercial, manufacturing, or industrial purposes; the abandonment of such buildings; or the same being allowed to fall into so great a state of disrepair as to be untenable.

C. Land that is owned by the municipality, the county, a local housing authority, redevelopment agency or redevelopment entity, or unimproved vacant land that has remained so for a period of ten years prior to adoption of the resolution, and that by reason of its location, remoteness, lack of means of access to developed sections or portions of the municipality, or topography, or nature of the soil, is not likely to be developed through the instrumentality of private capital.

D. Areas with buildings or improvements which, by reason of dilapidation, obsolescence, overcrowding, faulty arrangement or design, lack of ventilation, light and sanitary facilities, excessive land coverage, deleterious land use or obsolete layout, or any combination of these or other factors, are detrimental to the safety, health, morals, or welfare of the community.

E. A growing lack or total lack of proper utilization of areas caused by the condition of the title, diverse ownership of the real properties therein or other similar conditions which impede land assemblage or discourage the undertaking of improvements, resulting in a stagnant and unproductive condition of land potentially useful and valuable for contributing to and serving the public health, safety and welfare, which condition is presumed to be having a negative social or economic impact or otherwise being detrimental to the safety, health, morals, or welfare of the surrounding area or the community in general.

F. Areas, in excess of five contiguous acres, whereon buildings or improvements have been destroyed, consumed by fire, demolished or altered by the action of storm, fire, cyclone, tornado, earthquake or other casualty in such a way that the aggregate assessed value of the area has been materially depreciated.

G. In any municipality in which an enterprise zone has been designated pursuant to the "New Jersey Urban Enterprise Zones Act," P.L. 1983, c.303 (C.52:27H-60 et seq.) the execution of

the actions prescribed in that act for the adoption by the municipality and approval by the New Jersey Urban Enterprise Zone Authority of the zone development plan for the area of the enterprise zone shall be considered sufficient for the determination that the area is in need of redevelopment pursuant to sections 5 and 6 of P.L. 1992, c.79 (C.40A:12A-5 and 40A:12A-6) for the purpose of granting tax exemptions within the enterprise zone district pursuant to the provisions of P.L. 1991, c.431 (C.40A:20-1 et seq.) or the adoption of a tax abatement and exemption ordinance pursuant to the provisions of P.L. 1991, c.441 (C.40A:21-1 et seq.). The municipality shall not utilize any other redevelopment powers within the urban enterprise zone unless the municipal governing body and planning board have also taken the actions and fulfilled the requirements prescribed in P.L. 1992, c.79 (C.40A:12A-1 et al.) for determining that the area is in need of redevelopment or an area in need of rehabilitation and the municipal governing body has adopted a redevelopment plan ordinance including the area of the enterprise zone.

H. The designation of the delineated area is consistent with smart growth planning principles adopted pursuant to law or regulation.

N.J.S.A. 40A:12A-3 further states that "A redevelopment area may include lands, buildings, or improvements which of themselves are not detrimental to the public health, safety or welfare, but the inclusion of which is found necessary, with or without change in their condition, for the effective development of the area of which they are a part." This is commonly referred to as the "Section 3 Criteria."

According to the Redevelopment Handbook, this section allows for the inclusion of properties that do not meet the statutory criteria but are,"essential to be included in the designation to effectively redevelop the area." Examples of such properties include properties located within and surrounded by otherwise blighted area, property that are needed to provide access to an area to be redeveloped, areas needed for infrastructure or utilities, or properties that otherwise could be determined to be critical to the area's successful redevelopment.

4.0 Applicability of Statutory Criterion "C"

4.1. Introduction

4.1.a. Statutory Language: Criterion C

Land that is owned by the municipality, the county, a local housing authority, redevelopment agency or redevelopment entity, **or unimproved vacant land that has remained so for a period of ten years prior to adoption of the resolution, and that by reason of its** location, remoteness, lack of means of access to developed sections or portions of the municipality, or topography, or **nature of the soil, is not likely to be developed through the instrumentality of private capital.** (Emphases added.)

4.1.b. Applicability

The following analysis of Statutory Criterion C is applicable to:

- Block 56, Lots 3.01, 3.02, 4.01, and 4.02

4.2. Background

4.2.a. Ownership and Vacancy

In order to meet Criterion C, an investigation property must be publicly owned (i.e. public property) or unimproved, vacant privately-owned land, which has remained unimproved and vacant for at least ten years. Although all of the investigation parcels are subject to developmental and agricultural limitations because of their soil conditions, the ownership/vacancy portion of Statutory Criterion "C" is only applicable to Block 56, Lots 3.01, 3.02, 4.01, and 4.02.

Lots 3.01 and 3.02 are land owned by the municipality (Harrison Township). Lots 4, 4.01, and 4.02 are privately owned, but are substantially unimproved vacant land that has remained so for a period of ten years prior to adoption of the Resolution authorizing this investigation (205 - 2017). MOD-IV property classifications can be seen at right in Figure 3. Lots 3.01 and 3.02 are identified as Public Property, and lots 4.01 and 4.02 are identified as Qualified Farms.

Because of the nature of the soil, as described below, these parcels are not likely to be developed through the instrumentality of private capital alone. Although the nature of the soil in Lots 1.03, 1.04, 1.05, and 2 hinder the ability of these lot to be developed through the instrumentality of private capital, these lots are privately owned and contain substantial improvements, and are thus not applicable under Statutory Criterion "C".

Figure 3. MOD-IV Land Use Classifications

4.2.b. Sediment with Potential to Form Acid (Sulfate) Soils

As displayed in Figure 4, a wide band of coastal plain sediments with the potential to form acid (sulfate) soils, runs across the state of New Jersey. The entirety of Block 56 in Harrison Township is within the Lower Member of Kirkwood Formation (Tkl), a sedimentary unit with the potential to produce acidic soils.

Soil pH is the measure of the pH of soil water, which depends on the hydrogen ion (H+) activity in solution. Soils become naturally acidic for three major reasons: rainfall and leaching, acidic parent material, and decay of organic matter which produces hydrogen ions. Sulfide-bearing (pyritic) Cretaceous and Paleogene (formerly the Tertiary period) marine and estuarine sediments, such as the Lower Member of Kirkwood Formation (Tkl), are potential acid-soil producers. The development of acid-sulfate soils occurs when sulfide minerals oxidize upon air exposure during construction, drainage, or earth-moving operations. The overall acid-sulfate, soil-forming process involves a complex chain of reactions that connect the oxidation of iron sulfides to the release of iron oxyhydrates and sulfuric acids.

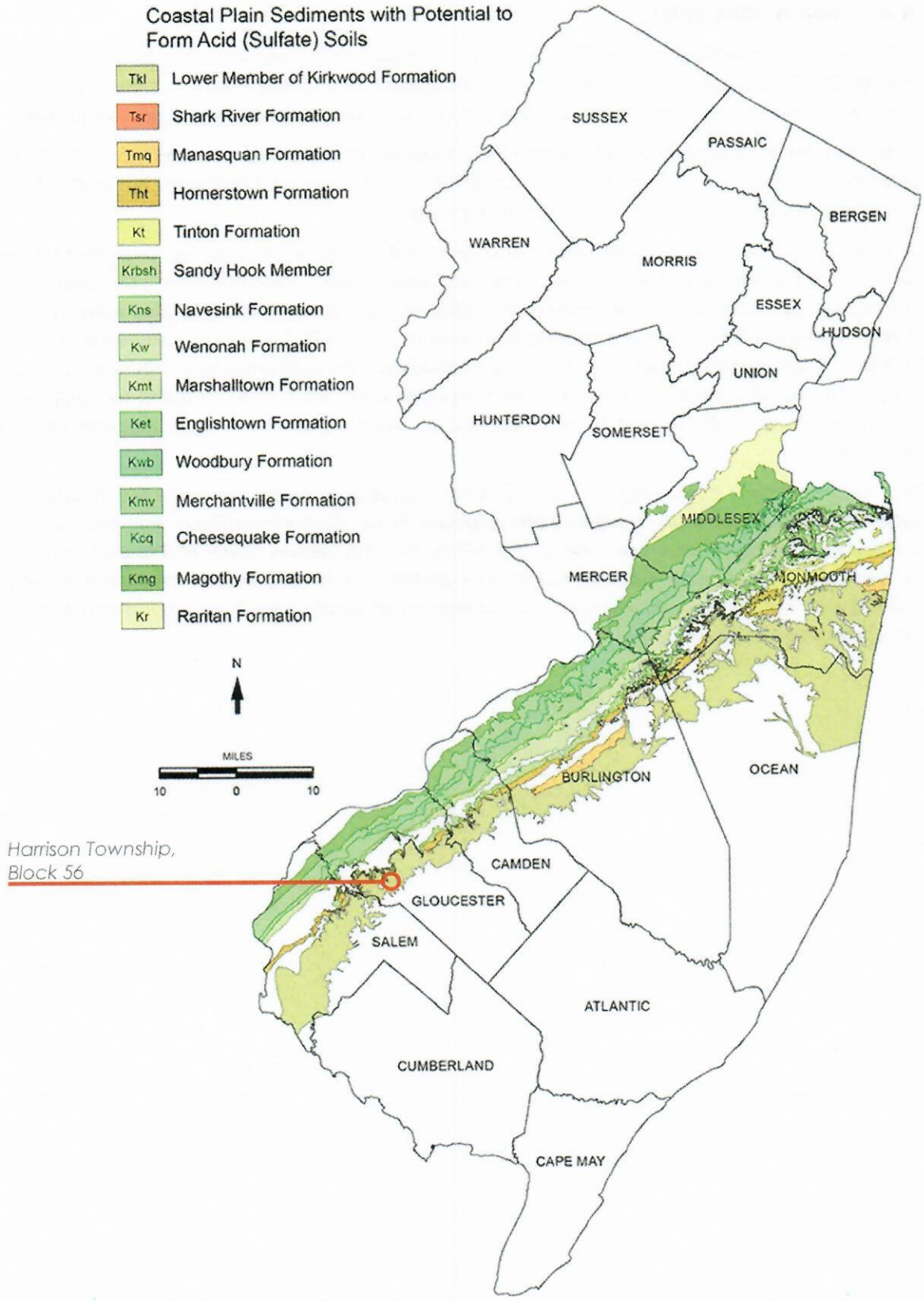
Acid-sulfate soil formation occurs if the reduced sulfur components exceed the acid-neutralizing capacity of adsorbed bases and easily weatherable silicate and carbonate minerals. Natural Resource Conservation Service reports (such as the Soil Resource Report included as Appendix B of this investigation) demonstrate that soils developed on these sulfidic, non calcareous, marine sediments are strongly ($pH < 5.5$) to extremely acid ($pH < 4.5$).

4.2.c. NRCS Custom Soil Resource Report

Upon discovery that the redevelopment investigation area falls within a sedimentary unit with the potential to produce acidic soils, a Custom Soil Resource Report for Block 56, Harrison Township was generated via the Natural Resources Conservation Service's Web Soil Survey. The Natural Resources Conservation Service, formerly known as the Soil Conservation Service, is an agency of the United States Department of Agriculture that provides technical assistance to farmers and private landowners. The Custom Soil Resource Report generated for Block 56 of Harrison Township is included in this Investigation as Appendix B.

The Report provides relevant soil information including soil acidity (pH level), as well as suitabilities and limitations for developmental and agricultural uses based on specific soil properties. The findings of this Report are described below in Sections 4.3 through 4.5 and are displayed in Figures 5 through 13. A table summarizing the chemical properties and developmental and agricultural limitations for Lots 3.01, 3.02, 4, 4.01, and 4.02 is located at the end of this chapter, on Page 30.

Figure 4. Sediments with Potential to Form Acid Soils in New Jersey



4.3. Soil Acidity (pH)

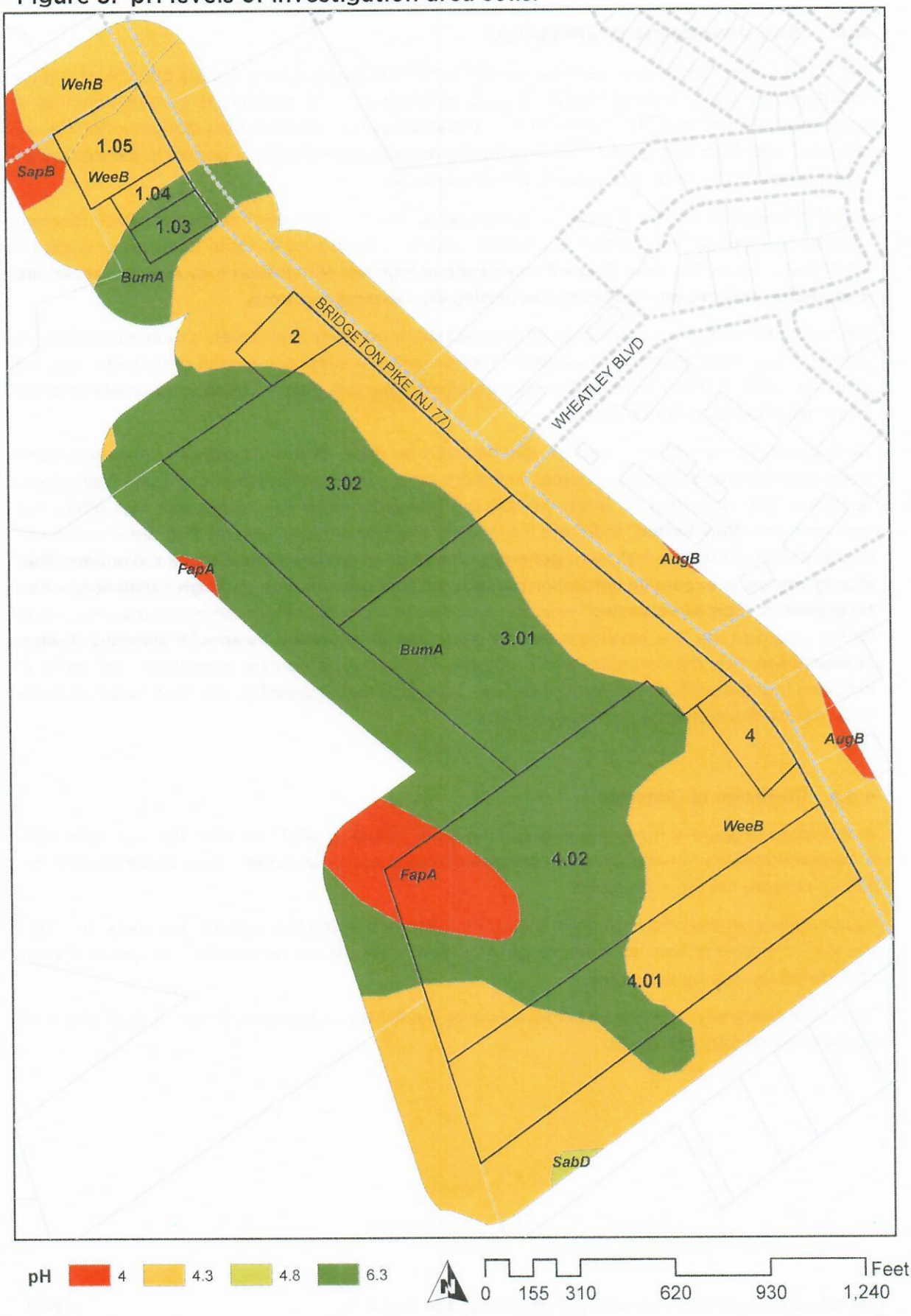
Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion. In general, soils that are either highly alkaline or highly acid are likely to be very corrosive to steel.

Soils within the investigation area fall within the categories of "Extremely acid (pH 3.5 - 4.4)", "Very Strongly Acid (pH 4.5 - 5.0)", and Slightly acid (pH 6.1 - 6.5)." Figure 5 displays the pH levels of soils inside of and within 200 feet of the investigation parcels.

According to *Standards for Solid Erosion and Sediment Control in New Jersey*, published by the New Jersey Department of Agriculture, State Soil Conservation Committee and promulgated as "Standards" pursuant to the Soil Erosion and Sediment Control Act of 1975 as amended (N.J.S.A. 4:24-39 et seq.) and New Jersey Administrative Code (N.J.A.C. 2:90-1.1 et seq.), soils with a pH of 4.0 or less or those which contain iron sulfide are considered high acid-producing soils. Such soils are subject to strict standards, "to prevent or limit exposure area, time, and spreading by equipment or rainfall on- and off-site and to minimize erosion, sedimentation and acid leachate-related damages."

Soils and sediment containing iron sulfide, characterized by pyrite or marcasite nuggets or greensands, are chemically oxidized when exposed to air, producing sulfuric acid and result in soil pH levels falling to pH 4.0 and lower. Soils within the sedimentary Lower Member of Kirkwood Formation (Tkl) are known to become acidic. Thus, portions of the study area which are not currently considered "high acid-producing soils" have a high risk of acidification from ground disturbances via construction or development.

Figure 5. pH levels of investigation area soils.



4.4. Site Development Limitations

Site Development Limitations are to be used as tools for evaluating soil suitability and identifying soil limitations for various development or construction purposes. Soils' potential to corrode concrete or steel, and soils' limitations for construction or development of numerous uses are presented herein, in Subsections 4.4.a. through 4.4.f. Each of the site development limitations applies to the soils in their current condition, and do not consider present land use.

Risk of corrosion for concrete or steel is expressed as "low," "moderate," or "high." Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete or uncoated steel. **Soils with moderate or high risk of corrosion may require special site examination and design, significantly increasing site development costs.**

The concrete or steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer. Lots 3.01, 3.02, 4.01, and 4.02 each contain multiple soils (*BumA, FapA, and WeeB*) and are thus intersected by soil boundaries.

Soil properties may limit the types of uses that can be easily built on a property. Area soils have been examined to determine inherent limitations for a number of possible land uses. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. **"Very limited"** indicates that the soil has one or more features that are unfavorable for the specified use. The limitations **generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected. "Somewhat limited"** indicates that the soil has features that are moderately favorable for the specified use. The limitations **can be overcome or minimized by special planning, design, or installation.** Fair performance and moderate maintenance can be expected. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected.

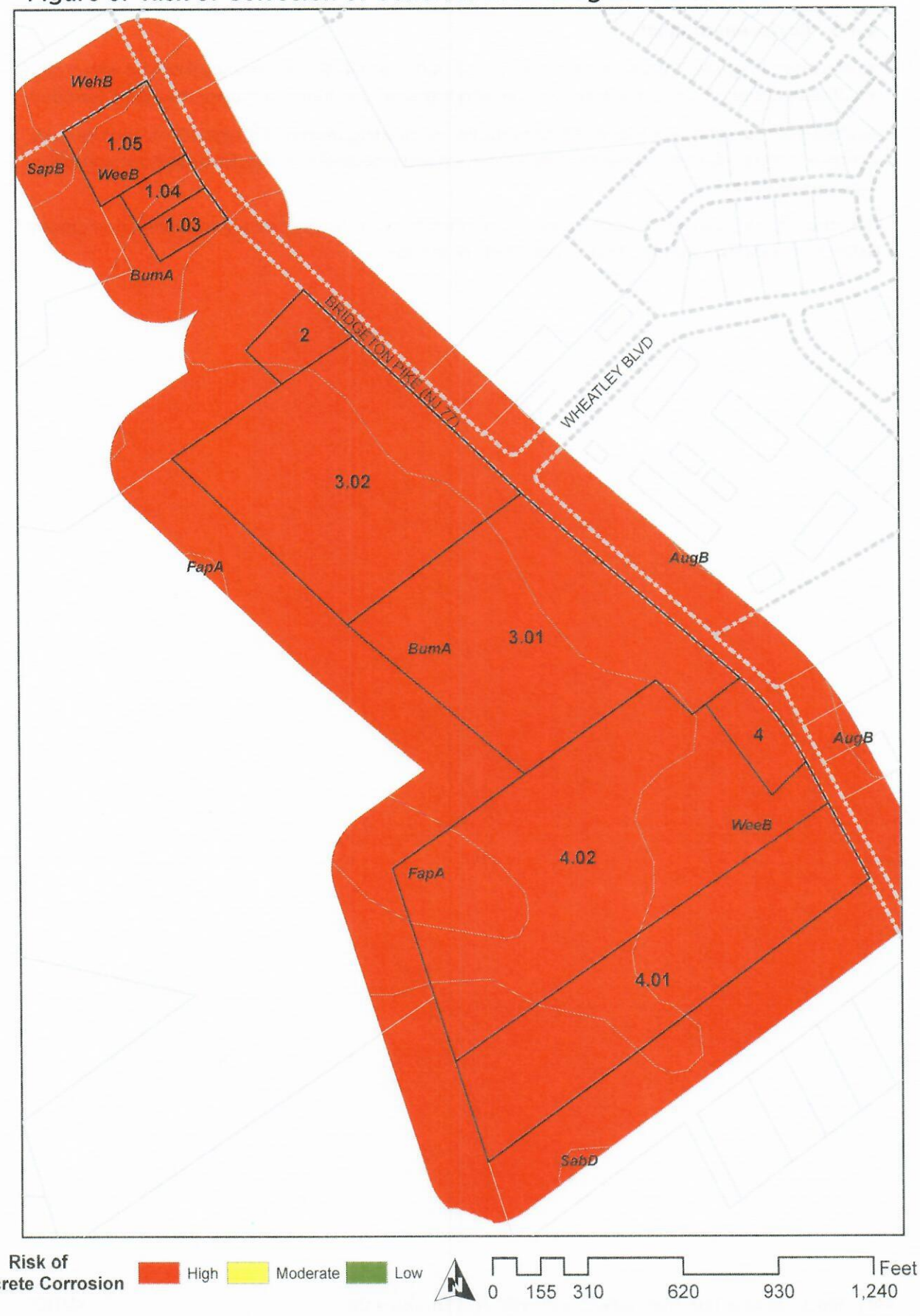
4.4.a. Corrosion of Concrete

As illustrated in Figure 6, the entire Investigation Area, including all of Lots 3.01, 3.02, 4.01, and 4.02, is comprised of soils with a high risk of concrete corrosion. Soil boundaries intersecting these parcels further increase the risk of corrosion.

As concrete is an essential material in the construction of building foundations, it is highly likely that the soils' corrosive nature will increase development costs, as soil remediation or special design considerations may be necessary.

The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil.

Figure 6. Risk of Corrosion of Concrete in investigation area soils.



4.4.b. Corrosion of Steel

As illustrated in Figure 7, portions of Lots 3.01, 3.02, 4.01, and 4.02 are comprised of soils with a high risk of steel corrosion. Soil boundaries intersecting these parcels further increase the risk of corrosion.

As steel is an essential material in the construction of building frames, it is highly likely that the soils' corrosive nature will increase development costs, as soil remediation or special design considerations may be necessary.

The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil.

Figure 7. Risk of Corrosion of Steel in investigation area soils.

4.4.c. Dwellings with Basements

As illustrated in Figure 8, portions of Lots 3.01, 3.02, 4.01, and 4.02 are partially comprised of soils with "Very Limited" development potential for dwellings with basements. These limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Increased development costs, poor performance and high maintenance can be expected. This increase in construction and maintenance costs has deterred development through the instrumentality of private capital.

Dwellings are defined in the Custom Soil Resource Report as single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

Figure 8. Soil limitation for development of Dwellings with Basements.

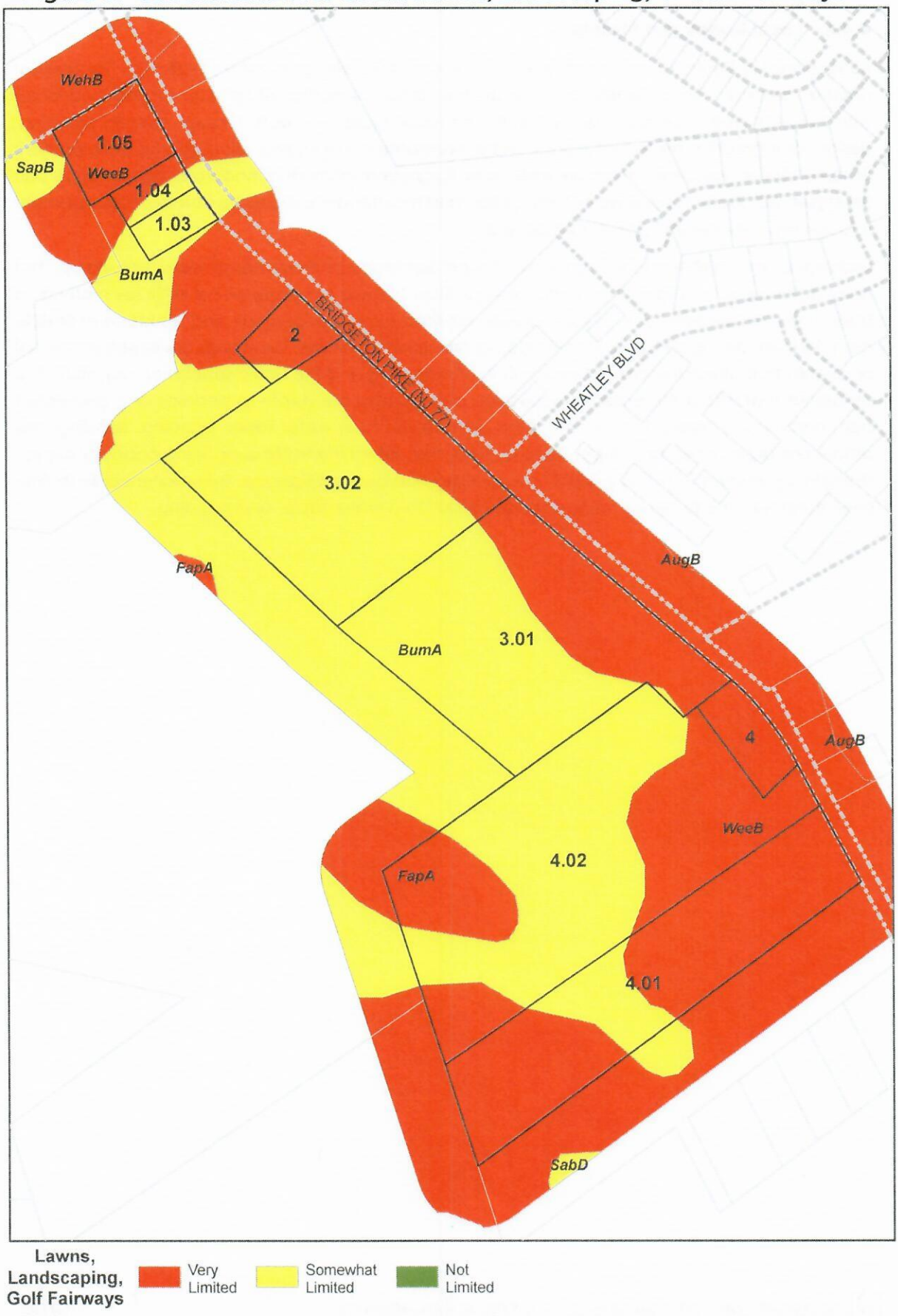
4.4.d. Lawns, Landscaping, and Golf Fairways

As illustrated in Figure 9, Lots 3.01, 3.02, 4.01, and 4.02, are comprised of soils with "Very Limited" or "Somewhat Limited" development potential for lawns, landscaping, or golf fairways. These limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Increased development costs, poor performance and high maintenance can be expected. This increase in construction and maintenance costs has deterred development through the instrumentality of private capital.

This evaluation rates soils for their use in establishing and maintaining turf for lawns and golf fairways and ornamental trees and shrubs for residential or commercial landscaping. Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required.

The ratings are based on the use of soil material at the site, which may have been altered by some land smoothing. Irrigation may or may not be needed and is not a criterion in rating. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Figure 9. Soil limitation for use in Lawns, Landscaping, or Golf Fairways

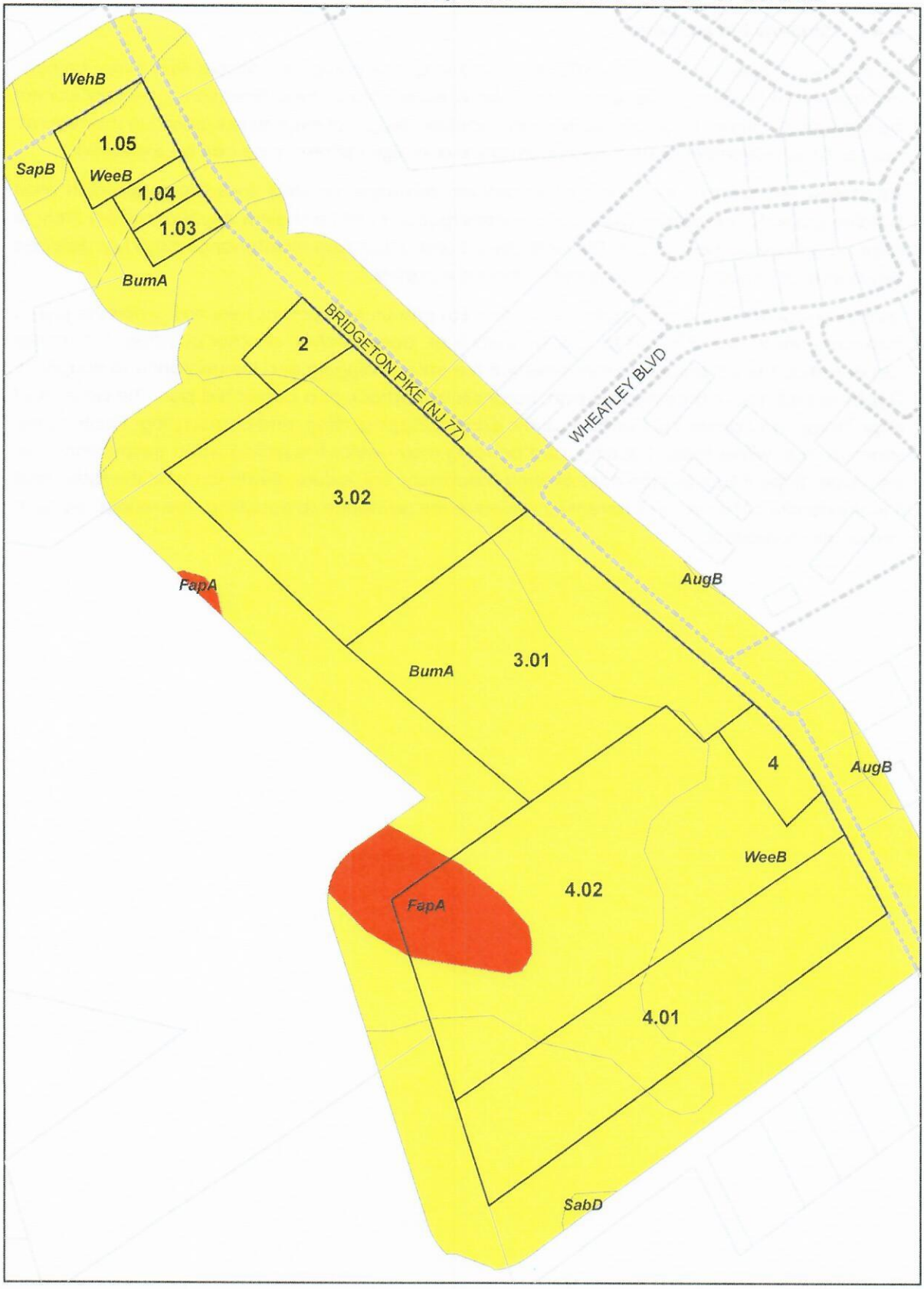


4.4.e. Local Roads and Streets

As illustrated in Figure 10 , all of Lots 3.01, 3.02, 4, and 4.01, are comprised of soils with "Somewhat Limited" development potential for local roads or streets. A portion of Lot 4.02 is comprised of soil with "Very Limited" development potential for local roads or streets. Through special planning, design, or installation these limitations can be overcome or minimized, although the development process will likely be longer and more expensive. Fair performance and moderate maintenance can be expected. Such an increase in construction and maintenance costs has deterred development through the instrumentality of private capital.

Local roads and streets are defined in the Custom Soil Resource Report as all-weather surfaces that carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

Figure 10. Soil limitation for development of Local Roads or Streets



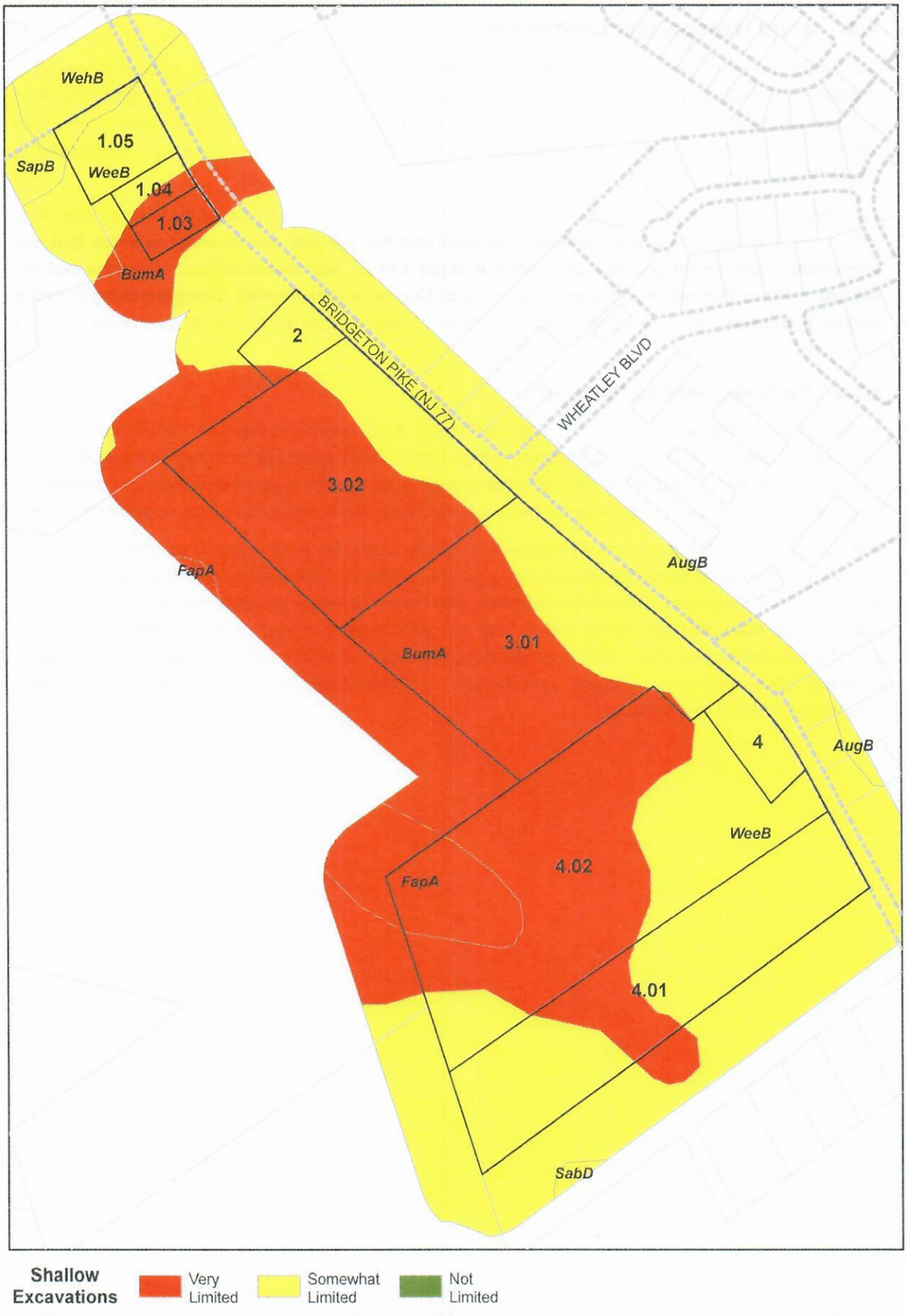
4.4.f. Shallow Excavations

As shown in Figure 11, Lots 3.01, 3.02, 4.01, and 4.02, are comprised of soils with "Very Limited" or "Somewhat Limited" development for shallow excavations. These limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Increased development costs, poor performance and high maintenance can be expected.

As shallow excavations for building foundations, drainage, or utility lines are required in most building projects, the added planning and construction costs for shallow excavations are likely to affect any development on site. This increase in construction and maintenance costs has deterred development through the instrumentality of private capital.

Shallow excavations are defined in the Custom Soil Resource Report as trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing. The ratings are both verbal and numerical.

Figure 11. Soil limitation for Shallow Excavations.



4.5. Land Management Limitations

Land management interpretations are tools designed to guide the user in evaluating existing conditions in planning and predicting the soil response to various land management practices for agricultural land uses, including cropland, forestland, hayland, pastureland, horticulture, and rangeland. Soils' potential for the leaching or runoff of agricultural pesticides are presented in Subsections 4.5.a. and 4.5.b.

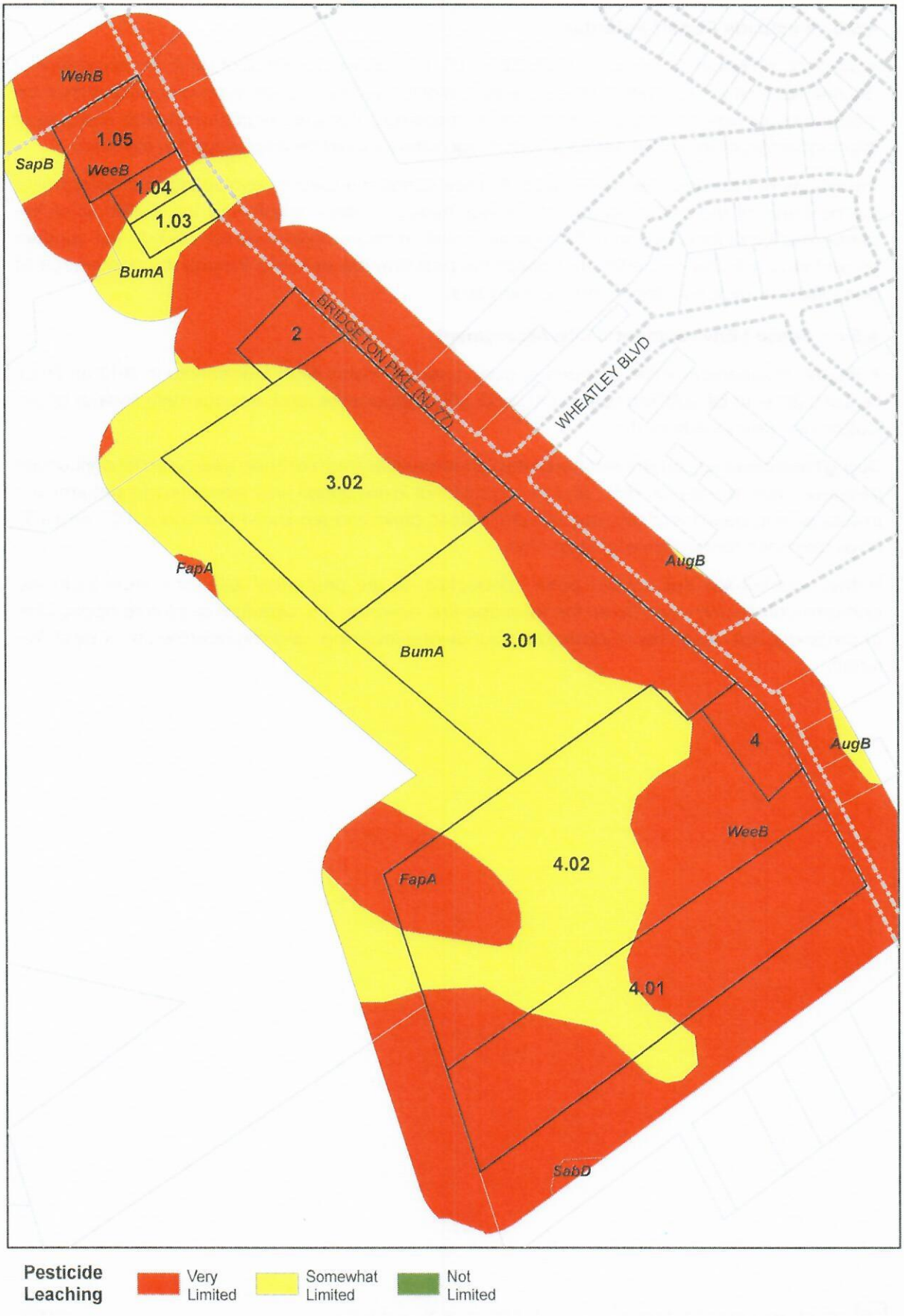
Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. **"Very limited" indicates that the soil has one or more features that are unfavorable and leaching potential or surface runoff is high. "Somewhat limited" indicates that the soil has features that are moderately rated for leaching or runoff potential. Some leaching or runoff can be expected.** "Not limited" indicates that the soil has features that have low leaching or runoff potential.

4.5.a. Pesticide Leaching Potential

As illustrated in Figure 12, Lots 3.01, 3.02, 4.01, and 4.02, are comprised of "Very Limited" and "Somewhat Limited" soils with a moderate-to-high potential for pesticide leaching. Extra precautions must be made to avoid agricultural pesticide leaching and resulting ground-water contamination. Because of this high potential for pesticide leaching, agriculture should be discouraged in this area.

The ratings for Pesticide Loss Potential-Leaching are used for evaluating and determining the potential of the soil to transmit pesticides through the profile and the likelihood of the contamination of ground-water supplies. Evaluations consider movement of water through the soil and underlying fractured bedrock. Ratings are for soils in their natural condition and do not consider present land use. The properties that affect the pesticide loss potential include the soil's hydrologic group, depth to water table, saturated hydraulic conductivity at different depths, and the possibility of water movement in fractured bedrock.

Figure 12. Pesticide Leaching Potential of area soils.



4.5.b. Pesticide Runoff Potential

As illustrated in Figure 13, portions of Lots 3.01, 3.02, 4.01, and 4.02, and all of Lot 4, are comprised of "Somewhat Limited" soils with a moderate potential for pesticide runoff. Extra precautions must be made to avoid agricultural pesticide runoff and resulting surface water contamination. Because of this heightened potential for pesticide runoff, agriculture should be discouraged in this area.

The ratings for Pesticide Loss Potential-Soil Surface Runoff are used for evaluating and determining the potential of the soil to transmit pesticides through surface runoff and the likelihood of the contamination of surface waters. Ratings are for soils in their natural condition and do not consider present land use. The properties that affect the pesticide loss potential include the occurrence of permafrost, surface ponding, flooding, and slope.

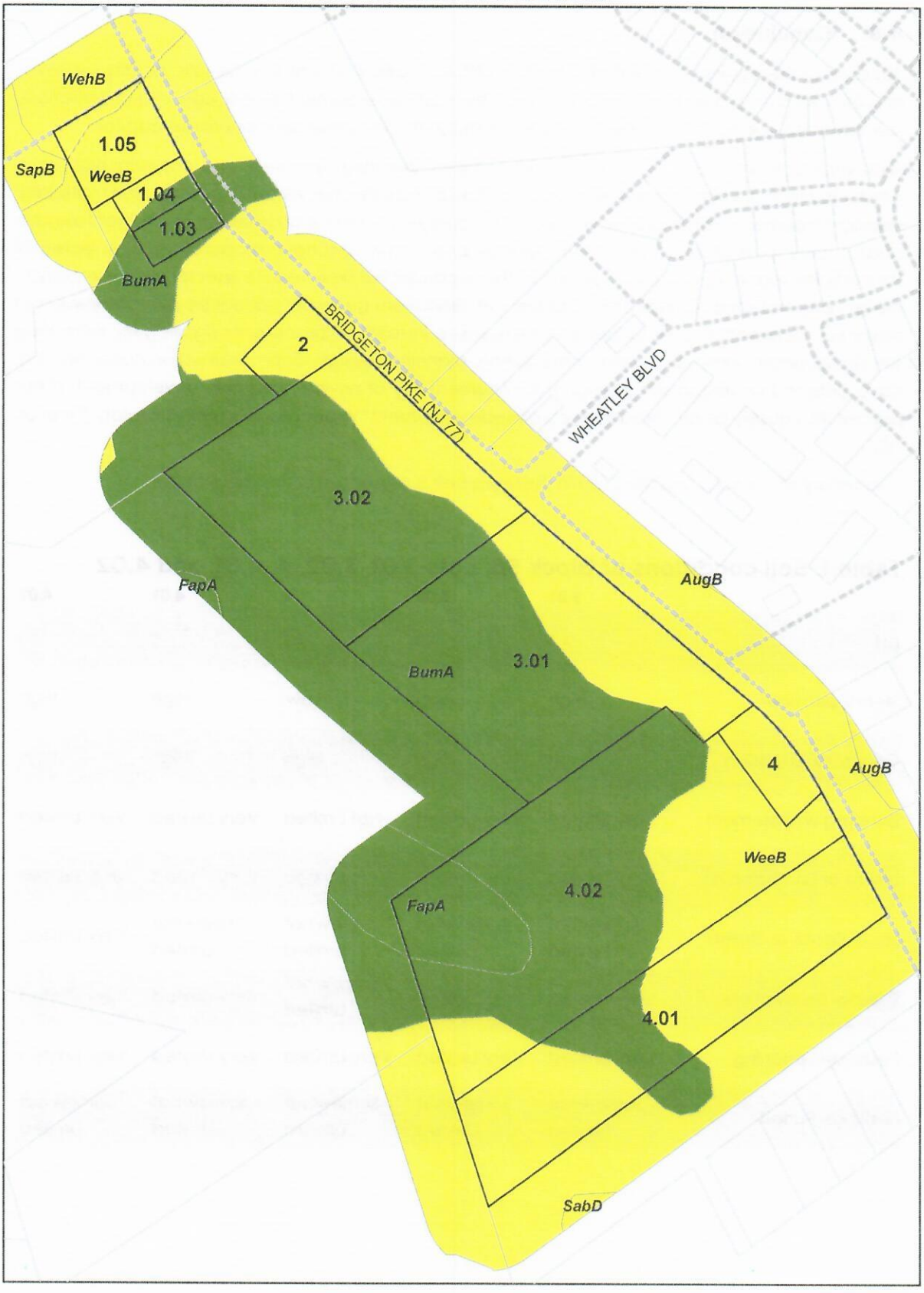
4.5.c. Phase I Environmental Site Assessment

A Phase I Environmental Site Assessment conducted by Hatch Mott Macdonald in 2012 for Block 56, Lot 3 (later to be split into Lots 3, 3.01, and 3.02) supports the land management findings of the Custom Soil Resource Report.

During the assessment, environmental professionals identified that Lot 3 had been used for agricultural purposes from as early as 1931, and that additional investigation was warranted to determine if pesticides had been historically used on site. Historic aerial imagery shows that Lots 4, 4.01, and 4.02 have also been farmed since at least 1930.

Further investigation has not yet been conducted, so the properties' level of current pesticide contamination is unknown. Given the soil properties, however, it is clear that any future application of pesticides has a high risk of pesticide-groundwater leaching, and a moderate risk of pesticide runoff.

Figure 13. Pesticide Runoff Potential of area soils.



4.6. Conclusion

Because of the nature of the soil of Lots 3.01, 3.02, 4.01, and 4.02, namely the soils' acidity (pH level) or potential for acidification, corrosive qualities, and developmental and agricultural limitations, these parcels are not likely to be developed through the instrumentality of private capital.

Soils within Lots 3.01, 3.02, 4.01, and 4.02 have been identified as current and potential high acid-producing soils; are highly corrosive to both concrete and steel (two essential construction materials); display properties which make the development and maintenance of dwellings, lawns, golf fairways, and/or roads and shallow excavations difficult and costly; and have moderate-to-high potential for pesticide leaching or runoff. Soils within these parcels will likely require special site examination, design, and potential remediation, and the soils' limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures significantly increasing site development costs. Expensive remediation, planning, design, and construction considerations have deterred development through the instrumentality of private capital in development. These parcels thus qualify as an "Area in Need of Redevelopment" in accordance with Statutory Criterion "C."

A summary of the soil conditions within these parcels is presented in the table below.

Table 1. Soil conditions of Block 56, Lots 3.01, 3.02, 4, 4.01, and 4.02

	3.01	3.02	4	4.01	4.02
pH	4.3	4.3	4.3	4	4.3
Steel Corrosion	High	High	Low	High	High
Concrete Corrosion	High	High	High	High	High
Dwelling w/Basement	Very Limited	Very Limited	Not Limited	Very Limited	Very Limited
Lawns or Landscaping	Very Limited	Very Limited	Very Limited	Very Limited	Very Limited
Local Roads or Streets	Somewhat Limited	Somewhat Limited	Somewhat Limited	Somewhat Limited	Very Limited
Shallow Excavations	Very Limited	Very Limited	Somewhat Limited	Very Limited	Very Limited
Pesticide Leaching	Very Limited	Very Limited	Very Limited	Very Limited	Very Limited
Pesticide Runoff	Somewhat Limited	Somewhat Limited	Somewhat Limited	Somewhat Limited	Somewhat Limited

5.0 Applicability of Section 3 Criteria

5.1. Introduction

5.1.a. Statutory Language: Section 3

A redevelopment area may include lands, buildings, or improvements which of themselves are not detrimental to the public health, safety or welfare, but the inclusion of which is found necessary, with or without change in their condition, for the effective development of the area of which they are a part.

5.1.b. Applicability

The following analysis of the Section 3 Criteria is applicable to:

- Block 56, Lot 4

5.1.c. Background

Block 56, Lot 4 is located along Bridgeton Pike, between Lots 3.01 and 4.02. As documented in Section 4.0 of this investigation, Lot 4 shares many of the detrimental soil issues as Lots 3.01, 3.02, 4.01, and 4.02—its soil is Very Strongly Acidic (pH = 4.3), highly corrosive to concrete, limited for a number of development types, highly susceptible to pesticide leaching. These conditions make development on Lot 4 much more costly, and will likely limit the instrumentality of private capital toward its development. However, because Lot 4 is privately owned and features a house on the property (i.e. the lot is not vacant and unimproved) it does not qualify as an Area in Need of Redevelopment under Criterion C.

5.2. Necessary Inclusion for Effective Redevelopment

Block 56, Lot 4 is surrounded by Lots 3.01 and 4.02, two parcels that were found to be in Need of Redevelopment in the preceding chapter. Because Lot 4.02 is a "flag lot" largely separated from Bridgeton Pike by Lot 4, and because Lots 4 and 4.02 have the same owner, and essentially operate as one property, the inclusion of Block 56, Lot 4 is found necessary for the effective development of the area of which it is a part.

Appendix A - Resolution No. 205 - 2017

Exhibit 5

RESOLUTION NO. 205-2017

RESOLUTION OF THE MAYOR AND COMMITTEE OF THE TOWNSHIP OF HARRISON AUTHORIZING THE JOINT LAND USE BOARD TO CONDUCT A PRELIMINARY INVESTIGATION TO DETERMINE WHETHER BLOCK 56, LOTS 1.03, 1.04, 1.05, 2, 3.01, 3.02, 4, 4.01, AND 4.02 ON THE OFFICIAL TAX MAP OF THE TOWNSHIP OF HARRISON QUALIFY AS A NON-CONDEMNATION AREA IN NEED OF REDEVELOPMENT

WHEREAS, the Local Redevelopment and Housing Law, N.J.S.A. 40A:12A-1, et seq., provides a mechanism to empower and assist local governments in efforts to promote programs of redevelopment; and

WHEREAS, the Local Redevelopment and Housing Law sets forth a specific procedure for establishing an area in need of redevelopment; and

WHEREAS, N.J.S.A. 40A:12A-6 authorizes the governing body of the municipality by Resolution, to cause its Planning Board to conduct a preliminary investigation to determine whether the proposed area is an area in need of redevelopment according to the criteria set forth in N.J.S.A. 40A:12A-5; and

WHEREAS, the proposed Redevelopment Area (Block 56, Lots 1.03, 1.04, 1.05, 2, 3.01, 3.02, 4, 4.01, and 4.02) determination shall authorize the municipality to use all those powers provided by the Legislature for use in a Redevelopment Area, other than the use of eminent domain; and, as such, the Redevelopment Area shall be established and be referred to as a "Non-Condemnation Redevelopment Area"; and

WHEREAS, the Township Committee of the Township of Harrison, Gloucester County, has determined that an investigation and inquiry should be made to see if said area is in need of redevelopment pursuant to the aforementioned State Statute; and

WHEREAS, the Township of Harrison governing body wishes to direct the Joint Land Use Board to undertake a preliminary investigation to determine whether the following property identified as and consisting of Block 56, Lots 1.03, 1.04, 1.05, 2, 3.01, 3.02, 4, 4.01, and 4.02, qualifies as an area in need of redevelopment pursuant to N.J.S.A. 40A:12A-5; and

WHEREAS, the Township Committee considers it to be in the best interest of the Township to directs its Joint Land Use Board to conduct such an investigation regarding said area/property.

NOW, THEREFORE, BE IT RESOLVED by the Mayor and Committee of the Township of Harrison, County of Gloucester and State of New Jersey as follows:

1. The Joint Land Use Board of the Township of Harrison is hereby directed to undertake a preliminary investigation to determine whether Block 56, Lots 1.03, 1.04, 1.05, 2, 3.01, 3.02, 4, 4.01, and 4.02 is a "Non-Condemnation Redevelopment Area such that the municipality may use all those powers provided by the Legislature for use in a Redevelopment Area", other than the use of eminent domain, according to the criteria set forth in N.J.S.A. 40A:12A-1, et seq.; and

2. The staff of the Joint Land Use Board and its consultants are hereby directed to assist the Joint Land Use Board in conducting the area in need of redevelopment investigation; and

3. The Township Clerk shall forward a copy of this Resolution to the Chairman and Secretary of the Joint Land Use Board for immediate action; and

4. The preliminary investigation, once completed, shall be submitted to the Township Committee for review and approval in accordance with the provisions of the Redevelopment and Housing Law, N.J.S.A. 40A:12A-1, et seq.

ADOPTED at a regular meeting of the Mayor and Township Committee of the Township of Harrison, County of Gloucester, State of New Jersey held on September 5, 2017.

TOWNSHIP OF HARRISON

BY: _____
LOUIS F. MANZO, MAYOR

ATTEST:

_____
DIANE L. MALLOY
Municipal Clerk

ROLL CALL VOTE				
COMMITTEE MEMBER	**AYES**	**NAYS**	**ABSTAIN**	**ABSENT**
Manzo	✓			
Clowney	✓			
Heim	✓			
Gangemi				✓
Jacques	✓			

CERTIFICATION

I hereby certify that the above resolution is a true copy of a resolution adopted by the Township Committee of the Township of Harrison, County of Gloucester, State of New Jersey, at a meeting held by the same on September 5, 2017 in the Harrison Township Municipal Building, 114 Bridgeton Pike, Mullica Hill, New Jersey 08062.

_____
DIANE L. MALLOY
Municipal Clerk

Appendix B - Custom Soil Resource Report for Gloucester County, NJ Block 56 - Harrison Township

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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 Gloucester County, New Jersey

Block 56 - Harrison Township

October 2, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 14, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	98.8	24.9%
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	3.5	0.9%
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	53.4	13.4%
SabD	Sassafras loamy sand, 10 to 15 percent slopes	12.0	3.0%
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	13.4	3.4%
SacC	Sassafras sandy loam, 5 to 10 percent slopes	11.4	2.9%
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	4.1	1.0%
UdauB	Udorthents-Urban land complex, 0 to 8 percent slopes	2.1	0.5%
WeeB	Westphalia fine sandy loam, 2 to 5 percent slopes	118.6	29.8%
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	0.5	0.1%
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	71.8	18.1%
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	7.6	1.9%
Totals for Area of Interest		**397.4**	**100.0%**

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Building Site Development

Building site development interpretations are designed to be used as tools for evaluating soil suitability and identifying soil limitations for various construction purposes. As part of the interpretation process, the rating applies to each soil in its described condition and does not consider present land use. Example interpretations can include corrosion of concrete and steel, shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping.

Corrosion of Concrete

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Custom Soil Resource Report
Map—Corrosion of Concrete

Map Scale: 1:13,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 200 400 800 1200

Feet: 0 500 1000 2000 3000

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Lines
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Points
- High
- Moderate
- Low
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 14, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Corrosion of Concrete

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	High	98.8	24.9%
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	High	3.5	0.9%
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	High	53.4	13.4%
SabD	Sassafras loamy sand, 10 to 15 percent slopes	High	12.0	3.0%
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	High	13.4	3.4%
SacC	Sassafras sandy loam, 5 to 10 percent slopes	High	11.4	2.9%
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	High	4.1	1.0%
UdauB	Udorthents-Urban land complex, 0 to 8 percent slopes	High	2.1	0.5%
WeeB	Westphalia fine sandy loam, 2 to 5 percent slopes	High	118.6	29.8%
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	High	0.5	0.1%
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	High	71.8	18.1%
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	High	7.6	1.9%
Totals for Area of Interest			**397.4**	**100.0%**

Rating Options—Corrosion of Concrete

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Corrosion of Steel

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."


75° 13' 48" W
75° 12' 19" W
39° 43' 48" N
39° 42' 17" N
480400
480700
481000
481300
481600
481900
482200
4397800
4397500
4397200
4396900
4396600
4396300
4396000
4395700
4395400
4395100
45
581
Sage Trl
Bridgeton Pike
Richwood Rd
WehB
SapB
WeeB
BumA
FapA
WooB
SacB
WokA
SabD
UdauB
SacC
DocB
Map Scale: 1:13,600 if printed on A portrait (8.5" x 11") sheet.
Meters
0
200
400
800
1200
Feet
0
500
1000
2000
3000
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Lines
- High
- Moderate
- Low
- Not rated or not available

Soil Rating Points
- High
- Moderate
- Low
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 14, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Corrosion of Steel

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	High	98.8	24.9%
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	Low	3.5	0.9%
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	High	53.4	13.4%
SabD	Sassafras loamy sand, 10 to 15 percent slopes	Moderate	12.0	3.0%
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	Low	13.4	3.4%
SacC	Sassafras sandy loam, 5 to 10 percent slopes	Moderate	11.4	2.9%
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	Moderate	4.1	1.0%
UdauB	Udorthents-Urban land complex, 0 to 8 percent slopes	Low	2.1	0.5%
WeeB	Westphalia fine sandy loam, 2 to 5 percent slopes	Low	118.6	29.8%
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	Low	0.5	0.1%
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	High	71.8	18.1%
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	High	7.6	1.9%
Totals for Area of Interest			**397.4**	**100.0%**

Rating Options—Corrosion of Steel

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Dwellings With Basements

Dwellings are single-family houses of three stories or less. For dwellings with basements, the foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of about 7 feet.

The ratings for dwellings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility. Compressibility is inferred from the Unified classification of the soil. The properties that affect the ease and amount of excavation include depth to a water table, ponding, flooding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Dwellings With Basements

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 14, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables—Dwellings With Basements

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	Very limited	Buddtown (65%)	Depth to saturated zone (1.00)	98.8	24.9%
			Deptford (30%)	Depth to saturated zone (1.00)		
			Jade Run (5%)	Depth to saturated zone (1.00)		
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	Not limited	Downer (80%)		3.5	0.9%
			Evesboro (5%)			
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	Very limited	Fallsington, undrained (38%)	Ponding (1.00)	53.4	13.4%
				Depth to saturated zone (1.00)		
			Fallsington, drained (37%)	Depth to saturated zone (1.00)		
			Woodstown (8%)	Depth to saturated zone (1.00)		
			Hammonton (7%)	Depth to saturated zone (1.00)		
			Mullica, undrained (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
			Othello (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
SabD	Sassafras loamy sand, 10 to 15 percent slopes	Somewhat limited	Sassafras (85%)	Slope (0.63)	12.0	3.0%
			Downer (5%)	Slope (0.63)		
			Westphalia (5%)	Slope (0.63)		
			Aura (5%)	Slope (0.63)		
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	Not limited	Sassafras (80%)		13.4	3.4%
			Aura (4%)			
			Downer (4%)			
SacC	Sassafras sandy loam, 5 to 10 percent slopes	Not limited	Sassafras (90%)		11.4	2.9%
			Aura (5%)			

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Downer (5%)			
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	Not limited	Sassafras (60%)		4.1	1.0%
			Aura (5%)			
			Downer (5%)			
UdauB	Udorthents-Urban land complex, 0 to 8 percent slopes	Not limited	Udorthents (60%)		2.1	0.5%
WeeB	Westphalia fine sandy loam, 2 to 5 percent slopes	Not limited	Westphalia (80%)		118.6	29.8%
			Freehold (5%)			
			Evesboro (5%)			
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	Not limited	Westphalia (55%)		0.5	0.1%
			Freehold (5%)			
			Evesboro (5%)			
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	Very limited	Woodstown (70%)	Depth to saturated zone (1.00)	71.8	18.1%
			Glassboro (15%)	Depth to saturated zone (1.00)		
			Mullica (5%)	Depth to saturated zone (1.00)		
			Fallsington (5%)	Depth to saturated zone (1.00)		
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	Very limited	Woodstown (65%)	Depth to saturated zone (1.00)	7.6	1.9%
			Glassboro (5%)	Depth to saturated zone (1.00)		
Totals for Area of Interest					**397.4**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Very limited	231.7	58.3%
Not limited	153.7	38.7%
Somewhat limited	12.0	3.0%
Totals for Area of Interest	**397.4**	**100.0%**

Rating Options—Dwellings With Basements

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Lawns, Landscaping, and Golf Fairways

This interpretation rates soils for their use in establishing and maintaining turf for lawns and golf fairways and ornamental trees and shrubs for residential or commercial landscaping. Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required.

The ratings are based on the use of soil material at the site, which may have been altered by some land smoothing. Irrigation may or may not be needed and is not a criterion in rating. The ratings are based on the soil properties that affect plant growth and trafficability after vegetation is established. The properties that affect plant growth are reaction; depth to a water table; ponding; depth to bedrock or a cemented pan; the available water capacity in the upper 40 inches; the content of salts, sodium, or calcium carbonate; and sulfidic materials. The properties that affect trafficability are flooding, depth to a water table, ponding, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer. The suitability of the soil for traps, tees, roughs, and greens is not considered in the ratings.

Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. Soils that are subject to flooding are limited by the duration and intensity of flooding and the season when flooding occurs. In planning for lawns, landscaping, or golf fairways, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer

are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Lawns, Landscaping, and Golf Fairways

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 14, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

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Tables—Lawns, Landscaping, and Golf Fairways

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	Somewhat limited	Buddtown (65%)	Low exchange capacity (0.75)	98.8	24.9%
				Dusty (0.02)		
			Deptford (30%)	Depth to saturated zone (0.94)		
				Low exchange capacity (0.75)		
				Dusty (0.02)		
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	Very limited	Downer (80%)	Low exchange capacity (1.00)	3.5	0.9%
			Atsion (5%)	Depth to saturated zone (1.00)		
				Droughty (0.83)		
			Evesboro (5%)	Low exchange capacity (1.00)		
				Droughty (0.60)		
				Aluminum saturation (0.16)		
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	Very limited	Fallsington, undrained (38%)	Ponding (1.00)	53.4	13.4%
				Depth to saturated zone (1.00)		
				Dusty (0.02)		
			Fallsington, drained (37%)	Too dense (1.00)		
				Depth to saturated zone (0.96)		
				Low exchange capacity (0.50)		
				Dusty (0.03)		
			Woodstown (8%)	Too dense (1.00)		
				Low exchange capacity (0.50)		
				Depth to saturated zone (0.19)		
				Aluminum saturation (0.07)		
				Dusty (0.02)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Mullica, undrained (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Droughty (0.04)		
				Aluminum saturation (0.03)		
				Dusty (0.00)		
			Othello (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Aluminum saturation (1.00)		
				Dusty (0.08)		
SabD	Sassafras loamy sand, 10 to 15 percent slopes	Somewhat limited	Sassafras (85%)	Low exchange capacity (0.75)	12.0	3.0%
				Slope (0.63)		
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	Somewhat limited	Sassafras (80%)	Low exchange capacity (0.75)	13.4	3.4%
				Dusty (0.01)		
			Fallsington, drained (4%)	Depth to saturated zone (0.96)		
				Low exchange capacity (0.50)		
				Dusty (0.01)		
			Woodstown (4%)	Low exchange capacity (0.50)		
				Depth to saturated zone (0.19)		
				Aluminum saturation (0.19)		
SacC	Sassafras sandy loam, 5 to 10 percent slopes	Somewhat limited	Sassafras (90%)	Low exchange capacity (0.75)	11.4	2.9%
				Dusty (0.01)		
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Sassafras (60%)	Low exchange capacity (0.75)	4.1	1.0%
				Dusty (0.01)		
UdauB	Udorthents-Urban land complex, 0 to 8 percent slopes	Very limited	Udorthents (60%)	Low exchange capacity (1.00)	2.1	0.5%

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Aluminum saturation (1.00)		
				Droughty (0.01)		
				Dusty (0.00)		
WeeB	Westphalia fine sandy loam, 2 to 5 percent slopes	Very limited	Westphalia (80%)	Low exchange capacity (1.00)	118.6	29.8%
				Dusty (0.00)		
			Jade Run (5%)	Depth to saturated zone (1.00)		
				Low exchange capacity (0.75)		
				Dusty (0.01)		
			Evesboro (5%)	Low exchange capacity (1.00)		
				Droughty (0.69)		
				Too sandy (0.50)		
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	Very limited	Westphalia (55%)	Low exchange capacity (1.00)	0.5	0.1%
				Dusty (0.00)		
			Evesboro (5%)	Low exchange capacity (1.00)		
				Droughty (0.69)		
				Too sandy (0.50)		
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	Somewhat limited	Woodstown (70%)	Low exchange capacity (0.75)	71.8	18.1%
				Dusty (0.00)		
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Woodstown (65%)	Low exchange capacity (0.75)	7.6	1.9%
				Dusty (0.00)		
			Sassafras (5%)	Low exchange capacity (0.75)		
				Dusty (0.01)		
Totals for Area of Interest					**397.4**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Somewhat limited	219.2	55.2%
Very limited	178.2	44.8%
Totals for Area of Interest	**397.4**	**100.0%**

Rating Options—Lawns, Landscaping, and Golf Fairways

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Local Roads and Streets

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or soil material stabilized by lime or cement; and a surface of flexible material (asphalt), rigid material (concrete), or gravel with a binder. The ratings are based on the soil properties that affect the ease of excavation and grading and the traffic-supporting capacity. The properties that affect the ease of excavation and grading are depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, depth to a water table, ponding, flooding, the amount of large stones, and slope. The properties that affect the traffic-supporting capacity are soil strength (as inferred from the AASHTO group index number), subsidence, linear extensibility (shrink-swell potential), the potential for frost action, depth to a water table, and ponding.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

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Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be

viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Local Roads and Streets

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

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Coordinate System: Web Mercator (EPSG:3857)

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Tables—Local Roads and Streets

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	Somewhat limited	Buddtown (65%)	Frost action (0.50)	98.8	24.9%
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	Somewhat limited	Downer (80%)	Frost action (0.50)	3.5	0.9%
			Hammonton (10%)	Frost action (0.50)		
				Depth to saturated zone (0.19)		
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	Very limited	Fallsington, undrained (38%)	Ponding (1.00)	53.4	13.4%
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
			Fallsington, drained (37%)	Frost action (1.00)		
				Depth to saturated zone (0.96)		
			Mullica, undrained (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
			Othello (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Frost action (1.00)		
				Low strength (1.00)		
SabD	Sassafras loamy sand, 10 to 15 percent slopes	Somewhat limited	Sassafras (85%)	Slope (0.63)	12.0	3.0%
				Frost action (0.50)		
			Downer (5%)	Slope (0.63)		
				Frost action (0.50)		
			Westphalia (5%)	Slope (0.63)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Frost action (0.50)		
			Aura (5%)	Depth to thin cemented pan (1.00)		
				Slope (0.63)		
				Frost action (0.50)		
				Depth to thick cemented pan (0.03)		
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	Somewhat limited	Sassafras (80%)	Frost action (0.50)	13.4	3.4%
			Aura (4%)	Depth to thin cemented pan (1.00)		
				Frost action (0.50)		
				Depth to thick cemented pan (0.03)		
			Ingleside (4%)	Frost action (0.50)		
			Woodstown (4%)	Frost action (0.50)		
				Depth to saturated zone (0.19)		
			Downer (4%)	Frost action (0.50)		
SacC	Sassafras sandy loam, 5 to 10 percent slopes	Somewhat limited	Sassafras (90%)	Frost action (0.50)	11.4	2.9%
			Aura (5%)	Depth to thin cemented pan (1.00)		
				Frost action (0.50)		
				Depth to thick cemented pan (0.03)		
			Downer (5%)	Frost action (0.50)		
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Sassafras (60%)	Frost action (0.50)	4.1	1.0%
			Aura (5%)	Depth to thin cemented pan (1.00)		
				Frost action (0.50)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Depth to thick cemented pan (0.03)		
			Downer (5%)	Frost action (0.50)		
UdauB	Udorthents-Urban land complex, 0 to 8 percent slopes	Not limited	Udorthents (60%)		2.1	0.5%
WeeB	Westphalia fine sandy loam, 2 to 5 percent slopes	Somewhat limited	Westphalia (80%)	Frost action (0.50)	118.6	29.8%
			Freehold (5%)	Frost action (0.50)		
			Buddtown (5%)	Frost action (0.50)		
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Westphalia (55%)	Frost action (0.50)	0.5	0.1%
			Buddtown (5%)	Frost action (0.50)		
			Freehold (5%)	Frost action (0.50)		
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	Somewhat limited	Woodstown (70%)	Frost action (0.50)	71.8	18.1%
			Downer (5%)	Frost action (0.50)		
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Woodstown (65%)	Frost action (0.50)	7.6	1.9%
			Downer (5%)	Frost action (0.50)		
			Sassafras (5%)	Frost action (0.50)		
Totals for Area of Interest					**397.4**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Somewhat limited	341.8	86.0%
Very limited	53.4	13.4%
Not limited	2.1	0.5%
Totals for Area of Interest	**397.4**	**100.0%**

Rating Options—Local Roads and Streets

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Shallow Excavations

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Shallow Excavations

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Background
- Aerial Photography

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 14, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables—Shallow Excavations

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	Very limited	Buddtown (65%)	Depth to saturated zone (1.00)	98.8	24.9%
				Dusty (0.02)		
				Unstable excavation walls (0.01)		
			Deptford (30%)	Depth to saturated zone (1.00)		
				Dusty (0.02)		
				Unstable excavation walls (0.01)		
			Jade Run (5%)	Depth to saturated zone (1.00)		
				Unstable excavation walls (0.01)		
				Dusty (0.01)		
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	Somewhat limited	Downer (80%)	Unstable excavation walls (0.18)	3.5	0.9%
			Evesboro (5%)	Unstable excavation walls (0.53)		
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	Very limited	Fallsington, undrained (38%)	Ponding (1.00)	53.4	13.4%
				Depth to saturated zone (1.00)		
				Dusty (0.02)		
				Unstable excavation walls (0.01)		
			Fallsington, drained (37%)	Depth to saturated zone (1.00)		
				Dusty (0.03)		
				Unstable excavation walls (0.01)		
			Woodstown (8%)	Depth to saturated zone (1.00)		
				Dusty (0.02)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
				Unstable excavation walls (0.01)		
			Hammonton (7%)	Depth to saturated zone (1.00)		
				Unstable excavation walls (0.01)		
				Dusty (0.01)		
			Mullica, undrained (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Unstable excavation walls (0.01)		
				Dusty (0.00)		
			Othello (5%)	Ponding (1.00)		
				Depth to saturated zone (1.00)		
				Dusty (0.08)		
				Unstable excavation walls (0.01)		
SabD	Sassafras loamy sand, 10 to 15 percent slopes	Somewhat limited	Sassafras (85%)	Slope (0.63)	12.0	3.0%
				Unstable excavation walls (0.01)		
			Downer (5%)	Slope (0.63)		
				Unstable excavation walls (0.01)		
			Westphalia (5%)	Slope (0.63)		
				Unstable excavation walls (0.01)		
				Dusty (0.00)		
			Aura (5%)	Slope (0.63)		
				Unstable excavation walls (0.01)		
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	Somewhat limited	Sassafras (80%)	Unstable excavation walls (0.01)	13.4	3.4%
				Dusty (0.01)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Aura (4%)	Unstable excavation walls (0.01)		
				Dusty (0.00)		
			Ingleside (4%)	Depth to saturated zone (0.73)		
				Unstable excavation walls (0.01)		
				Dusty (0.00)		
			Downer (4%)	Unstable excavation walls (0.01)		
SacC	Sassafras sandy loam, 5 to 10 percent slopes	Somewhat limited	Sassafras (90%)	Unstable excavation walls (0.01)	11.4	2.9%
				Dusty (0.01)		
			Aura (5%)	Unstable excavation walls (0.01)		
				Dusty (0.00)		
			Downer (5%)	Unstable excavation walls (0.01)		
				Dusty (0.01)		
SapB	Sassafras-Urban land complex. 0 to 5 percent slopes	Somewhat limited	Sassafras (60%)	Unstable excavation walls (0.01)	4.1	1.0%
				Dusty (0.01)		
			Aura (5%)	Unstable excavation walls (0.01)		
				Dusty (0.00)		
			Downer (5%)	Unstable excavation walls (0.01)		
				Dusty (0.01)		
UdauB	Udorthents-Urban land complex. 0 to 8 percent slopes	Somewhat limited	Udorthents (60%)	Unstable excavation walls (0.92)	2.1	0.5%
				Dusty (0.00)		
WeeB	Westphalia fine sandy loam. 2 to 5 percent slopes	Somewhat limited	Westphalia (80%)	Unstable excavation walls (0.01)	118.6	29.8%
				Dusty (0.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Freehold (5%)	Unstable excavation walls (0.01)		
				Dusty (0.01)		
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Westphalia (55%)	Unstable excavation walls (0.01)	0.5	0.1%
				Dusty (0.00)		
			Freehold (5%)	Unstable excavation walls (0.01)		
				Dusty (0.01)		
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	Very limited	Woodstown (70%)	Depth to saturated zone (1.00)	71.8	18.1%
				Unstable excavation walls (0.01)		
				Dusty (0.00)		
			Glassboro (15%)	Depth to saturated zone (1.00)		
				Unstable excavation walls (0.01)		
				Dusty (0.01)		
			Mullica (5%)	Depth to saturated zone (1.00)		
				Unstable excavation walls (0.03)		
				Dusty (0.01)		
			Fallsington (5%)	Depth to saturated zone (1.00)		
				Unstable excavation walls (0.02)		
				Dusty (0.01)		
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	Very limited	Woodstown (65%)	Depth to saturated zone (1.00)	7.6	1.9%
				Unstable excavation walls (0.01)		
				Dusty (0.00)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Glassboro (5%)	Depth to saturated zone (1.00)		
				Unstable excavation walls (0.01)		
				Dusty (0.01)		
Totals for Area of Interest					**397.4**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Very limited	231.7	58.3%
Somewhat limited	165.7	41.7%
Totals for Area of Interest	**397.4**	**100.0%**

Rating Options—Shallow Excavations

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Land Management

Land management interpretations are tools designed to guide the user in evaluating existing conditions in planning and predicting the soil response to various land management practices, for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture, and rangeland. Example interpretations include suitability for a variety of irrigation practices, log landings, haul roads and major skid trails, equipment operability, site preparation, suitability for hand and mechanical planting, potential erosion hazard associated with various practices, and ratings for fencing and waterline installation.

Pesticide Leaching Potential

The ratings for Pesticide Loss Potential-Leaching are used for evaluating and determining the potential of the soil to transmit pesticides through the profile and the likelihood of the contamination of ground-water supplies. Evaluations consider movement of water through the soil and underlying fractured bedrock. Ratings are for soils in their natural condition and do not consider present land use. The properties that affect the pesticide loss potential include the soil's hydrologic group, depth to water table, saturated hydraulic conductivity at different depths, and the possibility of water movement in fractured bedrock.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that have low leaching potential. "Somewhat limited" indicates that the soil has features that are moderately rated for leaching potential. Some leaching can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable and leaching potential is high.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as that listed for the map unit. The percent composition of each component in a particular map unit is given so that the user will realize the percentage of each map unit that has the specified rating.

A map unit may have other components with different ratings. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Pesticide Leaching Potential

Map Scale: 1:13,600 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 200, 400, 800, 1200

Feet: 0, 500, 1000, 2000, 3000

N

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 14, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables—Pesticide Leaching Potential

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	Somewhat limited	Buddtown (65%)	Wetness (0.50)	98.8	24.9%
				Seepage (0.50)		
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	Very limited	Downer (80%)	Seepage (1.00)	3.5	0.9%
				Low adsorption (0.50)		
			Atsion (5%)	Wetness (1.00)		
				Seepage (1.00)		
			Evesboro (5%)	Low adsorption (1.00)		
				Seepage (1.00)		
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	Very limited	Fallsington, undrained (38%)	Wetness (1.00)	53.4	13.4%
				Seepage (0.50)		
			Fallsington, drained (37%)	Wetness (1.00)		
				Seepage (0.50)		
			Mullica, undrained (5%)	Wetness (1.00)		
				Seepage (0.50)		
			Othello (5%)	Wetness (1.00)		
				Seepage (0.50)		
SabD	Sassafras loamy sand, 10 to 15 percent slopes	Very limited	Sassafras (85%)	Seepage (1.00)	12.0	3.0%
				Low adsorption (0.50)		
			Downer (5%)	Seepage (1.00)		
				Low adsorption (0.50)		
			Westphalia (5%)	Seepage (1.00)		
				Low adsorption (0.50)		
			Aura (5%)	Seepage (1.00)		
				Low adsorption (0.50)		
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	Somewhat limited	Sassafras (80%)	Seepage (0.50)	13.4	3.4%
			Aura (4%)	Low adsorption (0.50)		
			Ingleside (4%)	Low adsorption (0.50)		
				Wetness (0.50)		
				Seepage (0.50)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Woodstown (4%)	Wetness (0.50)		
				Seepage (0.50)		
SacC	Sassafras sandy loam, 5 to 10 percent slopes	Somewhat limited	Sassafras (90%)	Seepage (0.50)	11.4	2.9%
			Aura (5%)	Low adsorption (0.50)		
			Downer (5%)	Low adsorption (0.50)		
				Seepage (0.50)		
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Sassafras (60%)	Seepage (0.50)	4.1	1.0%
			Aura (5%)	Low adsorption (0.50)		
			Downer (5%)	Low adsorption (0.50)		
				Seepage (0.50)		
UdauB	Udorthents-Urban land complex, 0 to 8 percent slopes	Not limited	Udorthents (60%)		2.1	0.5%
WeeB	Westphalia fine sandy loam, 2 to 5 percent slopes	Very limited	Westphalia (80%)	Seepage (1.00)	118.6	29.8%
				Low adsorption (0.50)		
			Jade Run (5%)	Wetness (1.00)		
				Seepage (0.50)		
			Evesboro (5%)	Low adsorption (1.00)		
				Seepage (1.00)		
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	Very limited	Westphalia (55%)	Seepage (1.00)	0.5	0.1%
				Low adsorption (0.50)		
			Evesboro (5%)	Low adsorption (1.00)		
				Seepage (1.00)		
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	Somewhat limited	Woodstown (70%)	Low adsorption (0.50)	71.8	18.1%
				Wetness (0.50)		
				Seepage (0.50)		
			Downer (5%)	Low adsorption (0.50)		
				Seepage (0.50)		
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Woodstown (65%)	Low adsorption (0.50)	7.6	1.9%
				Wetness (0.50)		
				Seepage (0.50)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
			Downer (5%)	Low adsorption (0.50)		
				Seepage (0.50)		
			Sassafras (5%)	Seepage (0.50)		
Totals for Area of Interest					**397.4**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Somewhat limited	207.2	52.1%
Very limited	188.0	47.3%
Not limited	2.1	0.5%
Totals for Area of Interest	**397.4**	**100.0%**

Rating Options—Pesticide Leaching Potential

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Pesticide Runoff Potential

The ratings for Pesticide Loss Potential-Soil Surface Runoff are used for evaluating and determining the potential of the soil to transmit pesticides through surface runoff and the likelihood of the contamination of surface waters. Ratings are for soils in their natural condition and do not consider present land use. The properties that affect the pesticide loss potential include the occurrence of permafrost, surface ponding, flooding, and slope.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that have low runoff potential. "Somewhat limited" indicates that the soil has features that are moderately rated for runoff potential. Some runoff can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable and surface runoff is high.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those

that have the same rating class as that listed for the map unit. The percent composition of each component in a particular map unit is given so that the user will realize the percentage of each map unit that has the specified rating.

A map unit may have other components with different ratings. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Custom Soil Resource Report
Map—Pesticide Runoff Potential

Map Scale: 1:13,600 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 200, 400, 800, 1200

Feet: 0, 500, 1000, 2000, 3000

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 14, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Tables—Pesticide Runoff Potential

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	Not limited	Buddtown (65%)		98.8	24.9%
			Deptford (30%)			
			Jade Run (5%)			
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	Not limited	Downer (80%)		3.5	0.9%
			Hammonton (10%)			
			Atsion (5%)			
			Evesboro (5%)			
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	Not limited	Fallsington, undrained (38%)		53.4	13.4%
			Woodstown (8%)			
			Hammonton (7%)			
			Mullica, undrained (5%)			
			Othello (5%)			
SabD	Sassafras loamy sand, 10 to 15 percent slopes	Somewhat limited	Sassafras (85%)	Excess runoff (0.50)	12.0	3.0%
			Downer (5%)	Excess runoff (0.50)		
			Westphalia (5%)	Excess runoff (0.50)		
			Aura (5%)	Excess runoff (0.50)		
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	Somewhat limited	Sassafras (80%)	Excess runoff (0.50)	13.4	3.4%
			Aura (4%)	Excess runoff (0.50)		
			Woodstown (4%)	Excess runoff (0.50)		
SacC	Sassafras sandy loam, 5 to 10 percent slopes	Somewhat limited	Sassafras (90%)	Excess runoff (0.50)	11.4	2.9%
			Aura (5%)	Excess runoff (0.50)		
			Downer (5%)	Excess runoff (0.50)		
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Sassafras (60%)	Excess runoff (0.50)	4.1	1.0%
			Aura (5%)	Excess runoff (0.50)		

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
UdauB	Udorthents-Urban land complex, 0 to 8 percent slopes	Very limited	Udorthents (60%)	Excess runoff (1.00)	2.1	0.5%
WeeB	Westphalia fine sandy loam, 2 to 5 percent slopes	Somewhat limited	Westphalia (80%)	Excess runoff (0.50)	118.6	29.8%
			Freehold (5%)	Excess runoff (0.50)		
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Westphalia (55%)	Excess runoff (0.50)	0.5	0.1%
			Freehold (5%)	Excess runoff (0.50)		
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	Not limited	Woodstown (70%)		71.8	18.1%
			Downer (5%)			
			Mullica (5%)			
			Fallsington (5%)			
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	Somewhat limited	Woodstown (65%)	Excess runoff (0.50)	7.6	1.9%
			Sassafras (5%)	Excess runoff (0.50)		
Totals for Area of Interest					**397.4**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Not limited	227.5	57.3%
Somewhat limited	167.7	42.2%
Very limited	2.1	0.5%
Totals for Area of Interest	**397.4**	**100.0%**

Rating Options—Pesticide Runoff Potential

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Chemical Properties

Soil Chemical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil chemical properties include pH, cation exchange capacity, calcium carbonate, gypsum, and electrical conductivity.

pH (1 to 1 Water)

Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion. In general, soils that are either highly alkaline or highly acid are likely to be very corrosive to steel. The most common soil laboratory measurement of pH is the 1:1 water method. A crushed soil sample is mixed with an equal amount of water, and a measurement is made of the suspension.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Custom Soil Resource Report
Map—pH (1 to 1 Water)


MAP LEGEND
Area of Interest (AOI)
Area of Interest (AOI)
Soils
Soil Rating Polygons
Ultra acid (ph < 3.5)
Extremely acid (pH 3.5 - 4.4)
Very strongly acid (pH 4.5 - 5.0)
Strongly acid (pH 5.1 - 5.5)
Moderately acid (pH 5.6 - 6.0)
Slightly acid (pH 6.1 - 6.5)
Neutral (pH 6.6 - 7.3)
Slightly alkaline (pH 7.4 - 7.8)
Moderately alkaline (pH 7.9 - 8.4)
Strongly alkaline (pH 8.5 - 9.0)
Very strongly alkaline (pH > 9.0)
Not rated or not available
Soil Rating Lines
Ultra acid (ph < 3.5)
Extremely acid (pH 3.5 - 4.4)
Very strongly acid (pH 4.5 - 5.0)
Strongly acid (pH 5.1 - 5.5)
Moderately acid (pH 5.6 - 6.0)
Slightly acid (pH 6.1 - 6.5)
Neutral (pH 6.6 - 7.3)
Slightly alkaline (pH 7.4 - 7.8)
Moderately alkaline (pH 7.9 - 8.4)
Strongly alkaline (pH 8.5 - 9.0)
Very strongly alkaline (pH > 9.0)
Not rated or not available
Soil Rating Points
Ultra acid (ph < 3.5)
Extremely acid (pH 3.5 - 4.4)
Very strongly acid (pH 4.5 - 5.0)
Strongly acid (pH 5.1 - 5.5)
Moderately acid (pH 5.6 - 6.0)
Slightly acid (pH 6.1 - 6.5)
Neutral (pH 6.6 - 7.3)
Slightly alkaline (pH 7.4 - 7.8)
Moderately alkaline (pH 7.9 - 8.4)
Strongly alkaline (pH 8.5 - 9.0)
Very strongly alkaline (pH > 9.0)
Not rated or not available
Water Features
Streams and Canals
Transportation
Rails
Interstate Highways
US Routes
Major Roads
Local Roads
Background
Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Gloucester County, New Jersey
Survey Area Data: Version 14, Sep 28, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2015—Apr 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—pH (1 to 1 Water)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BumA	Buddtown-Deptford complex, 0 to 2 percent slopes	6.3	98.8	24.9%
DocB	Downer loamy sand, 0 to 5 percent slopes, Northern Coastal Plain	3.6	3.5	0.9%
FapA	Fallsington loams, 0 to 2 percent slopes, Northern Coastal Plain	4.0	53.4	13.4%
SabD	Sassafras loamy sand, 10 to 15 percent slopes	4.8	12.0	3.0%
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	4.0	13.4	3.4%
SacC	Sassafras sandy loam, 5 to 10 percent slopes	4.0	11.4	2.9%
SapB	Sassafras-Urban land complex, 0 to 5 percent slopes	4.0	4.1	1.0%
UdauB	Udorthents-Urban land complex, 0 to 8 percent slopes	5.5	2.1	0.5%
WeeB	Westphalia fine sandy loam, 2 to 5 percent slopes	4.3	118.6	29.8%
WehB	Westphalia-Urban land complex, 0 to 5 percent slopes	4.3	0.5	0.1%
WokA	Woodstown-Glassboro complex, 0 to 2 percent slopes	4.0	71.8	18.1%
WooB	Woodstown-Urban land complex, 0 to 5 percent slopes	5.8	7.6	1.9%
Totals for Area of Interest			**397.4**	**100.0%**

Rating Options—pH (1 to 1 Water)

Aggregation Method: Minimum or Maximum

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

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