

APPLICATION FOR SITE PLAN APPROVAL

Owner of record: 280 BTLR, LLC

Address of owner: 23721 NE 48th Ave, #H7, Okeechobee, FL 34972

280-300 Between the Lakes Road

Property Location: Tax Map 67 Lot 07 Land Records: Vol. 273 Page 58
07-2 272 403

Acreage: 280= 4.406 acres Zone: RR1

300= 2.262 acres

Site Plan Requirements: See site plan

Soil Erosion and Sediment Control Measures: See site plan

Conservation Commission Approval, if applicable: pending

Historic District Commission Approval, if applicable: N/A

Approval From TAHD: pending WPCA: N/A BHC: N/A

If applicable, boundaries of flood plain, aquifer protection zone, Housatonic River District, or Historic District should be on Site Plan.

Additional Remarks: Proposal for single family house on Lot 280 and driveway passing through Lot 300.

Owner's Signature:  Date: 9/12/24

Applicant's Signature and Title: 

Applicant's address and phone number: Great Falls Construction
117 Dublin Road, Falls Village, CT 06031 860-824-7128

Filed at Planning and Zoning Commission Office: _____, 2001

Date of next regular Commission meeting: _____

Date of approval or denial of plan: _____

A decision on a site plan submitted as part of a zoning permit application shall be rendered within 65 days after receipt of the plan at a regular meeting of the Commission. The applicant may request extensions of the decision period, not to exceed two further 65-day periods.

Introduction and Existing Conditions

This project is located at 280 Between the Lakes Road, which lies on the western side of the road. The property consists of 4.406 acres in the RR-1 Zone. There is a small, isolated wetlands area on the east side of the property. A significant portion of the property lies within the Town of Salisbury Lake Protective Overlay District (LPOD). The grades range from mild (3%) to moderate (13%). This parcel is predominately open meadow. A portion of the property is encumbered by a conservation easement.

The owner also owns the adjacent parcel, 300 Between the Lakes Road, which includes an existing house and garage on 2.262 acres. There is a wetlands area on the western side of the property. There is a mixture of open and wooded areas on this parcel.

Proposal

The applicant intends to construct a new house. Included in the proposal are typical features of a single-family lot development such as septic system, paved driveway, well, and associated earthwork. In addition, the house will use a geothermal heating system. The geothermal system requires several wells. All of the work except for a portion of the driveway will be on Lot 280.

All of the activity will take place outside of the wetlands, outside of the conservation easement area, and above the Ordinary High Water associated with Lake Washining. Only the septic system lies within the LPOD.

Impacts to Wetlands and Upland Review Area

The activity has no direct wetland impact. There will be 0.22 acres of impact within the upland review area. This work is associated with the driveway.

Impact within the Lake Protective Overlay District

All activity except for the septic system and some of the geothermal wells is outside of the LPOD. The septic system wells are over 260 feet away from the Ordinary High Water line, well beyond the 150-foot regulatory setback for the septic system. The area impacted within the LPOD is 5,200 SF.

Alternatives

The applicant considered constructing the driveway entirely on Lot 280, however that would result in a steeper driveway and more impact within the LPOD.

Erosion Control

The plan includes a detailed erosion control plan and narrative. Total disturbance is approximately 1.5 acres.

Stormwater Management

The work includes a rain garden to capture and treat runoff before it reaches the wetlands to the west of the activity. The rain garden is designed to hold the Water Quality Volume. A Stormwater report is attached.

Drainage Calculations



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Stormwater Report

New Residence

280 Between the Lakes Road
Salisbury, Connecticut



PREPARED FOR:
Great Falls Construction

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HALEYWARD.COM

September 10, 2024
JN: 4010128.001

Report Prepared By:

Haley Ward, Inc.

140 Willow Street, Suite 8 | Winsted, Connecticut 06098



STORMWATER REPORT

280 Between the Lakes Road, Salisbury, CT

I. Introduction

The owner of 280-300 Between the Lakes Road in Salisbury, CT proposes to build new residence on the property. Haley Ward performed a hydrologic and hydraulic analysis to design a storm sewer pipe and rain garden. This report summarizes our design and calculations.

II. Post Development Hydrology

The proposed drainage system is made up of one storm sewer pipe and one rain garden. Accordingly, Haley Ward delineated watersheds for each. The watershed map can be found in Exhibit A.

Land cover categories were broken into the following classifications:

- Impervious
- Open Space (HSG-B)

We used the USDA-Natural Resources Conservation Resource, Web Soil Survey to establish the Hydrologic Soil Group (HSG) within each watershed. Haley Ward selected runoff coefficient that best suited either the HSG or land cover type. We used Section 6.9-5 of the ConnDOT *Drainage Manual* to appropriately choose runoff coefficients for this site. Exhibit C contains the runoff coefficients for each watershed.

Haley Ward downloaded extreme precipitation tables from NOAA Atlas 14 site. Exhibit B contains the precipitation data values we used in our analysis for the 2-year through 100-year recurrence intervals. We then utilized *Hydraflow Storm Sewers* IDF Curve generator tool to develop rainfall intensities for each recurrence interval. The following table summarizes the values we input into *Hydraflow Storm Sewers*:

Recurrence Interval	5 Minute Duration	15 Minute Duration	60 Minute Duration
2-Year	0.397 inches	0.662 inches	1.16 inches
100-Year	0.870 inches	1.45 inches	2.55 inches

Exhibit B contains the IDF curve that was used for our analysis.

The watersheds to the yard drain and rain garden are small enough to assume a time of concentration (Tc) of 5 minutes which is considered a minimum value in the ConnDOT *Drainage Manual*.



III. Storm Sewer Design

Haley Ward used *Hydraflow Storm Sewers* software to design a storm sewer that will collect runoff from the roof and a portion of the driveway and convey it to the rain garden.

The Rational Method and methodology outlined in the ConnDOT *Drainage Manual* was utilized to predict peak discharge rates and model the hydraulic conditions in the pipe. The storm sewer is sized to collect and convey a 10-year flood, which is a standard in the industry.

Exhibit D contains our data input and the results of our hydraulic analysis.

IV. Rain Garden Design

Haley Ward referred to CTDEEP *Storm Water Quality Manual* for methodology on calculating the water quality volume (WQV) for each watershed.

To achieve the required treatment volume, a trial-and-error process was applied. Contours were preliminarily drafted, and the areas were generated using *AutoCAD* software. The volume of each rain garden was calculated using the average-end-area method. Next, we adjusted the horizontal and vertical dimensions of the rain garden until the overall volume of the treatment system exceeded the WQV.

Exhibit E contains our calculations for determining WQV and rain garden volume.

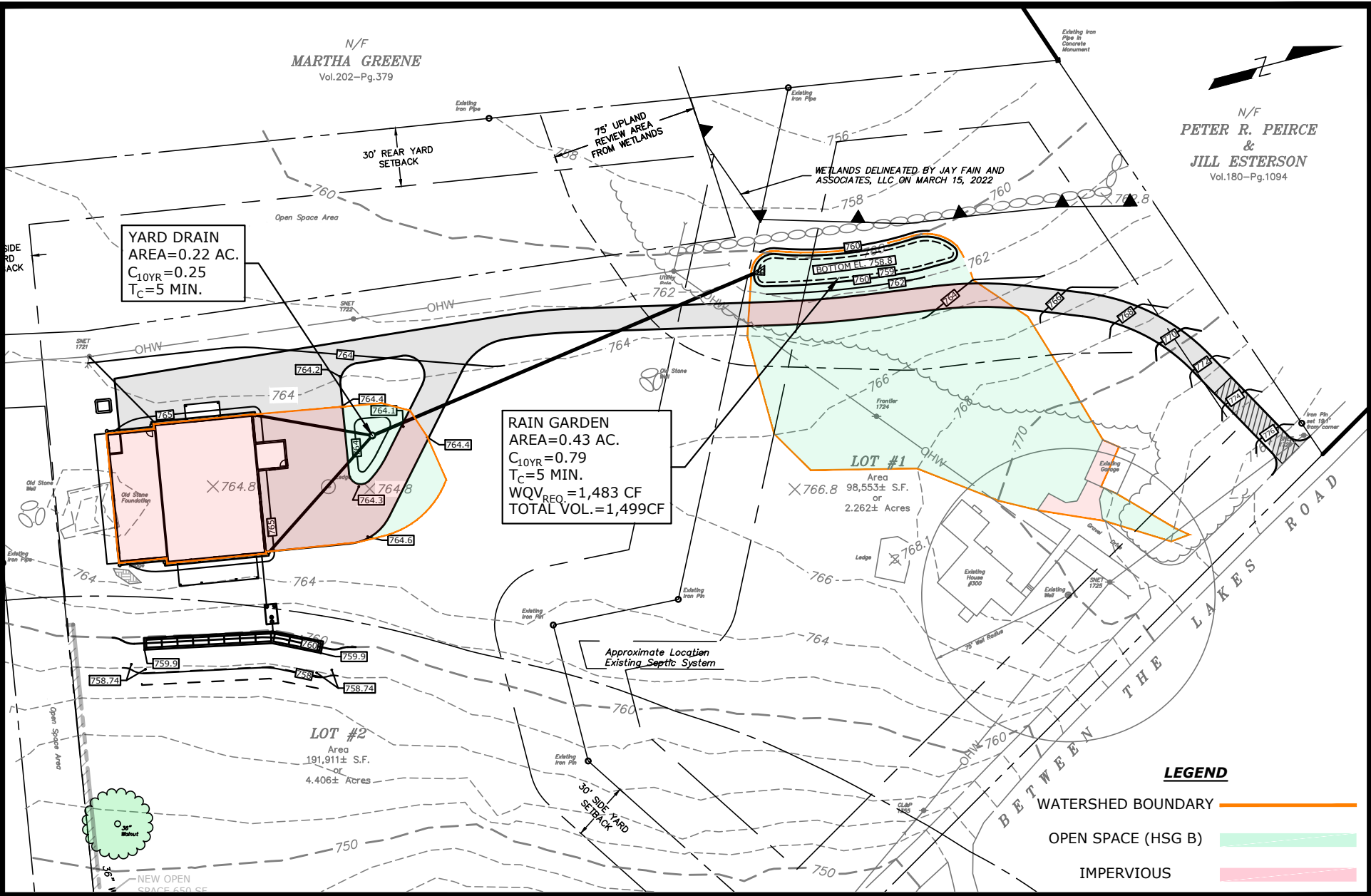
EXHIBIT A

WATERSHED MAP

FILE LOCATION: P:\CT4010128 - GREAT FALLS_CONSTRUCTION\128.001 - 280 BETWEEN THE LAKE RD. - TAP\02-CAD_FILES\280 BTL RD - PROJECT.DWG, 2024.09.10, 1:05 PM

N/F
MARTHA GREENE
 Vol.202-Pg.379

N/F
**PETER R. PEIRCE
 &
 JILL ESTERSON**
 Vol.180-Pg.1094



LEGEND

- WATERSHED BOUNDARY —
- OPEN SPACE (HSG B) —
- IMPERVIOUS —

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PROJECT	280 BETWEEN THE LAKES ROAD SALISBURY, CONNECTICUT
TITLE	WATERSHED MAP

DATE	2024.09.10
SCALE	AS NOTED
DRAWN BY	CG

PROJECT No.	4010128.001
DRAWING No.	EXHIBIT A

EXHIBIT B

NOAA Atlas 14 Data



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aerials](#)

PF tabular

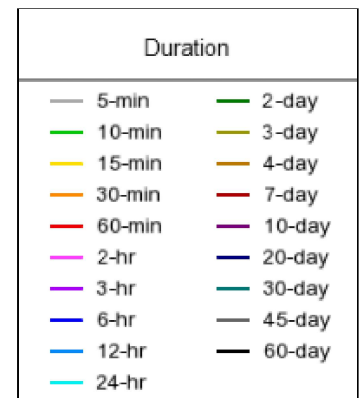
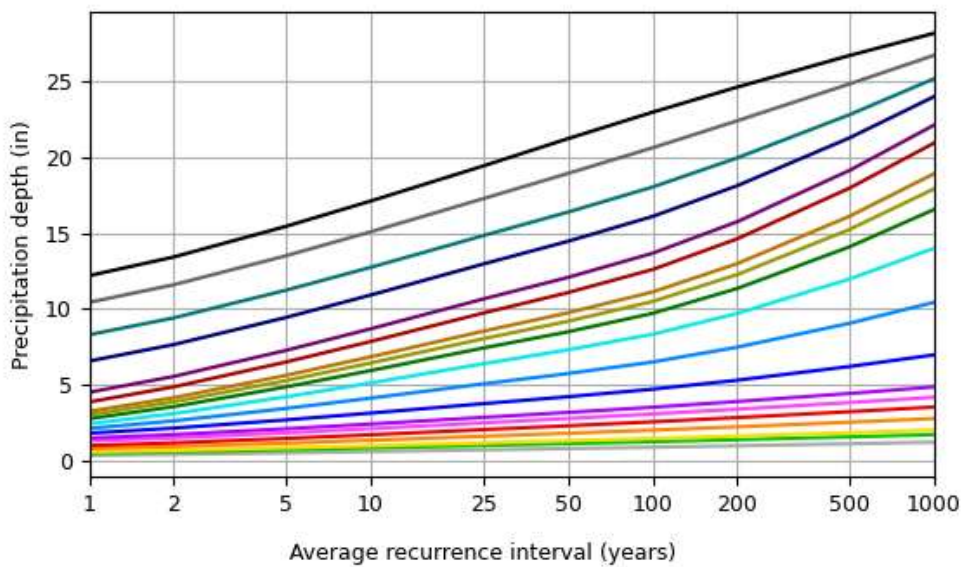
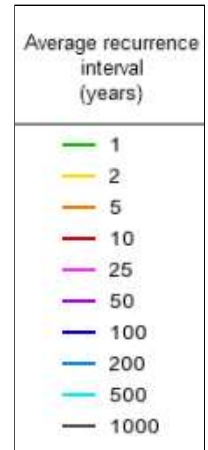
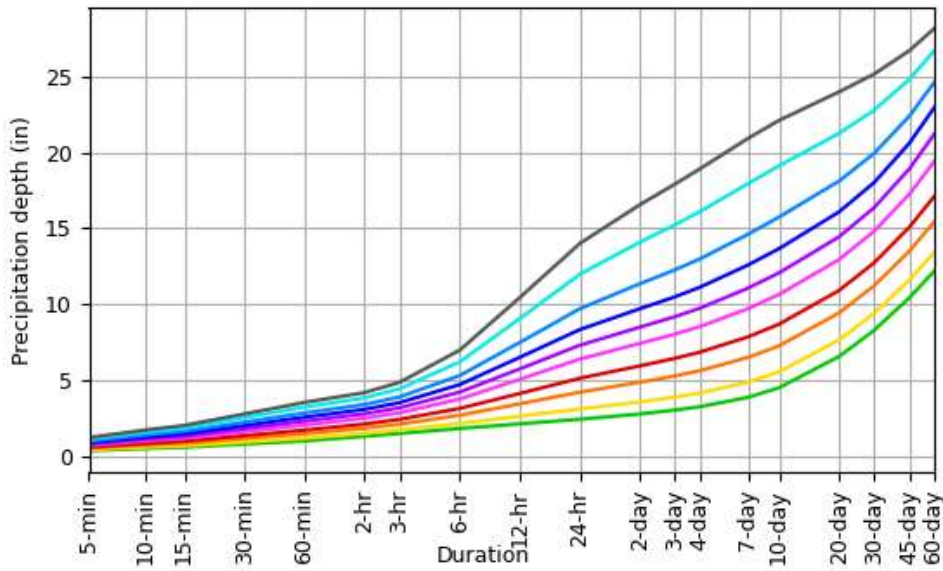
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.336 (0.259-0.438)	0.397 (0.306-0.518)	0.497 (0.382-0.650)	0.580 (0.443-0.763)	0.694 (0.513-0.952)	0.781 (0.566-1.09)	0.870 (0.612-1.26)	0.966 (0.649-1.44)	1.10 (0.711-1.70)	1.20 (0.761-1.90)
10-min	0.477 (0.367-0.620)	0.563 (0.433-0.734)	0.704 (0.540-0.920)	0.821 (0.626-1.08)	0.983 (0.727-1.35)	1.11 (0.802-1.55)	1.23 (0.867-1.79)	1.37 (0.919-2.04)	1.56 (1.01-2.41)	1.70 (1.08-2.69)
15-min	0.561 (0.432-0.730)	0.662 (0.510-0.863)	0.828 (0.635-1.08)	0.967 (0.738-1.27)	1.16 (0.855-1.59)	1.30 (0.942-1.82)	1.45 (1.02-2.10)	1.61 (1.08-2.40)	1.83 (1.18-2.83)	2.00 (1.27-3.17)
30-min	0.769 (0.592-1.00)	0.909 (0.700-1.18)	1.14 (0.874-1.49)	1.33 (1.02-1.75)	1.59 (1.18-2.18)	1.79 (1.30-2.51)	2.00 (1.40-2.90)	2.22 (1.49-3.31)	2.52 (1.63-3.90)	2.76 (1.75-4.37)
60-min	0.977 (0.753-1.27)	1.16 (0.890-1.51)	1.45 (1.11-1.90)	1.69 (1.29-2.23)	2.03 (1.50-2.78)	2.28 (1.66-3.20)	2.55 (1.79-3.69)	2.83 (1.90-4.22)	3.22 (2.08-4.97)	3.52 (2.23-5.57)
2-hr	1.28 (0.993-1.66)	1.49 (1.15-1.93)	1.82 (1.40-2.37)	2.10 (1.61-2.74)	2.48 (1.84-3.38)	2.77 (2.01-3.85)	3.06 (2.16-4.42)	3.38 (2.28-5.03)	3.82 (2.48-5.89)	4.17 (2.64-6.56)
3-hr	1.47 (1.14-1.90)	1.71 (1.32-2.20)	2.09 (1.61-2.71)	2.40 (1.85-3.13)	2.84 (2.12-3.86)	3.17 (2.31-4.41)	3.51 (2.49-5.07)	3.88 (2.62-5.76)	4.42 (2.88-6.80)	4.85 (3.08-7.62)
6-hr	1.80 (1.40-2.31)	2.13 (1.66-2.74)	2.67 (2.08-3.45)	3.12 (2.41-4.05)	3.74 (2.81-5.10)	4.20 (3.10-5.87)	4.70 (3.38-6.85)	5.29 (3.58-7.84)	6.20 (4.04-9.51)	6.97 (4.44-10.9)
12-hr	2.11 (1.65-2.69)	2.61 (2.04-3.34)	3.43 (2.68-4.40)	4.11 (3.19-5.31)	5.05 (3.82-6.90)	5.73 (4.27-8.05)	6.49 (4.75-9.58)	7.47 (5.07-11.0)	9.05 (5.91-13.9)	10.4 (6.68-16.3)
24-hr	2.41 (1.90-3.07)	3.09 (2.43-3.93)	4.20 (3.29-5.36)	5.11 (3.99-6.57)	6.38 (4.86-8.72)	7.29 (5.48-10.3)	8.32 (6.15-12.3)	9.70 (6.60-14.3)	12.0 (7.84-18.3)	14.0 (8.99-21.8)
2-day	2.75 (2.18-3.48)	3.55 (2.81-4.50)	4.85 (3.82-6.17)	5.93 (4.65-7.58)	7.41 (5.68-10.1)	8.48 (6.41-11.9)	9.70 (7.22-14.4)	11.3 (7.74-16.7)	14.1 (9.26-21.5)	16.6 (10.7-25.7)
3-day	3.01 (2.39-3.80)	3.87 (3.07-4.88)	5.27 (4.16-6.68)	6.43 (5.05-8.20)	8.02 (6.17-10.9)	9.18 (6.96-12.9)	10.5 (7.83-15.5)	12.3 (8.38-18.0)	15.2 (10.0-23.2)	17.9 (11.6-27.8)
4-day	3.24 (2.58-4.08)	4.14 (3.29-5.22)	5.61 (4.45-7.10)	6.84 (5.39-8.70)	8.52 (6.56-11.6)	9.74 (7.39-13.6)	11.1 (8.31-16.4)	13.0 (8.89-19.0)	16.1 (10.6-24.5)	18.9 (12.2-29.3)
7-day	3.86 (3.08-4.83)	4.86 (3.88-6.09)	6.49 (5.16-8.18)	7.85 (6.21-9.95)	9.72 (7.50-13.1)	11.1 (8.42-15.4)	12.6 (9.41-18.4)	14.6 (10.0-21.3)	18.0 (11.9-27.2)	21.0 (13.6-32.3)
10-day	4.49 (3.60-5.62)	5.54 (4.44-6.94)	7.26 (5.79-9.12)	8.68 (6.89-11.0)	10.6 (8.23-14.3)	12.1 (9.18-16.7)	13.7 (10.2-19.9)	15.8 (10.9-22.9)	19.1 (12.7-28.9)	22.1 (14.4-34.1)
20-day	6.55 (5.28-8.15)	7.65 (6.15-9.52)	9.43 (7.56-11.8)	10.9 (8.70-13.7)	13.0 (10.0-17.2)	14.5 (11.0-19.7)	16.1 (11.9-23.0)	18.1 (12.6-26.2)	21.3 (14.2-32.0)	24.0 (15.6-36.9)
30-day	8.29 (6.70-10.3)	9.41 (7.59-11.7)	11.2 (9.03-14.0)	12.7 (10.2-16.0)	14.8 (11.5-19.5)	16.4 (12.4-22.1)	18.0 (13.3-25.4)	20.0 (13.9-28.8)	22.8 (15.2-34.2)	25.2 (16.4-38.6)
45-day	10.4 (8.45-12.9)	11.6 (9.38-14.3)	13.5 (10.9-16.8)	15.1 (12.1-18.9)	17.3 (13.4-22.5)	18.9 (14.3-25.3)	20.6 (15.1-28.6)	22.4 (15.6-32.2)	24.8 (16.7-37.1)	26.7 (17.5-40.9)
60-day	12.2 (9.90-15.0)	13.4 (10.9-16.6)	15.4 (12.5-19.1)	17.1 (13.8-21.4)	19.4 (15.0-25.2)	21.2 (16.0-28.1)	23.0 (16.7-31.5)	24.6 (17.2-35.3)	26.7 (18.0-39.8)	28.2 (18.4-43.1)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

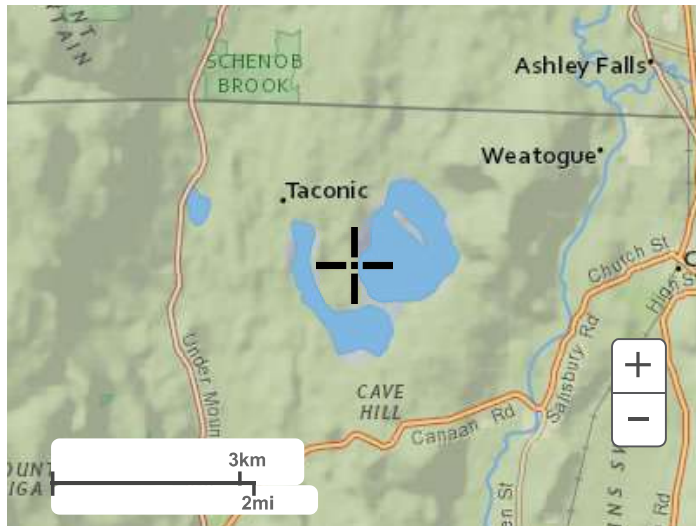
PDS-based depth-duration-frequency (DDF) curves
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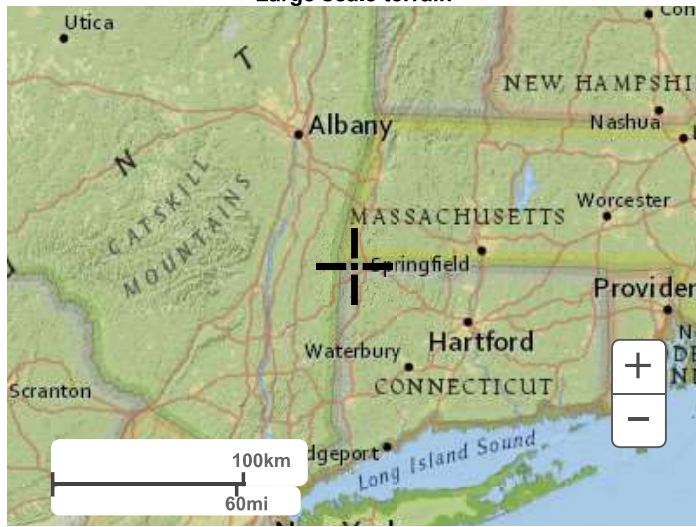
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Maps & aerials

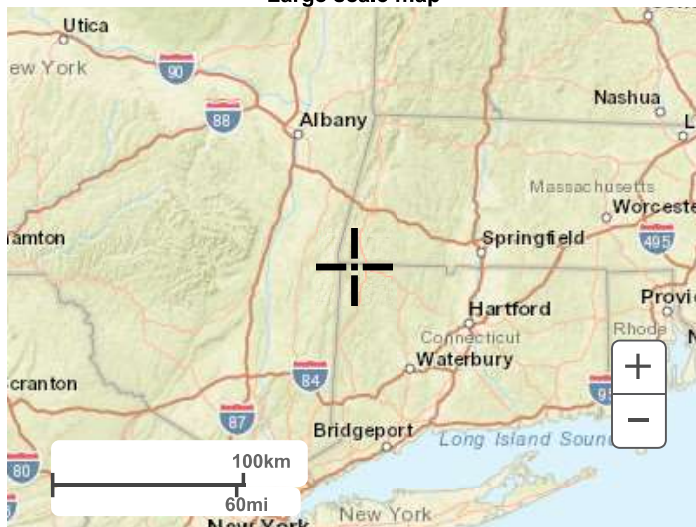
Small scale terrain



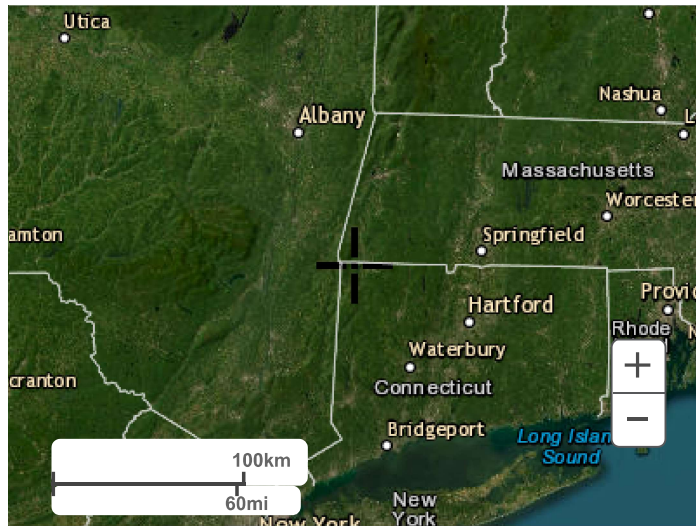
Large scale terrain



Large scale map



Large scale aerial



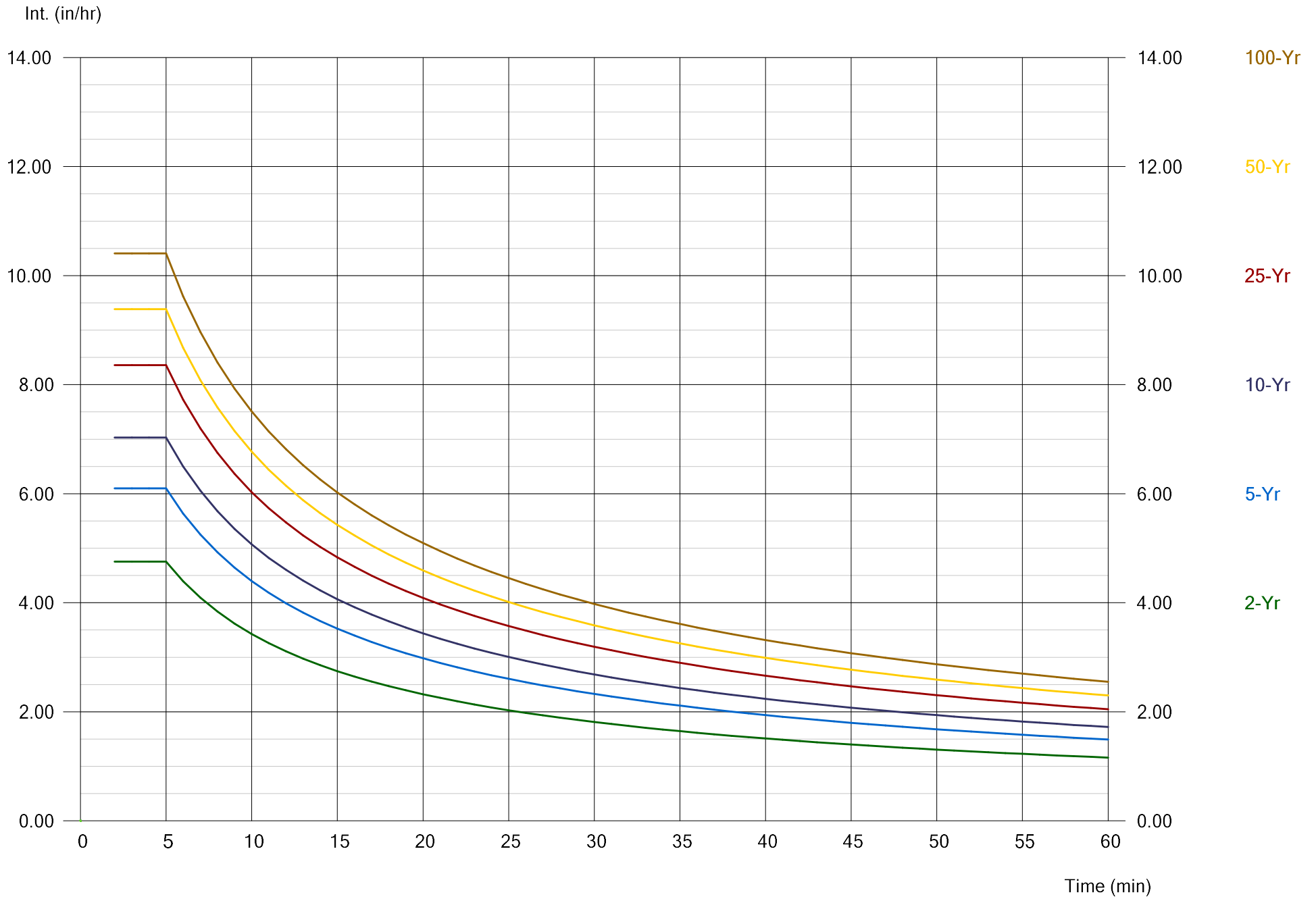
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[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

Storm Sewer IDF Curves

IDF file: 280 Between The Lakes Rd., Salisbury, CT.IDF





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EXHIBIT C

Runoff Coefficient Calculations

280 Between the Lakes Road | 2024.09.10 | 4010128.001 |



Runoff Coefficients per ConnDOT Drainage Manual - Chapter 6:

Table 6-3 - Recommended Coefficients for Pervious Areas:

Slope	NRCS Hydrologic Soil Group			
	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	Neighborhood Areas	Single Family Areas	Multi Units Detached	Multi Units Attached	Suburban	Residential (>1.2 Ac.)	Apartment Dwelling Areas	Light Industrial Areas	Heavy Industrial Areas	Parks & Cemetery	Playgrounds	Rail Yard Areas	Un-Improved Areas
0.70 - 0.95	0.50 - 0.70	0.30 - 0.50	0.40 - 0.60	0.60 - 0.75	0.25 - 0.40	0.30 - 0.45	0.50 - 0.70	0.50 - 0.80	0.60 - 0.90	0.10 - 0.25	0.20 - 0.40	0.20 - 0.40	0.10 - 0.30

Calculate Composite Runoff Coefficient and Adjust for Infrequent Storms:

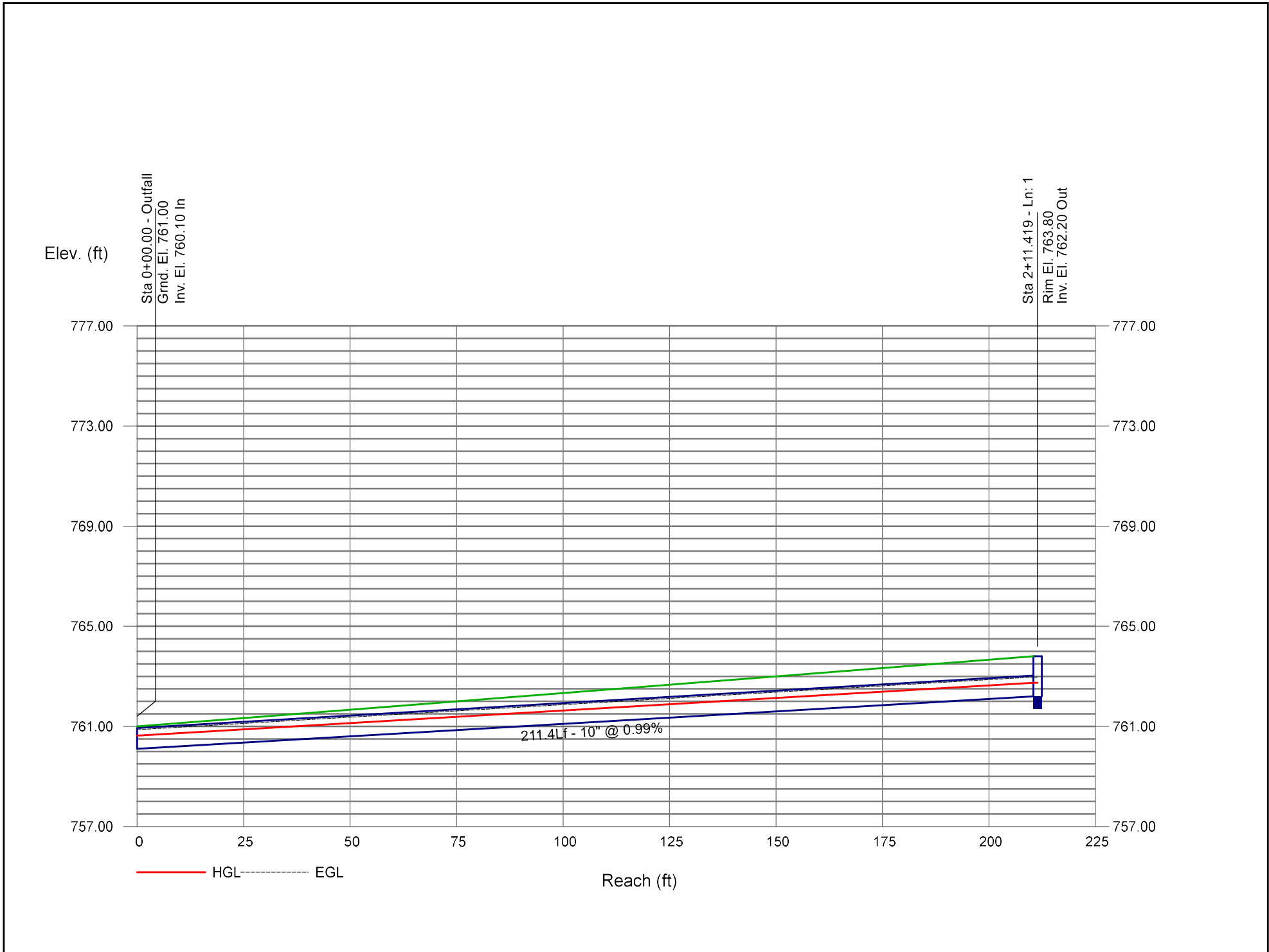
Area I.D.	Total Area (Acres)	Asphalt Streets (Acres) C =	Grass HSG B (Acres) C =	Woods HSG B (Acre) C =	Water (Acre) C =	Other (Acres) C =	Check S Area (Acres)	S A x C	Composite Runoff Coefficient C'	C _A - Runoff Coefficient Adjusted for Infrequent Storms					
										Recurrence Interval					
										2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
										C _F =	C _F =	C _F =	Max.C _F =	Max.C _F =	Max.C _F =
		0.90	0.17	0.22	0.90					1.00	1.00	1.00	1.10	1.20	1.25
Yard Drain	0.26	0.22	0.04				0.26	0.205	0.79	0.79	0.79	0.79	0.87	0.95	0.98
Rain Garden	0.43	0.05	0.38				0.43	0.110	0.25	0.25	0.25	0.25	0.28	0.31	0.32
Total	0.69	0.27	0.42	0.00	0.00	0.00	0.69	0.314	0.46	0.46	0.46	0.46	0.50	0.55	0.57
% Impervious		39%													

- (1) Area of individual cover types measured from plans
- (2) Runoff coefficient for individual cover types selected from reference tables above.
- (3) Composite Runoff Coefficient $C' = S(A \times C) / SA$
- (4) Frequency Factors (C_F) from ConnDOT Drainage Manual 2000 - Table 6-2
- (5) Per ConnDOT Drainage Manual 2000 Section 6.9.5: C_A = 1.00 where C' * C_F >= 1.00 C_A = C' * C_F where C' * C_F < 1.00
- (6) Watershed 1 will be directed away from the lake.
- (7) Watershed 5 does not drain to the stormwater basins.

EXHIBIT D

Storm Sewers Profile And Reports

Storm Sewer Profile



Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	211.4	0.26	0.26	0.79	0.21	0.21	5.0	5.0	7.0	1.44	2.36	3.91	10	0.99	760.10	762.20	760.63	762.74	761.00	763.80	Pipe from Yard Dr

Project File: 128.001 Barn and Driveway Yard Drain.stm

Number of lines: 1

Run Date: 9/10/2024

NOTES: Intensity = 30.48 / (Inlet time + 3.30) ^ 0.69; Return period = Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter						Inlet			Byp Line No	
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)		Depr (in)
1	Yard Drain	1.44	0.00	1.44	0.00	DrGrt	0.0	0.00	3.12	2.31	1.35	Sag	2.00	0.020	0.020	0.013	0.16	18.28	0.16	18.28	0.0	Off

Project File: 128.001 Barn and Driveway Yard Drain.stm Number of lines: 1 Run Date: 9/10/2024

NOTES: Inlet N-Values = 0.016; Intensity = 30.48 / (Inlet time + 3.30) ^ 0.69; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.



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EXHIBIT E

Water Quality Volume & Rain Garden Calculations

280 Between the Lakes Road | 2024.09.10 | 4010128.001 |



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	Area (acres)	Impervious	Coefficient	Volume (ac-ft)	Volume (CF)
Barn & Drive	0.69	39	0.46	0.0341	1,484

$GRV = ((D)(A)(I))/12$ 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)
					-
Barn & Drive	0.69	0.39	0.25	0.0056	245

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 Water Quality Basin For Barn & Driveway

Contour Elevation	Elevation Difference (ft)	Area (sq. ft.)	Volume (CF)	Cumulative Volume (CF)
758.8	-	988		
759.0	0.2	1,073	206	
760.0	1.0	1,512	1,293	1,499