

Stormwater Management Report

For

**435 Wheeler Place
Block 347, Lot 18**

**Franklin Township
Somerset County, New Jersey**

**Applicant
Jean Estephan
435 Wheeler Place
Somerset, NJ 08873**

September, 2024

Prepared By:
Accurate Engineering, PC
12 Concord Drive
Kendall Park, NJ 08824
732-951-2385



Frank T. Antisell, P.E.
Professional Engineer
NJ License No. 38739

INTRODUCTION

This Engineer's Report has been prepared on behalf of Jean Estephen to support the design, permitting, and construction of the proposed Additions to the Residential Dwelling at 435 Wheeler Place Street located on Block 347, Lot 18 in the Franklin Township, Somerset County, New Jersey. This report has been prepared in accordance with the technical requirements promulgated in the Franklin Township Engineering Standards.

EXISTING SITE DESCRIPTION

The project site (approximately 0.460± acre per the Township tax records) is located in the Franklin Township, New Jersey. The site is currently occupied by an existing 1-1/2 story single family residential dwelling, frame garage, and a stone driveway.

The USDA Soil Survey has mapped the site's soils as Reaville silt loam (RehA) and Royce silt loam (RoyB), both having a hydrolic soil group "C".

PROPOSED DEVELOPMENT

The project proposes to construct additions to an existing 1-1/2 story Residential Dwelling. The applicant is proposing to route the roof runoff from the residential dwelling and the garage to two (2) proposed dry well.

IMPERVIOUS COVERAGE

Existing Impervious = 6,321 sf
Proposed Impervious = 9,308 sf
Additional Impervious = 2,987 sf

As the development does not propose more than ¼ acre of new impervious and does not propose to disturb in excess of 1 acre, it is not classified as a "major development" as per N.J.A.C. 7:8.

Franklin Township requires that the increase in Impervious Coverage be mitigated. The project is proposing to direct the roof runoff into drywells in order to mitigate the increased impervious coverage.

PROPOSED DRY WELL

Additional Impervious = 2,987 sf
Approximately 2,987 sf of roof area will be directed to the proposed dry well.
Size for 3" runoff
Required Volume = 2,987 sf x 0.25 = 746.66 cf

Proposed Drywell Volume

Total Dry Well Volume = Conc. Struct. Volume + Stone Collar Volume + Stone Sump
Volume

Concrete Structure Volume

Conc. Struct. Volume Diameter = 8.0 ft,

Conc. Struct. Volume Depth = 3.0 ft

Conc. Struct. Volume = 150.86 cf

Stone Collar Volume

Assume 40% Voids

Stone Collar Volume = (Outside Dimensions – Conc. Struct. Volume) x 0.40

Stone Area = ((12 ft x 12 ft x 3 ft) – 150.86) x 0.40

Stone Collar Volume = 112.46. cf

Stone Sump Volume

Stone Sump Thickness = 2.0 ft, Assume 40% Voids

Stone Sump Volume = Outside Dimensions x 0.40

Stone Sump Volume = (12 ft x 12 ft x 2 ft) x 0.40

Stone Sump Volume = 115.2 cf

Total Dry Well Volume

Total Dry Well Volume = Conc. Struct. Volume + Stone Collar Volume + Stone Sump
Volume

Total Dry Well Volume = 150.86 cf + 112.46 cf + 115.2 cf

Total Dry Well Volume = 378.51 cf

Number of Dry Wells Provided = 2

Total Drywell Capacity Provided = 378.51 cf x 2 Dry Well

Total Drywell Capacity Provided = 757.02 cf

Total Drywell Capacity Required = 746.66 cf

Excess Dry Well Capacity Provided = 10.36 cf

EXISTING SOILS

According to the Natural Resources Conservation Services Web Soil Survey the existing soils are Reaville silt loam (RehA), 0 to 2 percent slopes. Hydraulic Category "C".

Recharge Capability (Permeability) Calculations

Darcy's Law - $Q = kiA$

Q is the rate of infiltration (cfs)

k is the hydraulic conductivity of the soil (f/s)

i is the hydraulic gradient

A is the area of percolation (sq. ft.)

k = 0.0001 (f/s)

$i_{\min} = 1.0$ $i_{\max} = 1.65$ $i_{\text{avg}} = 1.32$

A = 144 sf

$Q = (0.0001 \text{ f/s})(1.32)(144 \text{ sf}) / 2$ for factor of safety = 0.0095 cfs

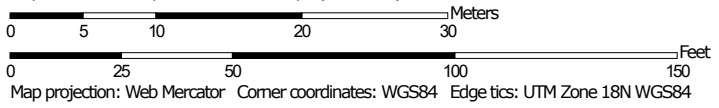
Recharge = $(0.0095 \text{ cfs} \times 60 \text{ sec} \times 60 \text{ min} \times 24 \text{ hrs}) = 821.14 \text{ ft}^3 / 24 \text{ hr}$

Soil Map—Somerset County, New Jersey




Soil Map may not be valid at this scale.

Map Scale: 1:518 if printed on A landscape (11" x 8.5") sheet.



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: Somerset County, New Jersey
 Survey Area Data: Version 21, Aug 29, 2023

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

Date(s) aerial images were photographed: Oct 9, 2022—Oct 16, 2022

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
RehA	Reaville silt loam, 0 to 2 percent slopes	0.6	58.5%
RoyB	Royce silt loam, 2 to 6 percent slopes	0.5	41.5%
Totals for Area of Interest		1.1	100.0%

Somerset County, New Jersey

RehA—Reaville silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1j535

Elevation: 300 to 1,000 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: Farmland of statewide importance

Map Unit Composition

Reaville and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Reaville

Setting

Landform: Interfluves

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Interbedded fine-grained fine-loamy residuum weathered from sandstone and siltstone and/or shale

Typical profile

A - 0 to 10 inches: silt loam

BA - 10 to 15 inches: channery silt loam

Bt - 15 to 22 inches: channery silt loam

C - 22 to 28 inches: very channery silt loam

R - 28 to 80 inches: weathered bedrock

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: 20 to 39 inches to lithic bedrock

Drainage class: Somewhat poorly drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water

(Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 12 to 24 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: C

Ecological site: F148XY025PA - Moist, Triassic, Upland, Mixed
Oak - Hardwood - Conifer Forest

Hydric soil rating: No

Minor Components

Bucks

Percent of map unit: 4 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Readington

Percent of map unit: 4 percent
Landform: Hillsides
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Reaville, poorly drained

Percent of map unit: 4 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Croton

Percent of map unit: 3 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Somerset County, New Jersey

Survey Area Data: Version 21, Aug 29, 2023

Somerset County, New Jersey

RoyB—Royce silt loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: ldsf

Elevation: 50 to 1,000 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: All areas are prime farmland

Map Unit Composition

Royce and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Royce

Setting

Landform: Alluvial flats

Landform position (three-dimensional): Talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Fine-loamy residuum weathered from shale

Typical profile

Ap - 0 to 8 inches: silt loam

BA - 8 to 12 inches: silt loam

Bt - 12 to 30 inches: clay loam

2BC - 30 to 48 inches: channery loam

2R - 48 to 80 inches: weathered bedrock

Properties and qualities

Slope: 2 to 6 percent

Depth to restrictive feature: 39 to 60 inches to lithic bedrock

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high (0.20 to 0.60 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: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C

Ecological site: F148XY025PA - Moist, Triassic, Upland, Mixed
Oak - Hardwood - Conifer Forest
Hydric soil rating: No

Minor Components

Lansdowne

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Birdsboro

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Data Source Information

Soil Survey Area: Somerset County, New Jersey
Survey Area Data: Version 21, Aug 29, 2023