



ENVIRONMENTAL IMPACT STATEMENT

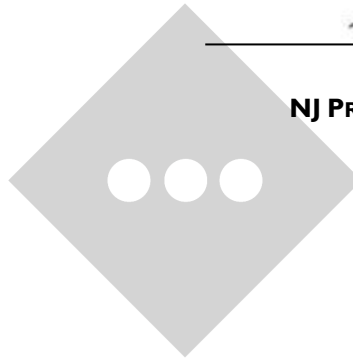
**PROPOSED SCHOOL
BLOCK 2104, LOT 21
60 SUNSET ROAD
PEQUANNOCK TOWNSHIP
MORRIS COUNTY, NEW JERSEY**

**PREPARED FOR:
ONE SCHOOL GLOBAL**

**PREPARED BY:
STONEFIELD ENGINEERING & DESIGN, LLC
92 PARK AVENUE
RUTHERFORD, NEW JERSEY**

**REPORT DATE
OCTOBER 17, 2022**

**JAKE MODESTOW, PE
NJ PROFESSIONAL ENGINEER LICENSE # 56119**





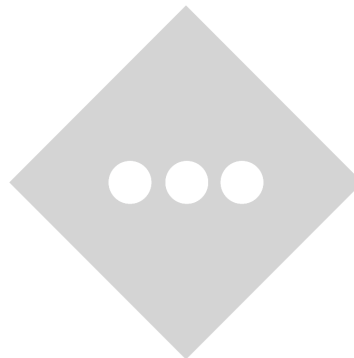
REPORT CONTENTS

1.0 SITE DESCRIPTION.....	1
2.0 INVENTORY OF EXISTING ENVIRONMENTAL CONDITIONS.....	1
2.1 AIR QUALITY.....	1
2.2 WATER SUPPLY	1
2.3 HYDROLOGY.....	1
2.4 GEOLOGY.....	2
2.5 SOILS	2
2.6 SEWERAGE SYSTEMS	2
2.7 TOPOGRAPHY & SLOPE.....	2
2.8 VEGETATION	2
2.9 WILDLIFE.....	3
2.10 NOISE	3
2.11 HISTORY & ARCHEOLOGICAL FEATURES.....	3
3.0 ENVIRONMENTAL IMPACT ASSESSMENT.....	3
3.1 AIR QUALITY.....	1
3.2 WATER SUPPLY	1
3.3 HYDROLOGY.....	1
3.4 GEOLOGY.....	2
3.5 SOILS	2
3.6 SEWERAGE SYSTEMS	2
3.7 TOPOGRAPHY & SLOPE.....	2
3.8 VEGETATION	2
3.9 WILDLIFE.....	3
3.10 NOISE	3
3.11 HISTORY & ARCHEOLOGICAL FEATURES.....	3
4.0 EVALUATION OF ADVERSE ENVIRONMENTAL IMPACTS	7
5.0 RECOMMENDATIONS TO MINIMIZE ENVIRONMENTAL IMPACTS	5
5.1 GRADING & DRAINAGE.....	1
5.2 VEGETATION & NATURAL ENVIRONMENT.....	1
5.3 CONSTRUCTION SCHEDULE	1
5.4 STATEMENT OF ALTERNATIVES.....	2
6.0 LICENSES, PERMITS, AND APPROVALS REQUIRED.....	7
7.0 DOCUMENTATION.....	8



APPENDICIES

PROJECT FIGURES.....	A
USGS LOCATION MAP	FIGURE I
TAX & ZONING MAP.....	FIGURE 2
AERIAL MAP	FIGURE 3
ZONING MAP.....	FIGURE 4
FEMA MAP	FIGURE 5
NRCS COUNTY SOILS SURVEY.....	B



1.0 SITE DESCRIPTION

One School Global is proposing the construction of a 27,825 SF school. The subject property is designated Block 2104, Lot 21, commonly known as 60 Sunset Road, Pequannock, Morris County, New Jersey. The property is located within the R-15 Residential District of Pequannock Township and is bounded by de Wilde Drive to the north, Sunset Road to the south, Roome Avenue to the east and residential dwellings to the west. The total project area 173,411 SF (3.98 acres). Project Figures can be found in Appendix A of this Report.

In existing conditions, the project site is comprised of a one-story Pompton Valley Presbyterian Church, a one-story Sunset Co-op Nursery School, and a two-story residential dwelling with associated improvements including parking utilities and small accessory structures. The proposed development includes the construction of a 27,825 SF School. Additional improvements include a soccer field, hard court, new site access, parking facilities, utilities, lighting, landscaping, and stormwater management improvements.

This Environmental Impact Statement has been prepared per the Pequannock Township requirements to investigate the existing conditions of the property, evaluate the potential impacts of the proposed redevelopment, and discuss the measures to mitigate environmental impacts, if any.

2.0 INVENTORY OF EXISTING ENVIRONMENTAL CONDITIONS

2.1 AIR QUALITY

Air quality is expected to be fair to good given the absence of surrounding industrial uses and the number of trees on site.

2.2 WATER SUPPLY

The existing developments are serviced by the water main running along Sunset Road and Roome Avenue. Per NJDEP Geoweb mapping, the purveyor for the site is Pequannock Township Water Department.

2.3 HYDROLOGY

There are no streams, water bodies, or wetlands on site. Per FEMA flood map number 3453110003C, the site lies within zone X. The majority of the site is located in the Unshaded Zone X which is determined to be outside the 500-year floodplain. The southern portion of the site is located in the Shaded Zone X which includes areas of 500-year flood, areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 100-year flood.

2.4 GEOLOGY

Per NJDEP Geoweb mapping, the site is located in the Boonton Formation. Characterized by the US Geological Survey, the Boonton Formation is described as reddish-brown to brownish-purple, fine-grained sandstone, siltstone, and mudstone; sandstone commonly micaceous, interbedded with siltstone and mudstone in fining-upward sequences mostly 1.5 to 4 m (5-13 ft) thick

2.5 SOILS

Soil mapping was obtained from the National Resource Conservation Service (NRCS) for the project site and immediate area. The soil underlying the project site consists of the following:

TABLE 1: NRCS SOIL MAPPING RESULTS

Soil Unit Code	Soil Description	Approximate Project Coverage	Drainage Class	Permeability Class	Depth to Water Table	Hydrologic Soil Group
USRHVB	Urban land-Riverhead complex, 3% to 8% slopes	100.0%	Well Drained	2.00 to 6.00 in/hr	> 80 inches	B

2.6 SEWERAGE SYSTEMS

Per NJDEP Geoweb Mapping, the site is located within a sewer service area. Sanitary sewer service for the existing developments are serviced by the 8" main running along Roome Avenue and Sunset Road.

2.7 TOPOGRAPHY & SLOPE

The project site is generally flat. On-site topography slopes generally toward either the south towards the Sunset Road right-of-way, north towards Dewilde Drive, or east towards Roome Avenue, with several low points in the center of the site which ultimately discharge into the Township's municipal storm drain system.

2.8 VEGETATION

The existing site is covered in approximately 126,645 SF (73.0%) of vegetation or grassed open space. There are trees/plantings throughout the site with buffer plantings along the western and northern property lines. The remainder of the site includes areas of grass.

2.9 WILDLIFE

Per NJDEP Geoweb mapping, no records of endangered or threatened species sightings/suitable habitats are located within the vicinity of the proposed improvements.

2.10 NOISE

There is minimal noise generated from the subject site. The largest contributor to decibel levels is from the traffic associated with Sunset Road and Roome Avenue.

2.11 HISTORY & ARCHEOLOGICAL FEATURES

Per the Pequannock Township Zoning Map and NJDEP Geoweb mapping the site is not located in a historic landmark district and no mapped historic or archeological features are located on or within the vicinity of the site.

3.0 ENVIRONMENTAL IMPACT ASSESSMENT

3.1 AIR QUALITY

There is no negative impact anticipated to air quality under proposed conditions. The biggest contributors of off-site air pollution may be caused by vehicles travelling along Sunset Road and Roome Avenue. Air quality on-site is likely enhanced by the addition of over 150 trees and over 50 shrubs.

3.2 WATER SUPPLY

As mentioned above, the purveyor for the site is Pequannock Township Water Department. The proposed development will be serviced by a domestic water line located at the southeast corner of the building connecting to the existing water main along Sunset Road.

3.3 HYDROLOGY

As previously noted, there are no streams, water bodies, or wetlands on site. Per FEMA flood map number 3453110003C, the site lies within zone X. The majority of the site is located in the Unshaded Zone X which is determined to be outside the 500-year floodplain. The southern portion of the site is located in the Shaded Zone X which includes areas of 500-year flood, areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 100-year flood. As such, it is not anticipated that the proposed development will have any subsurface impacts to waterways.

A formal stormwater management design is proposed which will mitigate stormwater runoff volume and quality impacts associated with the increase in impervious coverage. Two (2) above ground infiltration basins and a porous pavement system are proposed as part of the design. Under proposed conditions, the site is comprised of six (6) drainage areas with three (3) Points of Interest (POI). Please refer to the Stormwater Management Report for more detailed information.

3.4 GEOLOGY

As noted above, the site is located in the Boonton Formation. There will be no impact to underlying geology associated with the proposed development.

3.5 SOILS

Soils on site will be unaffected by the proposed development. The site is designed to meet NJ Soil Erosion & Sediment Control Standards and Morris County Soil Conservation District standards. Procedures will be enacted prior to construction (installation of silt fencing around the site, installation of inlet protection filters, implementation of stabilized construction entrance, etc.) to ensure that soil compaction and soil erosion is minimized during the installation of the proposed site improvements.

3.6 SEWERAGE SYSTEMS

Per NJDEP Geoweb Mapping, the site is located within a sewer service area. The proposed development will be serviced by 6" PVC laterals located at the front of the building connecting to a proposed doghouse sanitary manhole along Sunset Road.

3.7 TOPOGRAPHY & SLOPE

Proposed site topography and drainage patterns are designed to generally maintain the existing conditions, however as the site is extremely flat in existing conditions, additional fill has been provided on site to ensure positive pitch throughout the development.

3.8 VEGETATION

Vegetation on site will be greatly improved through various landscaping features to enhance interior aesthetic and improve upon perimeter buffering. The proposed landscaping plan incorporates a total of 162 deciduous and evergreen trees and a total of 55 shrubs. The remainder of the site will be planted with lawn area bringing the total vegetated area under proposed conditions to 106,310 SF (61.3%) of vegetation or grassed open space area.

3.9 WILDLIFE

As no threatened or endangered species are located on site, the proposed development will have no negative impact to wildlife or habitat.

3.10 NOISE

The proposed development is not anticipated to have any impact on the noise level of the surrounding area. The largest contributor to decibel levels will still be from nearby traffic on Sunset Road and Roome Avenue.

3.11 HISTORY & ARCHEOLOGICAL FEATURES

Per the Pequannock Township Zoning Map and NJDEP Geoweb mapping the site is not located in a historic landmark district and no mapped historic or archeological features are located on or within the vicinity of the site.

4.0 EVALUATION OF ADVERSE ENVIRONMENTAL IMPACTS

The table below provides a summary of the environmental impact from post-development conditions. No major impacts to sensitive environmental features are anticipated.

Environmental Category	Impact	Description
Air Pollution	None	No negative impact to air quality is anticipated.
Water Pollution	None	No negative impact to water quality is anticipated.
Noise	None	No negative impact to noise level of surrounding area is anticipated.
Vegetation	Negative	Although 162 trees and 55 shrubs are proposed, the total open space area on site is decreasing from 126,645 SF (73.0%) to 106,310 SF (61.3%).
Wildlife Systems	None	No threatened or endangered species are located on site, the proposed development will have no negative impact to wildlife or habitat.
Natural Resources	None	No negative impact to natural resources is anticipated.
Displacement of People/Businesses	None	No negative impact to the displacement of people is anticipated as the Pompton Valley Presbyterian Church and the Sunset-Co-Op Nursery School are non-operational.
Displacement of Farms	None	No negative impact to farms is anticipated.
Sedimentation & Siltation	None	No negative impact to sedimentation & siltation is anticipated.
Municipal Services/Municipal Tax Structure	Positive	The proposed school is anticipated to have a positive impact on the Municipality.
Off-Site Impact	None	No negative off-site impact is anticipated.

5.0 RECOMMENDATIONS TO MINIMIZE ENVIRONMENTAL IMPACTS

5.1 GRADING & DRAINAGE

The drainage plan complies with Municipal, County, and State regulations and is outlined in the Stormwater Management Report and Grading & Drainage Plan. The Stormwater Management Plan includes the integration of two (2) aboveground infiltration basins and a porous pavement system in an effort to limit off-site runoff and provide other stormwater benefits. The site has been graded to match the existing topography and drainage patterns however, as the site is extremely flat in existing conditions, additional fill has been provided on site to ensure positive pitch throughout the development.

5.2 VEGETATION & NATURAL ENVIRONMENT

The proposed landscaping aesthetically enhances the site, provides shade, and an improved buffer to adjacent properties. The landscaping plan incorporates a total of 162 native trees and 55 shrubs. The remainder of the site will be planted with shrub and grass areas and will provide a total of 106,310 SF (61.3%) of vegetated area under proposed conditions.

5.3 CONSTRUCTION SCHEDULE

Please note that various methods will be utilized during construction to help minimize the environmental impact. The proposed sequence of construction for the development is anticipated to be as follows:

1. Install silt fence, tree protection fence, inlet protection filter, construction entrance, and any other applicable soil and sediment control measures (3 days).
2. Rough grading and excavation (4 weeks).
3. Building construction and site improvements (6 months).
4. Streetscape improvements (4 weeks).
5. Remove silt fence and soil erosion measures (1 day).

5.4 STATEMENT OF ALTERNATIVES

Under a “no action” alternative, the site would remain as is with the one-story Pompton Valley Presbyterian Church, a one-story Sunset Co-op Nursery School, and a two-story residential dwelling. The location of the proposed school is located within the permitted setbacks and generally meets other requirements of the municipality. This combined with an enhanced buffer, stormwater management system, and landscaping is aimed to provide improved conditions for the adjacent uses. Additionally, the proposed development increases the aesthetics of the site with a modern architectural design and a landscaping design inclusive of native, low-maintenance trees. The proposed development offers increased economic activity and aesthetic appeal of the site when compared to the “no action” alternative.

Aside from the “no action” alternative, the development could propose another use that is permitted within the Residence District (R-15) zone such as a one-family dwelling or public recreation area.

6.0 LICENSES, PERMITS, AND APPROVALS REQUIRED

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

- Township of Pequannock
 - Preliminary & Final Major Site Plan/ Zoning Board Approval
 - Building Permit
 - Right-of-Way Permit
- Morris County
 - Site Plan Approval
- Morris County Soil Conservation District
 - Soil Erosion and Sediment Control Plan Certification
- New Jersey Department of Environmental Protection
 - NJPDES General Permit for Construction Activities (5G3)
- Local Sanitary Sewer Connection Permit & Water Connection Permit

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

7.0 DOCUMENTATION

The following documents were utilized in the drafting of this statement:

- NJDEP N.J.A.C. 7:8
- The Township of Pequannock Zoning Ordinance
- NJDEP GeoWeb Mapping
- FEMA Mapping
- USGS Mapping
- Google Earth
- NRCS Soil Survey

APPENDIX A

PROJECT FIGURES

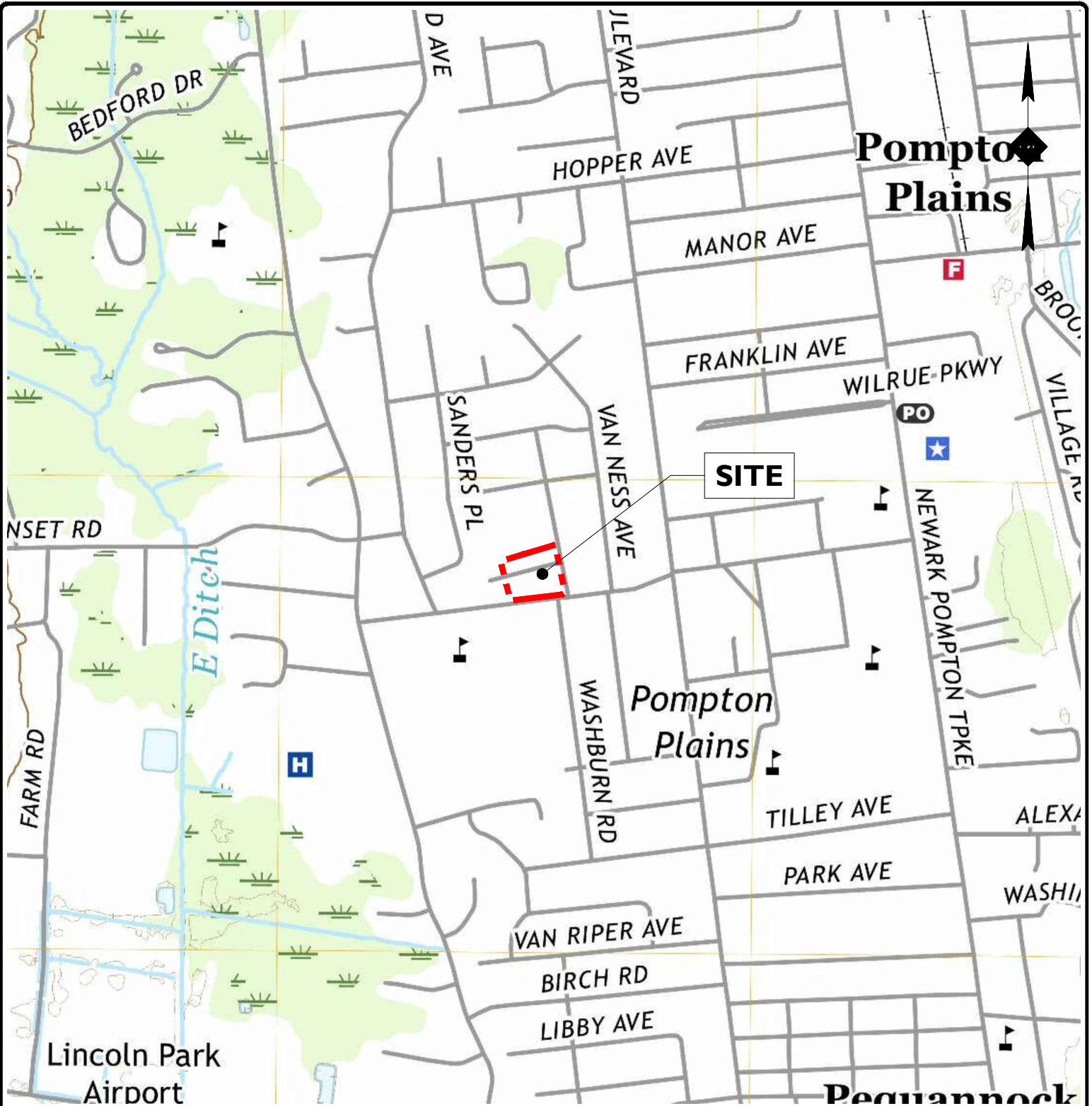
INVENTORY

USGS LOCATION MAP

TAX & ZONING MAP

AERIAL MAP

FEMA MAP



USGS QUADRANGLE MAP

1000' 0' 1000' 2000'



GRAPHIC SCALE IN FEET

1" = 1000'

SOURCE: UNITED STATES GEOLOGICAL SURVEY QUADRANGLE MAP, POMPTON PLAINS, NEW JERSEY, 7.5 MINUTE SERIES, 2019.

ONE SCHOOL GLOBAL PROPOSED SCHOOLING REDEVELOPMENT

BLOCK 2103, LOT 21
60 SUNSET ROAD
TOWNSHIP OF PEQUANNOCK, MORRIS COUNTY, NEW JERSEY

DRAWN BY:

UJ

CHECKED BY:

KB

DATE:

07/14/2022

SCALE:

1" = 1000'

PROJECT ID:

RUT-220209

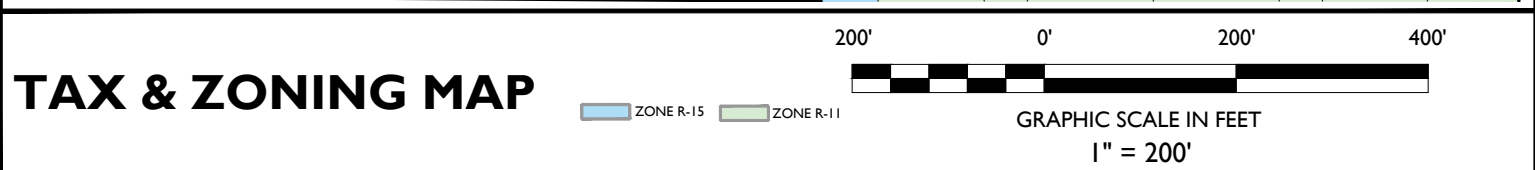
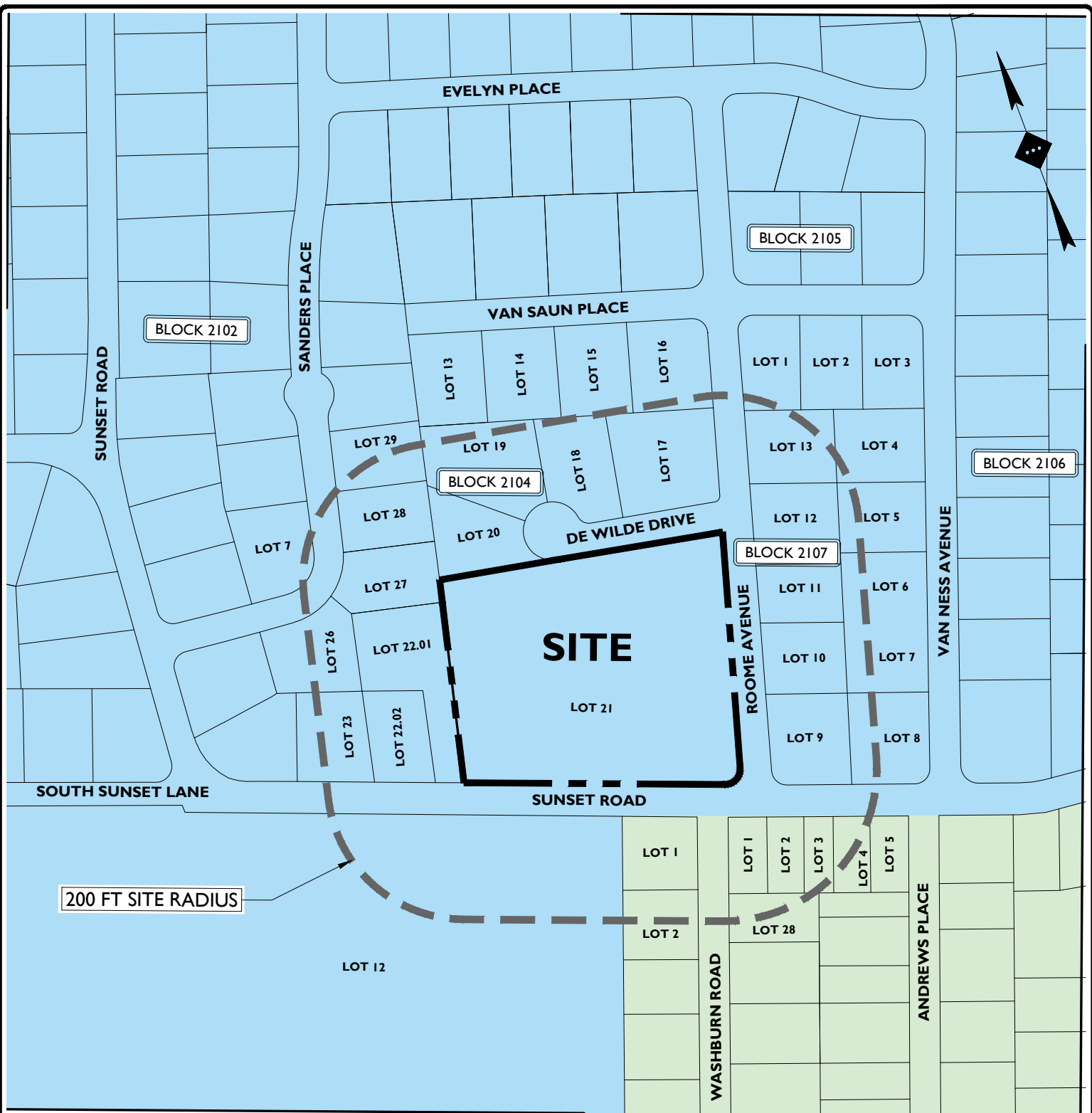


STONEFIELD
engineering & design

Rutherford, NJ · New York, NY · Boston, MA
Princeton, NJ · Tampa, FL · Detroit, MI
www.stonefieldeng.com

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

Z:\Rutherford\RUT-2022\BUT-220209 One School Global - 40 Sunset Road - Pequanock NJ\CADD\Exhibits\Project Map\2022-07-14, Project Maps.dwg

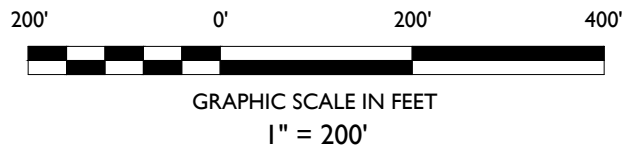


SOURCE: TOWNSHIP OF PEQUANNOCK TAX MAP SHEETS 21 & 25 DATED APRIL 28, 2005. TOWNSHIP OF PEQUANNOCK ZONING MAP DATED APRIL, 2021.	DRAWN BY: LJ	STONEFIELD engineering & design Rutherford, NJ • New York, NY • Boston, MA Princeton, NJ • Tampa, FL • Detroit, MI www.stonefieldeng.com Headquarters: 92 Park Avenue, Rutherford, NJ 07070 Phone 201.340.4468 • Fax 201.340.4472
ONE SCHOOL GLOBAL PROPOSED SCHOOLING REDEVELOPMENT	CHECKED BY: KB	
BLOCK 2103, LOT 21 60 SUNSET ROAD TOWNSHIP OF PEQUANNOCK, MORRIS COUNTY, NEW JERSEY	DATE: 07/14/2022	
	SCALE: 1" = 200' PROJECT ID: RUT-220209	

Z:\Rutherford\RUT-2022\BUT-220209 One School Global - 40 Sunset Road - Pequanock NJ\CADD\Exhibits\Project Map\2022-07-14 Project Map.dwg



AERIAL MAP



SOURCE: GOOGLE EARTH PRO 2020, IMAGE RETRIEVED JULY 11, 2022

ONE SCHOOL GLOBAL PROPOSED SCHOOLING REDEVELOPMENT

BLOCK 2103, LOT 21
60 SUNSET ROAD
TOWNSHIP OF PEQUANNOCK, MORRIS COUNTY, NEW JERSEY

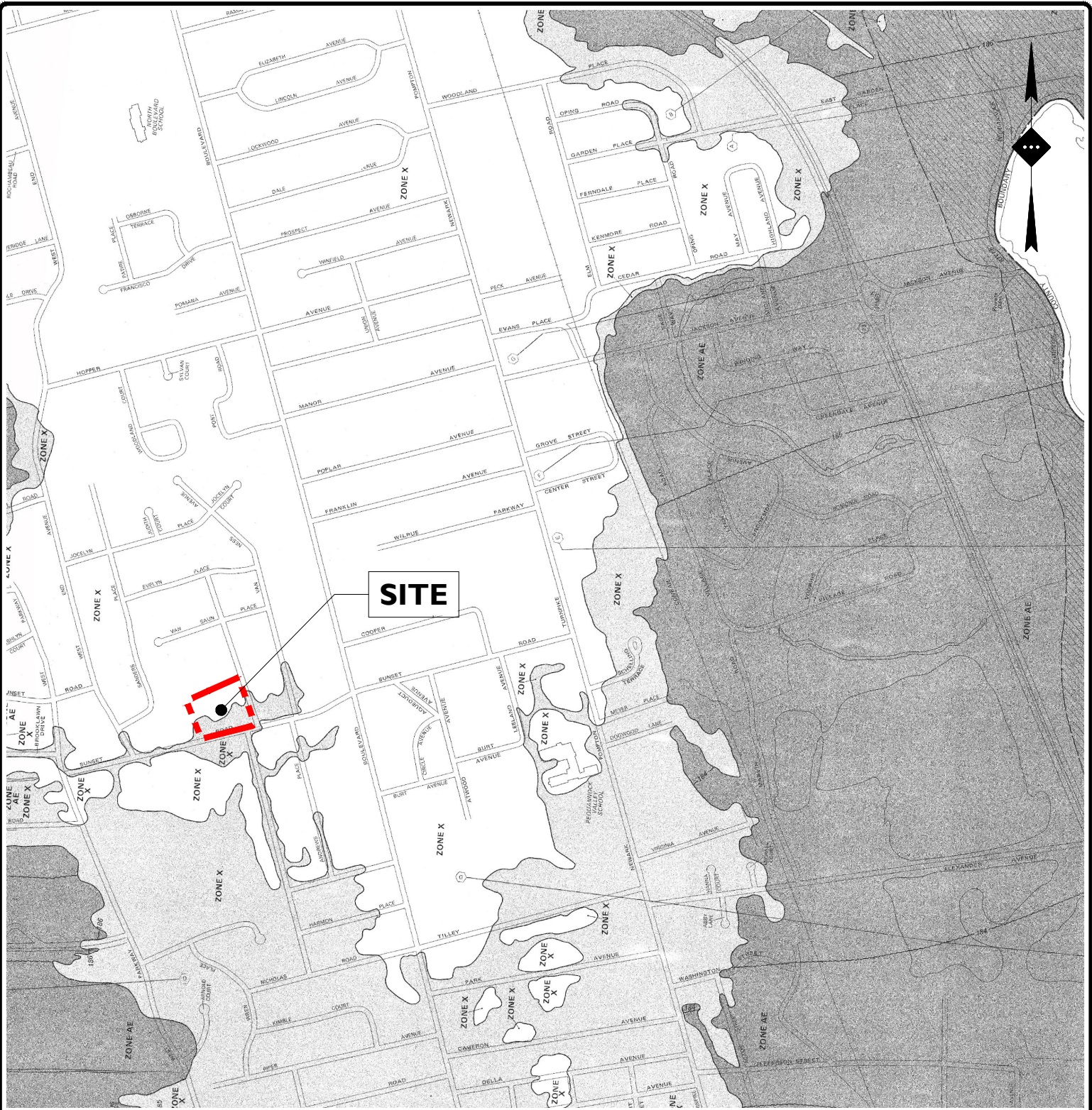
DRAWN BY:	UJ
CHECKED BY:	KB
DATE:	07/14/2022
SCALE:	1" = 200'
PROJECT ID:	RUT-220209

 **STONEFIELD**
engineering & design

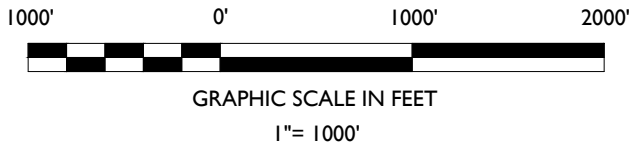
Rutherford, NJ • New York, NY • Boston, MA
Princeton, NJ • Tampa, FL • Detroit, MI
www.stonefieldeng.com

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

Z:\Rutherford\RTUT\2022\RTUT-220209 One School Global - 40 Sunset Road - Pequanock NJ\CADD\Exhibits\Project Map\2022-07-14 Project Map.dwg



EFFECTIVE FEMA FIRM MAP



SOURCE: FLOOD INSURANCE RATE MAP, MORRIS COUNTY, NEW JERSEY, MAP NUMBERS 3453110003C DATED SEPTEMBER 17, 1992.

ONE SCHOOL GLOBAL PROPOSED SCHOOLING REDEVELOPMENT

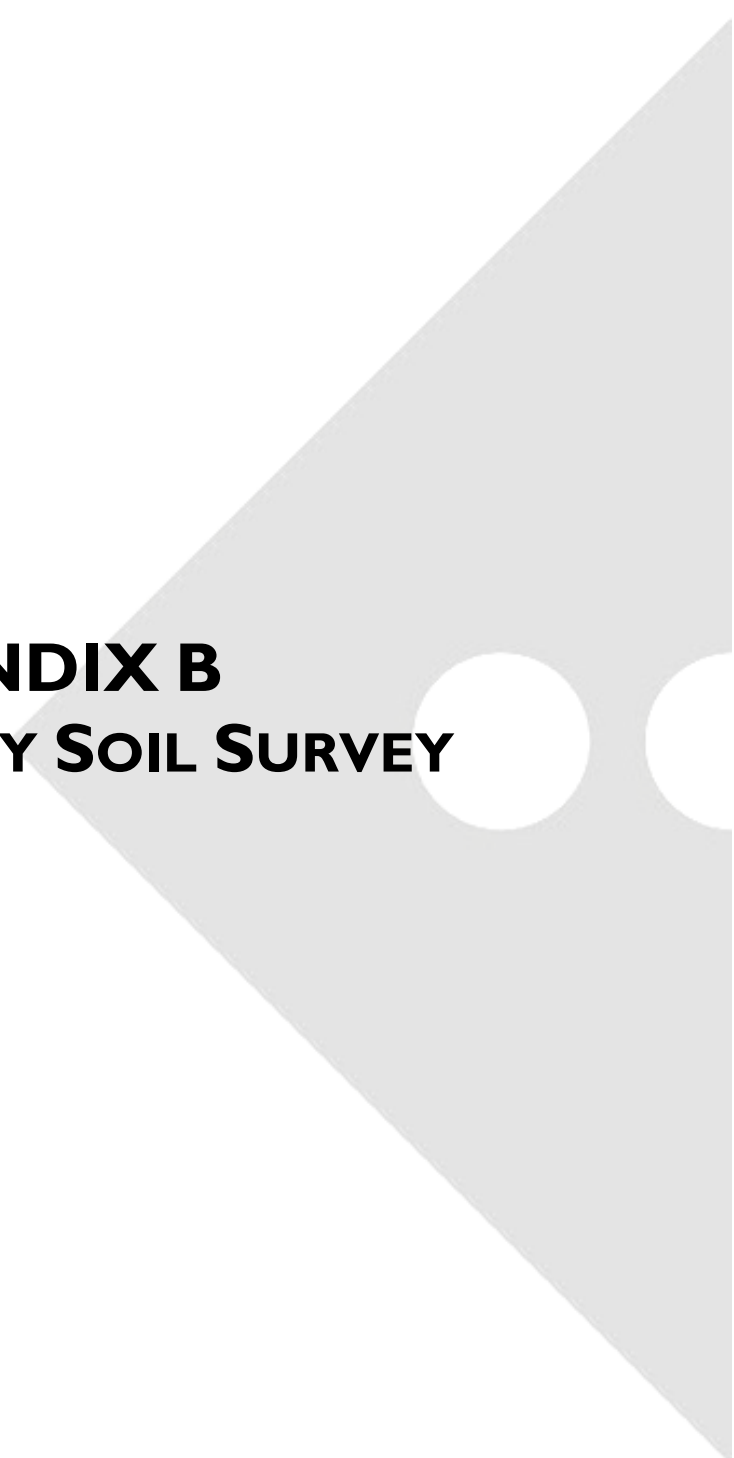
BLOCK 2103, LOT 21
60 SUNSET ROAD
TOWNSHIP OF PEQUANNOCK, MORRIS COUNTY, NEW JERSEY

DRAWN BY:	UJ
CHECKED BY:	KB
DATE:	07/14/2022
SCALE:	1" = 1000'
PROJECT ID:	RTUT-220209

**STONEFIELD**
engineering & design

Rutherford, NJ · New York, NY · Boston, MA
Princeton, NJ · Tampa, FL · Detroit, MI
www.stonefieldeng.com

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



APPENDIX B

NRCS COUNTY SOIL SURVEY



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for **Morris County, New Jersey**



August 8, 2022

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.

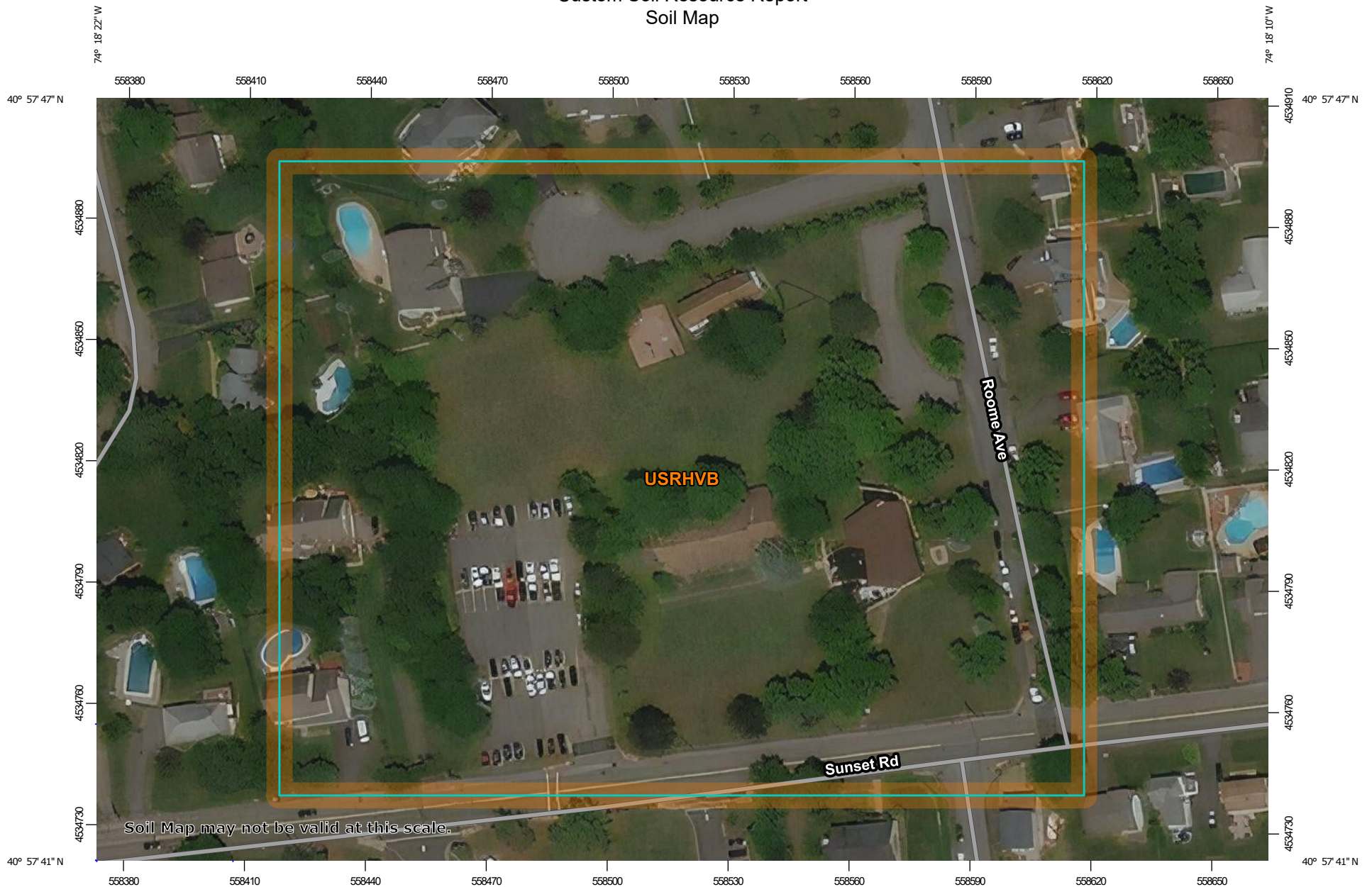
Contents

Preface	2
Soil Map	5
Soil Map.....	6
Legend.....	7
Map Unit Legend.....	8
Map Unit Descriptions.....	8
Morris County, New Jersey.....	10
USRHVB—Urban land-Riverhead complex, 3 to 8 percent slopes.....	10
References	12

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.

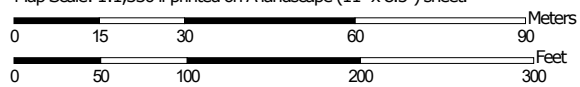
Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.



Map Scale: 1:1,330 if printed on A landscape (11" x 8.5") sheet.



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

Custom Soil Resource Report

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.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Morris County, New Jersey
Survey Area Data: Version 16, Aug 31, 2021

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

Date(s) aerial images were photographed: Dec 31, 2009—Feb 26, 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
USRHVB	Urban land-Riverhead complex, 3 to 8 percent slopes	7.8	100.0%
Totals for Area of Interest		7.8	100.0%

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Custom Soil Resource Report

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

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

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

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

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

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

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

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

Morris County, New Jersey

USRHVB—Urban land-Riverhead complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 13q0d
Elevation: 0 to 950 feet
Mean annual precipitation: 30 to 64 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 131 to 178 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 60 percent
Riverhead and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Outwash fans
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear
Parent material: Surface covered by pavement, concrete, buildings, and other structures underlain by disturbed and natural soil material

Typical profile

C - 0 to 60 inches: variable

Interpretive groups

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

Description of Riverhead

Setting

Landform: Outwash fans
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glaciofluvial deposits derived from granite and gneiss

Typical profile

A - 0 to 10 inches: sandy loam
Bw - 10 to 26 inches: gravelly sandy loam
BC - 26 to 36 inches: gravelly sandy loam
C - 36 to 60 inches: gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low

Custom Soil Resource Report

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s

Hydrologic Soil Group: B

Hydric soil rating: No

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf