HALEY WARD

ENGINEERING | ENVIRONMENTAL | SURVEYING

Stormwater Report

Kenneth and Elizabeth Burdick

152 South Shore Road

Salisbury, CT

March 21, 2025
Revised May 19, 2025
JN: 4010218.22157.1

Prepared By:
Haley Ward, Inc.
140 Willow Street, Suite 8 | Winsted, Connecticut 06098

Corporate Office
One Merchants Plaza
Suite 701
Bangor, ME 04401
T: 207.989.4824
F: 207.989.4881

HALEYWARD.COM

Table of Contents

Tables

Exhibits

Introduction

The owners of the parcel located at 152 South Shore Road intend to demolish and remove the existing house, garage, subsurface sewage disposal system, and the retaining walls located outside the 75-foot upland review area. Stormwater runoff ultimately reaches Lake Washining, which borders the parcel on the northerly side.

Site Description

The project is located on an existing fully developed parcel at the southern shore of Lake Washining. The proposed development will take place within the currently developed areas generally described as follows:

- The property lies in the R-20 Zone and the Lake Protection Overlay District.
- The parcel currently is predominately covered by buildings and lawn (grass) with some mature trees.
- There are Open Water wetlands (Lake Washining) on the northerly side of the site.
- The property generally slopes northerly toward the lake at varying grades of 2% to 15%.
- South Shore Road crosses the southern portion of the Parcel.

Stormwater runoff leaves the site as shallow concentrated flow to the west (Drainage Area-1), to the east (Drainage Area-3, and north (Drainage Area-2). The runoff discharge from these three areas enter to Lake Washining. A small portion on the southern end of the site (Drainage Area-4) flows to an existing catch basin located in South Shore Road which discharges to a swale on the neighboring property and eventually discharges to Lake Washining.

Proposed Project

The project involves the demolition discussed above and the construction of a new, three-bedroom dwelling with an attached garage, decks, and associated utilities. A new subsurface sewage disposal system will be constructed, and the existing driveway will be reconfigured.

Stormwater Management Practices

The project uses the following stormwater management practices:

- Low Impact Development: The project is designed using Low Impact Development techniques, such as keeping site disturbance to the minimum required and reducing the existing impervious surfaces to the extent practical. Table-1 below and the Watershed Maps in Appendix A present additional details for both existing and proposed site conditions.

- Rain Gardens: The site uses two rain gardens to capture and treat the runoff from most of the rooftop and the gravel portion of the driveway.
- Maintaining Site Hydrology: The existing drainage patterns are maintained with runoff being directed to essentially the same locations as under pre-development conditions.
- Crushed Stone Border: A crushed stone border will be installed along the northeast side of the driveway to reduce erosion and promote infiltration.
- Changing a parking area with a gravel surface to a permeable stone surface.

Impervious Surfaces Summary

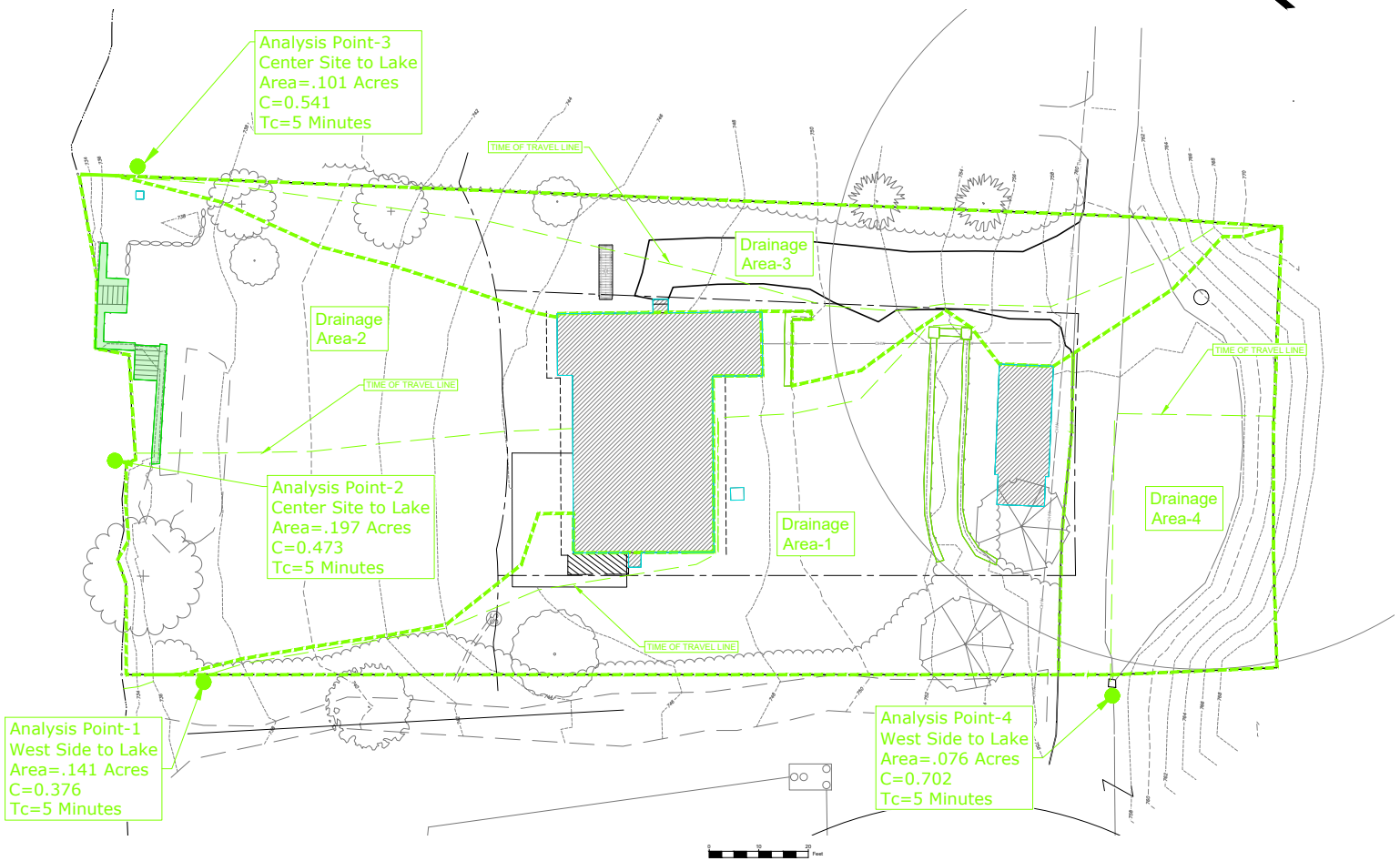
By reducing the total impervious surfaces by approximately 960 square feet (16.8%), the total site peak discharge rate for the proposed conditions two-year, ten-year, twenty-five-year and one-hundred-year design storms are less than the peak discharge rates for the existing conditions. The peak discharge rates for existing and proposed conditions are shown in Table-2, below. See Appendix B for runoff coefficient and peak flow calculations.

Table-1: Existing and Proposed Peak Discharge Summary

Peak Discharge Storm Summary			
Design Storm	Existing Discharge	Proposed Discharge	Proposed Change
(Year)	(CFS)	(CFS)	(CFS)
Analysis Point-1			
2	0.25	0.32	+0.07
10	0.37	0.47	+0.10
25	0.49	0.61	+0.12
100	0.69	0.87	+0.18
Analysis Point-2			
2	0.44	0.36	-0.08
10	0.65	0.52	-0.13
25	0.85	0.69	-0.16
100	1.21	0.98	-0.23
Analysis Point-3			
2	0.26	0.27	+0.01
10	0.38	0.39	+0.01
25	0.50	0.52	+0.02
100	0.71	0.73	+0.02
Analysis Point-4			
2	0.25	0.20	-0.05
10	0.37	0.29	-0.08
25	0.49	0.38	-0.11
100	0.69	0.54	-0.15
Entire Site			
2	1.21	1.14	-0.07
10	1.77	1.67	-0.10
25	2.32	2.20	-0.12
100	3.30	3.12	-0.18

Normally, we would not present the resulting flows to two significant digits as the modeling techniques are not that precise. In this case, because the flows are so small and the differences so minor, the flows are carried to the hundredths of CFS to demonstrate that the post development flow is at or below the predevelopment flow across the range of storm frequencies.

A. Watershed Maps



IMPERVIOUS SURFACES	
SURFACE	AREA (SF)
Wall at Lake	144.9
Pump House	2.5
House	1,550.0
Wall at House	28.6
AC Unit	6.8
Walls at Garage	132.4
Garage	300.7
South Shore Road	880.2
Ex. Grave Parking	1,604.4
Driveway	1,060.5
TOTAL	5,711.1
Property Area	22,438.0
Impervious Cover	25.4%

ALL SITE SOILS:

90C:STOCKBRIDGE LOAM, 8 TO 15 PERCENT SLOPES

HYDROLOGIC SOIL GROUP: B

REDUCED SIZE PRINT
ORIGINAL 24 X 36

REV	DATE	DESCRIPTION	BY	CHK

DRAWING ISSUE STATUS

PERMIT SUBMISSION

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM
140 Willow Street
Winsted, Connecticut 06098
860.379.6669

PROJECT

NEW RESIDENCE

KENNETH & ELIZABETH BURDICK
152 SOUTH SHORE ROAD - SALISBURY, CONNECTICUT

TITLE

EXISTING WATERSHED MAP

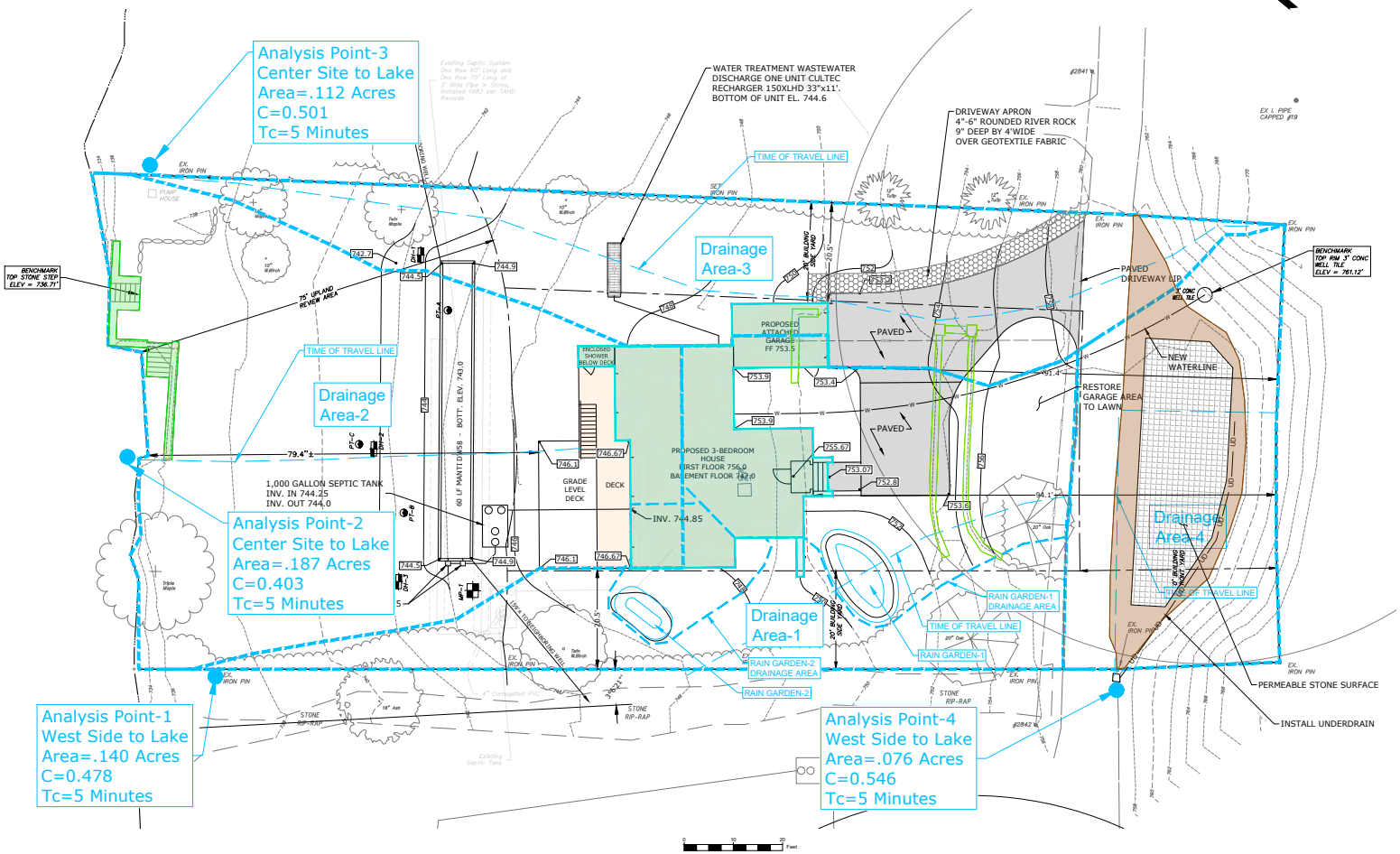
DATE	SCALE
May 19, 2025	1"= 10'

DRAWN BY	DESIGNED BY	CHECKED BY
JS	SMA	TAP

PROJECT No.
4010218.22157.1

DRAWING No.
WS-1

REV.



IMPERVIOUS SURFACES	
SURFACE	AREA (SF)
Wall at Lake	144.9
House/Garage	1,672.3
South Shore Road	880.2
Ex. Gravel Parking	750.0
Pro.Paved Driveway	1,301.9
TOTAL	4,749.4
Property Area	22,438.0
Impervious Cover	21.2%

ALL SITE SOILS:

90C:STOCKBRIDGE LOAM, 8 TO 15 PERCENT SLOPES

HYDROLOGIC SOIL GROUP: B

BASIN	BOTTOM ELEVATION (FT)	BOTTOM AREA (SF)	UPPER ELEVATION (FT)	UPPER AREA (SF)	VOLUME (CF)
RAIN GARDEN-1	749.3	67.0	750.3	200.0	134.0
RAIN GARDEN-2	745.5	19.0	746.2	80.0	37.0

REDUCED SIZE PRINT
ORIGINAL 24 X 36

PERMIT SUBMISSION

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM
140 Willow Street
Winsted, Connecticut 06098
860.379.6669

NEW RESIDENCE
KENNETH & ELIZABETH BURDICK
152 SOUTH SHORE ROAD - SALISBURY, CONNECTICUT

PROPOSED WATERSHED MAP

DATE: May 19, 2025
SCALE: 1"= 10'
DRAWN BY: JS
DESIGNED BY: SMA
CHECKED BY: TAP
PROJECT No.: 4010218.22157.1
DRAWING No.: WS-2

B. Runoff Coefficient and Peak Discharge Calculations

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

PROJECT: Kenneth and Elizabeth Burdick, 152 South Shore Road, Salisbury CT

SUBJECT: Existing Conditions

COMP. BY: TAP CHK. BY: _____ DATE: 05/19/25

Peak Flow Rate by Rational Method

Rational: Q = CIA

A = Watershed Area (acres)
C = Runoff Coefficient
I = Rain Fall Intensity (In/Hr.)
Q = Peak Discharge (cfs)

Site Soils NRCS Hydrologic Soil Group: B

Drainage Area Label	Composite Runoff Coefficient	Drainage Area (Acres)	Design Storm (Year)	Rain Fall Intensity (In/Hr)	Peak Discharge (CFS)
Drainage Area-1	0.375	0.141	2	4.76	0.25
Drainage Area-2	0.473	0.197	2	4.76	0.44
Drainage Area-3	0.541	0.101	2	4.76	0.26
Drainage Area-4	0.702	0.076	2	4.76	0.25
				Total	1.21
Drainage Area-1	0.375	0.141	10	6.96	0.37
Drainage Area-2	0.473	0.197	10	6.96	0.65
Drainage Area-3	0.541	0.101	10	6.96	0.38
Drainage Area-4	0.702	0.076	10	6.96	0.37
				Total	1.77
Drainage Area-1	0.412	0.141	25	8.33	0.49
Drainage Area-2	0.520	0.197	25	8.33	0.85
Drainage Area-3	0.595	0.101	25	8.33	0.50
Drainage Area-4	0.772	0.076	25	8.33	0.49
				Total	2.32
Drainage Area-1	0.469	0.141	100	10.40	0.69
Drainage Area-2	0.591	0.197	100	10.40	1.21
Drainage Area-3	0.676	0.101	100	10.40	0.71
Drainage Area-4	0.877	0.076	100	10.40	0.69
				Total	3.30

Drainage Area	Surface	Area (acres)	Avg. C Value
DA-1	Imp. Area	0.011	0.95
	Trees	0.030	0.25
	Grass	0.100	0.35
	Composite	0.141	0.375
DA-2	Imp. Area	0.039	0.95
	Trees	0.008	0.25
	Grass	0.150	0.35
	Composite	0.197	0.473
DA-3	Imp. Area	0.033	0.95
	Trees	0.005	0.25
	Grass	0.063	0.35
	Composite	0.101	0.541
DA-4	Imp. Area	0.049	0.95
	Trees	0.027	0.25
	Grass	0.000	0.35
	Composite	0.076	0.702
Total Area Modeled		0.515	Acres

Recurrence Interval (years)	Cf
25	1.1
50	1.2
100	1.25

Runoff Coefficients per ConnDOT Drainage Manual - Chapter 6:

Table 6-3 - Recommended Coefficients for Pervious Areas:

	NRCS Hydrologic Soil Group			
Slope	**A**	**B**	**C**	**D**
Flat: (0%-1%)	0.04 - 0.09	0.07 - 0.12	0.11 - 0.16	0.15 - 0.20
Ave.: (2%-6%)	0.09 - 0.14	0.12 - 0.17	0.16 - 0.21	0.20 - 0.25
Steep: (> 6%)	0.13 - 0.18	0.18 - 0.24	0.23 - 0.31	0.28 - 0.38

Table 6-5 - Runoff Coefficients for Impervious Areas

Asphalt Streets	Concrete Streets	Drives & Walks	Roofs
0.70 - 0.95	0.80 - 0.95	0.75 - 0.85	0.75 - 0.95

Table 6-4
Recommended Coefficients for Various Selected Land Uses:

Downtown Areas	Neighbor-hood Areas	Single Family Areas	Multi Units Detached	Multi Units Attached
0.70 - 0.95	0.50 - 0.70	0.30 - 0.50	0.40 - 0.60	0.60 - 0.75
Suburban	Resi-dential (>1.2 Ac.)	Apartment Dwelling Areas	Light Industrial Areas	Heavy Industrial Areas
0.25 - 0.40	0.30 - 0.45	0.50 - 0.70	0.50 - 0.80	0.60 - 0.90
Parks & Cemetery	Play-grounds	Rail Yard Areas	Un-Improved Areas	
0.10 - 0.25	0.20 - 0.40	0.20 - 0.40	0.10 - 0.30	

Notes:
1) Runoff Coefficient estimated by Haley Ward (see separate calculations)
2) Rainfall Intensity calculated by Haley Ward for D = Tc (Use 5 min for all areas due to small size)
3) Drainage area delineated by Haley Ward and measured using AutoCAD software (see separate watershed delineation)

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

PROJECT: Kenneth and Elizabeth Burdick, 152 South Shore Road, Salisbury CT

SUBJECT: Proposed Conditions

COMP. BY: TAP CHK. BY: DATE: 05/19/25

Peak Flow Rate by Rational Method

Rational: Q = CIA

A = Watershed Area (acres)
C = Runoff Coefficient
I = Rain Fall Intensity (In/Hr.)
Q = Peak Discharge (cfs)

Site Soils NRCS Hydrologic Soil Group: B

Drainage Area Label	Composite Runoff Coefficient	Drainage Area	Design Storm	Rain Fall Intensity	Peak Discharge
		(Acres)	(Year)	(In/Hr)	(CFS)
Drainage Area-1	0.478	0.140	2	4.76	0.32
Drainage Area-2	0.403	0.186	2	4.76	0.36
Drainage Area-3	0.501	0.112	2	4.76	0.27
Drainage Area-4	0.546	0.076	2	4.76	0.20
				Total	1.14
Drainage Area-1	0.478	0.140	10	6.96	0.47
Drainage Area-2	0.403	0.186	10	6.96	0.52
Drainage Area-3	0.501	0.112	10	6.96	0.39
Drainage Area-4	0.546	0.076	10	6.96	0.29
				Total	1.67
Drainage Area-1	0.525	0.140	25	8.33	0.61
Drainage Area-2	0.443	0.186	25	8.33	0.69
Drainage Area-3	0.551	0.112	25	8.33	0.52
Drainage Area-4	0.601	0.076	25	8.33	0.38
				Total	2.20
Drainage Area-1	0.597	0.140	100	10.4	0.87
Drainage Area-2	0.504	0.186	100	10.4	0.98
Drainage Area-3	0.627	0.112	100	10.4	0.73
Drainage Area-4	0.683	0.076	100	10.4	0.54
				Total	3.12

Notes:
1) Runoff Coefficient estimated by Haley Ward (see separate calculations)
2) Rainfall Intensity calculated by Haley Ward for D = Tc (Use 5 min for all areas due to small size)
3) Drainage area delineated by Haley Ward and measured using AutoCAD software (see separate watershed delineation)

Drainage Area	Surface	Area (acres)	Avg. C Value
DA-1	Imp. Area	0.034	0.95
	Trees	0.027	0.25
	Grass/permeable	0.080	0.35
	Composite	0.140	0.478
DA-2	Imp. Area	0.016	0.95
	Trees	0.002	0.25
	Grass/permeable	0.168	0.35
	Composite	0.186	0.403
DA-3	Imp. Area	0.030	0.95
	Trees	0.012	0.25
	Grass/permeable	0.070	0.35
	Composite	0.112	0.501
DA-4	Imp. Area	0.029	0.95
	Trees	0.027	0.25
	Grass/permeable	0.020	0.35
	Composite	0.076	0.546
Total Area Modeled		0.515	Acres

Recurrence Interval (years)	Cf
25	1.1
50	1.2
100	1.25

Runoff Coefficients per ConnDOT Drainage Manual - Chapter 6:

Table 6-3 - Recommended Coefficients for Pervious Areas:

	NRCS Hydrologic Soil Group			
Slope	**A**	**B**	**C**	**D**
Flat: (0%-1%)	0.04 - 0.09	0.07 - 0.12	0.11 - 0.16	0.15 - 0.20
Ave.: (2%-6%)	0.09 - 0.14	0.12 - 0.17	0.16 - 0.21	0.20 - 0.25
Steep: (> 6%)	0.13 - 0.18	0.18 - 0.24	0.23 - 0.31	0.28 - 0.38

Table 6-5 - Runoff Coefficients for Impervious Areas

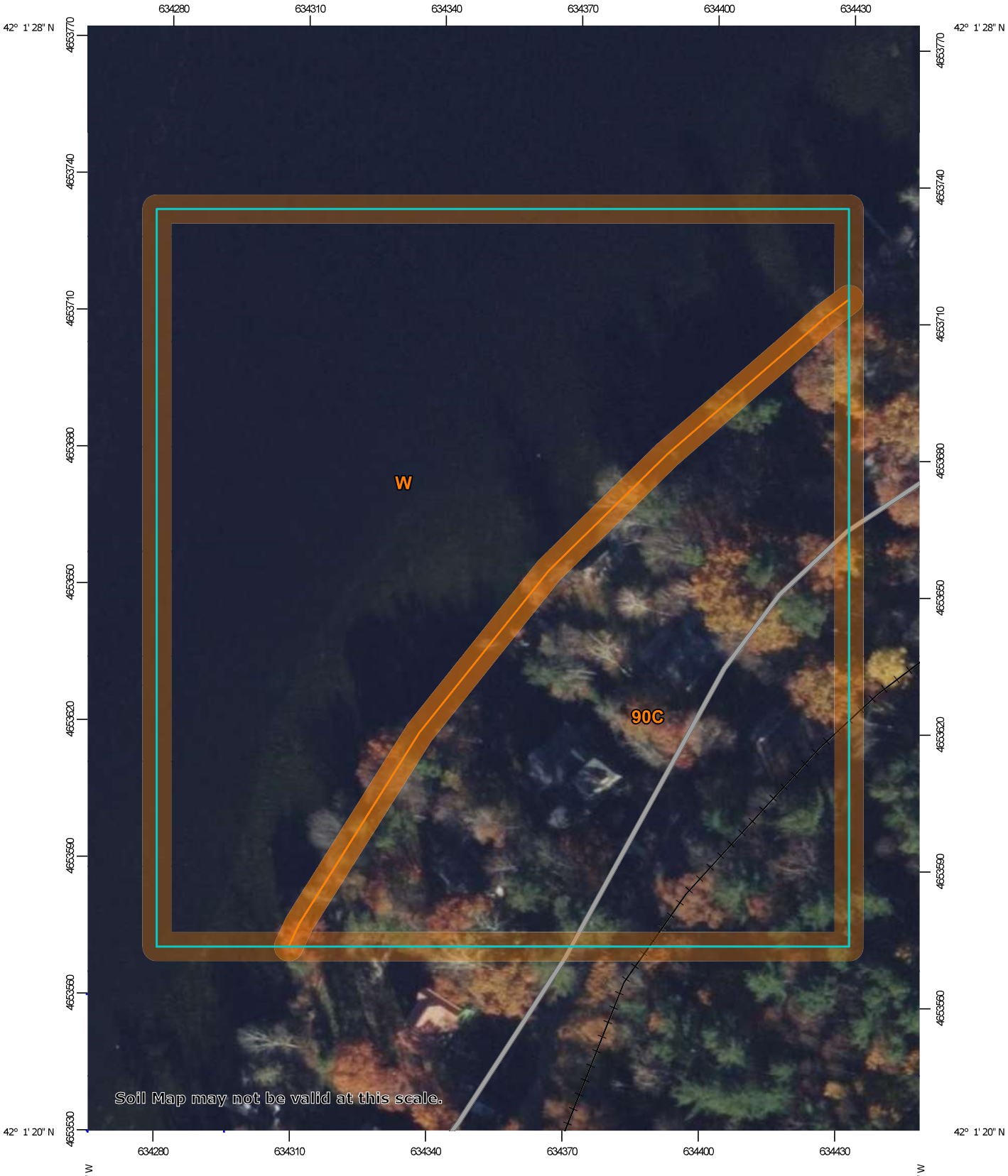
Asphalt Streets	Concrete Streets	Drives & Walks	Roofs
0.70 - 0.95	0.80 - 0.95	0.75 - 0.85	0.75 - 0.95

Table 6-4
Recommended Coefficients for Various Selected Land Uses:

Downtown Areas	Neighbor-hood Areas	Single Family Areas	Multi Units Detached	Multi Units Attached
0.70 - 0.95	0.50 - 0.70	0.30 - 0.50	0.40 - 0.60	0.60 - 0.75
Suburban	Resi-dential (>1.2 Ac.)	Apartment Dwelling Areas	Light Industrial Areas	Heavy Industrial Areas
0.25 - 0.40	0.30 - 0.45	0.50 - 0.70	0.50 - 0.80	0.60 - 0.90
Parks & Cemetery	Play-grounds	Rail Yard Areas	Un-Improved Areas	
0.10 - 0.25	0.20 - 0.40	0.20 - 0.40	0.10 - 0.30	

C. USDA Soils Map

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,180 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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

State of Connecticut, Western Part

90C—Stockbridge loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9lrs
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Stockbridge and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stockbridge

Setting

Landform: Hills
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy till derived from limestone and dolomite and/or schist

Typical profile

Ap - 0 to 10 inches: loam
Bw1 - 10 to 20 inches: loam
Bw2 - 20 to 28 inches: loam
C1 - 28 to 42 inches: gravelly loam
C2 - 42 to 48 inches: gravelly loam
C3 - 48 to 65 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B
Ecological site: F144AY036NY - Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Mudgepond
Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Georgia
Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Alden
Percent of map unit: 3 percent
Landform: Depressions, drainageways
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Nellis
Percent of map unit: 3 percent
Landform: Hills
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Farmington
Percent of map unit: 2 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Paxton
Percent of map unit: 2 percent
Landform: Till plains, drumlins, hills
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

D. Rain Garden Volume Calculations

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

PROJECT: Kenneth and Elizabeth Burdick, 152 South Shore Road, Salisbury CT

SUBJECT: Water Quality Volume Calculations RAIN GARDEN 1

COMP. BY: TAP CHK. BY: DATE: 05/19/25

I. Determine Volume of Water Quality Basin

WQV = (1.3"(R)(A))/12 Where:

WQV	=	Water Quality Volume (ac-ft)
R	=	Volumetric Runoff Coefficient
	=	0.05+0.009(I)
I	=	Percent Impervious Cover (whole number)
A	=	Site Area (acres) = Watershed area excluding bottom of basin

Watershed	Watershed Area (acres)	Percent Impervious	Volumetric Runoff Coefficient	Water Quality Volume (ac-ft)	Water Quality Volume (CF)
					-
To Rain Garden-1	0.07	40	0.41	0.0033	145
				Total Required	145

GRV = ((D)(A)(I))/12 Where:

GRV	=	Groundwater Recharge Volume
D	=	Depth of Runoff to be Recharged (Table 7.4 of Stormwater Quality Manual)
A	=	Site Area (acres)
I	=	Percent Impervious Cover (decimal)

Watershed Number	Watershed Area (acres)	Percent Impervious	Groundwater Recharge Depth (D)	Groundwater Recharge Volume (ac.ft)	Groundwater Recharge Volume (CF)
To Rain Garden-1	0.07	0.40	0.25	0.0006	27

Table 7.4

NRCS Hydrologic Soil Group	Average Annual Recharge	Groundwater Recharge Depth (D)
A	18 in/year	0.4 inch
B	12 in/year	0.25 inch
C	6 in/year	0.1 inch
D	3 in/year	0 inch

For Hydrologic Soil Group, see Web Soil Survey
The majority of development occurs over soil with hydrologic group B
For Design Use WQV since it is higher than GRV

Volume of Proposed Rain Garden-1 For New House

Contour Elevation	Elevation Difference (ft)	Area (sq. ft.)	Volume (CF)	Cumulative Volume (CF)	
749.3	-	83			
750.3	1.0	220	152		
			-	152	Greater Than 145 CF, OKAY

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

PROJECT: Kenneth and Elizabeth Burdick, 152 South Shore Road, Salisbury CT

SUBJECT: Water Quality Volume Calculations RAIN GARDEN 2

COMP. BY: SMA CHK. BY: TAP DATE: 02/05/25

I. Determine Volume of Water Quality Basin

WQV = (1.3"(R)(A))/12 Where:

WQV	=	Water Quality Volume (ac-ft)
R	=	Volumetric Runoff Coefficient
	=	0.05+0.009(I)
I	=	Percent Impervious Cover (whole number)
A	=	Site Area (acres) = Watershed area excluding bottom of basin

Watershed	Watershed Area (acres)	Percent Impervious	Volumetric Runoff Coefficient	Water Quality Volume (ac-ft)	Water Quality Volume (CF)
					-
To Rain Garden-2	0.01	42	0.43	0.0006	28
				Total Required	28

GRV = ((D)(A)(I))/12 Where:

GRV	=	Groundwater Recharge Volume
D	=	Depth of Runoff to be Recharged (Table 7.4 of Stormwater Quality Manual)
A	=	Site Area (acres)
I	=	Percent Impervious Cover (decimal)

Watershed Number	Watershed Area (acres)	Percent Impervious	Groundwater Recharge Depth (D)	Groundwater Recharge Volume (ac.ft)	Groundwater Recharge Volume (CF)
To Rain Garden-2	0.01	0.42	0.25	0.0001	5

Table 7.4

NRCS Hydrologic Soil Group	Average Annual Recharge	Groundwater Recharge Depth (D)
A	18 in/year	0.4 inch
B	12 in/year	0.25 inch
C	6 in/year	0.1 inch
D	3 in/year	0 inch

For Hydrologic Soil Group, see Web Soil Survey
The majority of development occurs over soil with hydrologic group B
For Design Use WQV since it is higher than GRV

Volume of Proposed Rain Garden-2 For New House

Contour Elevation	Elevation Difference (ft)	Area (sq. ft.)	Volume (CF)	Cumulative Volume (CF)	
745.45	-	19			
746.20	0.75	80	37		
			-	37	Greater Than 28 CF, OKAY

E. Permeable Patio Design

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING

PROJECT: Kenneth and Elizabeth Burdick, 152 South Shore Road, Salisbury CT

SUBJECT: Permeable Patio Design

COMP. BY: TAP CHK. BY: DATE: 05/19/25

I. Determine Water Quality Volume Required

WQV = (1.3"(R)(A))/12 Where:

WQV	=	Water Quality Volume (ac-ft)
R	=	Volumetric Runoff Coefficient
	=	0.05+0.009(I)
I	=	Percent Impervious Cover (whole number)
A	=	Site Area (acres) = Area of Patio 580 SF

Watershed	Watershed Area (acres)	Percent Impervious	Volumetric Runoff Coefficient	Water Quality Volume (ac-ft)	Water Quality Volume (CF)
					-
Patio Area	0.0133	100	0.95	0.0014	60
				Total Required	60

II. Soil Conditions

The underlying soil is Stockbridge Loam, Class B
Test pits reveal bedrock is deeper than 70" and seasonal high groundwater (SHGW) is an average of 41"

The finished grade at the patio is the same as the existing grade.
The depth of the patio system will be 16"
At 17.25", the bottom will be more than 3 feet above bedrock
At 17.25", the bottom will be 25" above SHGW, 24" is recommended for residential applications

III. Volume of Reservoir

The reservoir is 6 inches of crushed stone with an estimated void ratio of 40%

Area (SF)	Void ratio (%	Depth (ft)	Volume (CF)	
580	40%	0.2708	62.8	> 60, okay

IV. Drain Time

Td = V/(K*A) x 12 in/hr

Td = drain time in hours

V = Volume to be infiltrated in cubic feet	60	
A = Area in square feet	580	
K = infiltration rate	0.52	in/hr (default rate for class B Loam

Td = 2.4 hours

F. Impervious Coverage Calculations

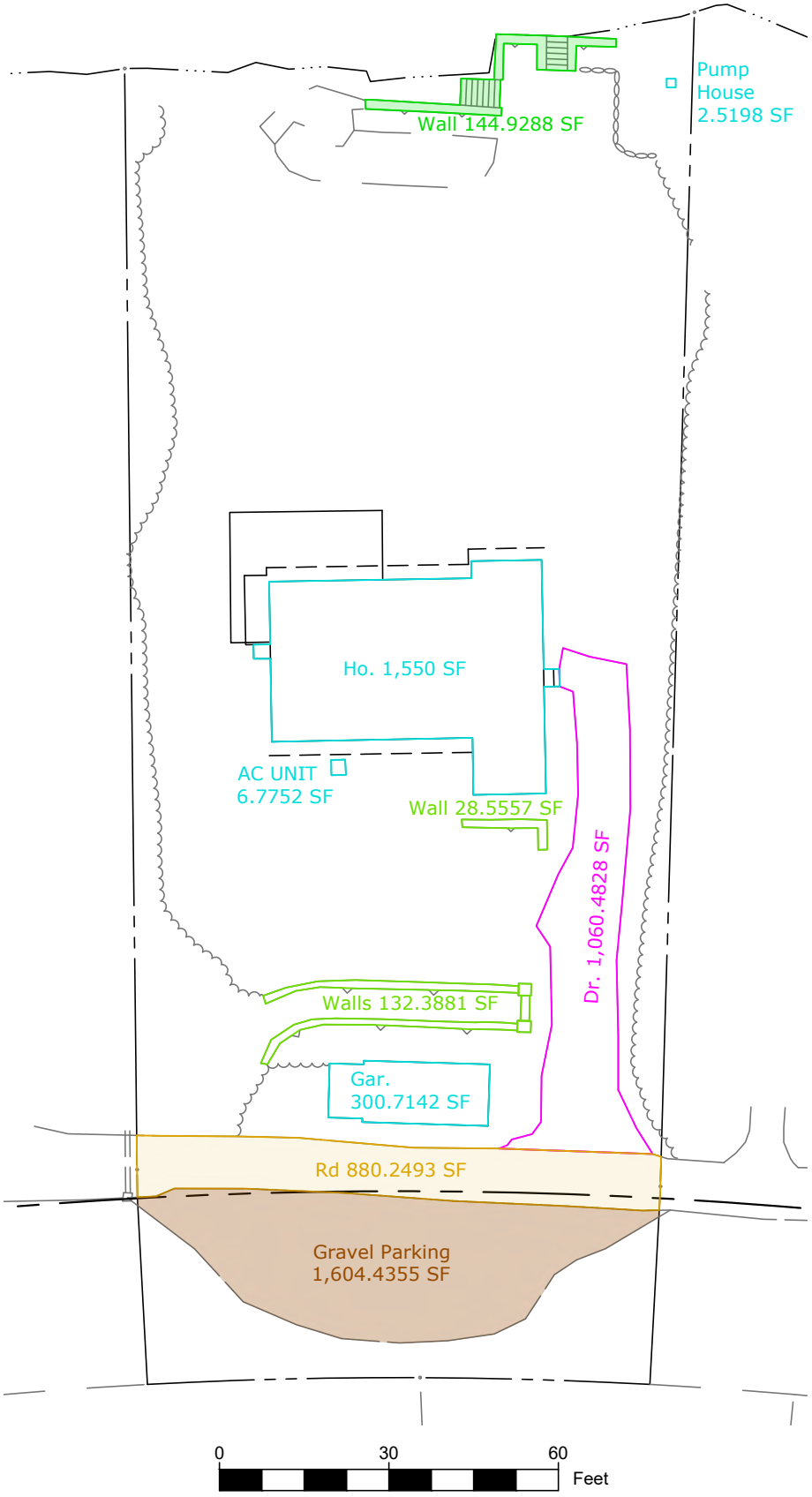
HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM

PROJECT No. : 4010218.22157.1 DRAWING No.: 1

PROJECT: BURDICK - 152 SOUTH SHORE RD. SALISBURY

TITLE: EX. IMPERVIOUS AREA CALCULATIONS

DWN. BY: JS CHK. BY: TAP DATE: 2025.05.19



IMPERVIOUS SURFACES	
SURFACE	AREA (SF)
Wall at Lake	144.9
Pump House	2.5
House	1,550.0
Wall at House	28.6
AC Unit	6.8
Walls at Garage	132.4
Garage	300.7
South Shore Road	880.2
Ex. Grave Parking	1,604.4
Driveway	1,060.5
TOTAL	5,711.1
Property Area	22,438.0
Impervious Cover	25.5%

P:\CT\4010218 - Burdick Kenneth Elizabeth\4010218.22157.1 House at 152 South Shore Rd Salisbury\02-CAD_Files\Civil\dwg\Project.dwg 5/20/2025 10:38:07 AM

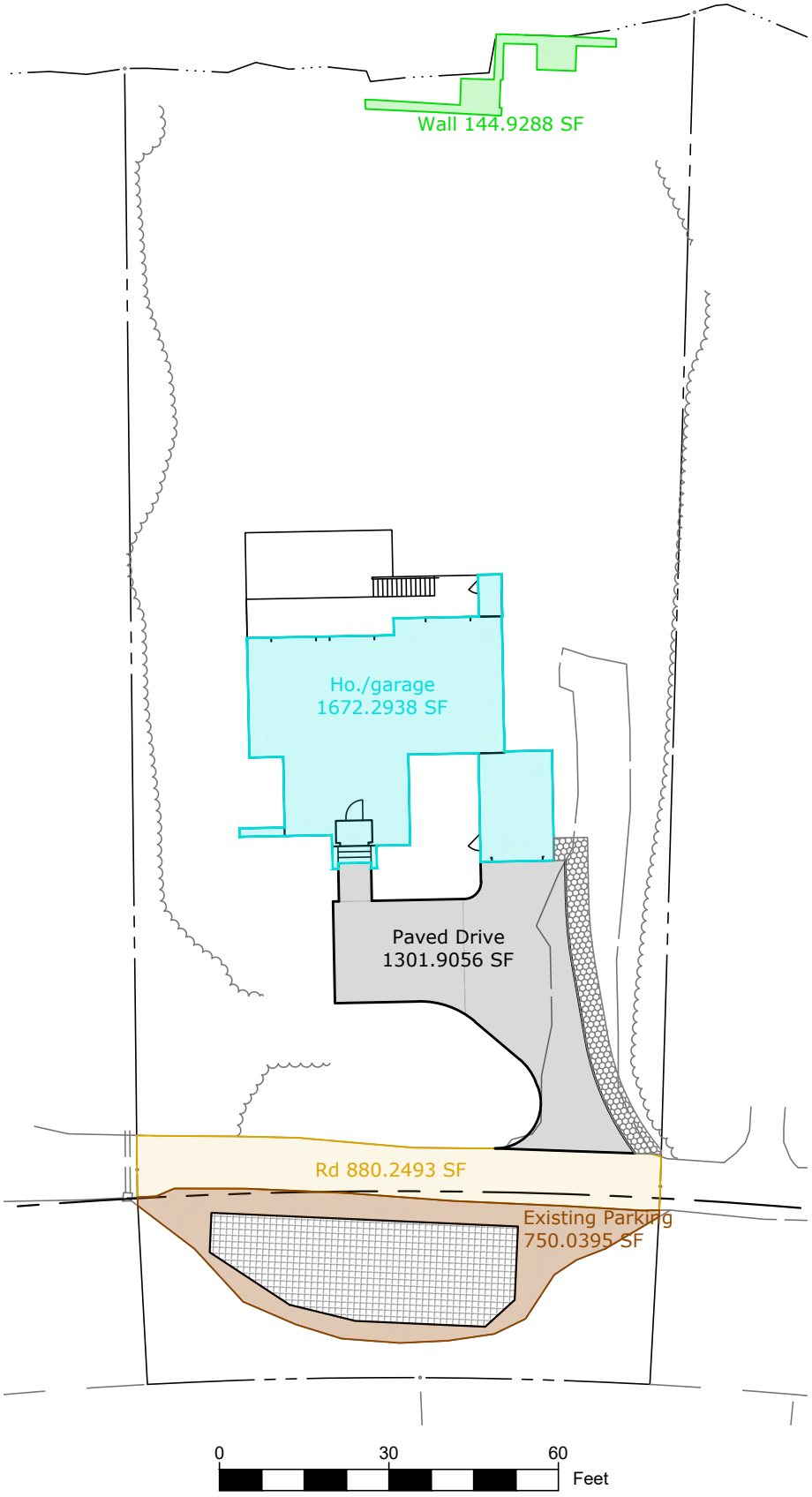
HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM

PROJECT No. : 4010218.22157.1 DRAWING No.: 1

PROJECT: BURDICK - 152 SOUTH SHORE RD. SALISBURY

TITLE: PROPOSED IMPERVIOUS AREA CALCULATIONS

DWN. BY: JS CHK. BY: TAP DATE: 2025.05.19



IMPERVIOUS SURFACES	
SURFACE	AREA (SF)
Wall at Lake	144.9
House/Garage	1,672.3
South Shore Road	880.2
Ex. Gravel Parking	750.0
Pro.Paved Driveway	1,301.9
TOTAL	4,749.4
Property Area	22,438.0
Impervious Cover	21.2%

P:\CT\4010218 - Burdick Kenneth Elizabeth\4010218.22157.1 House at 152 South Shore Rd Salisbury\02-CAD_Files\Civil\dwg\Project.dwg 5/20/2025 11:48:26 AM