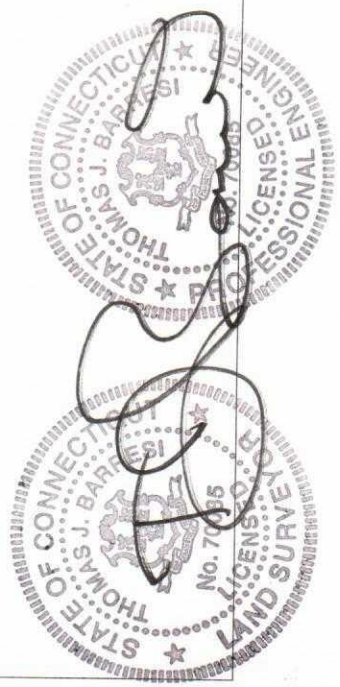
STORM WATER SYSTEM ANALYSIS

38 Russell Road
East Granby, Connecticut

Proposed Industrial Building



PREPARED BY

BARRESI ASSOCIATES LLC
1695 POQUONOCK AVENUE
WINDSOR, CONNECTICUT

Original Date: April 26, 2024

Russell Road Associates, LLC
Modification to Existing Site Plan

38 Russell Road
Site Description & Storm Water Narrative
(April 26, 2024)

The applicant, Russell Road Associates, LLC, is proposing to construct a new 90' x 90' industrial building with parking and loading docks at their existing industrial property located at 38 Russell Road in East Granby Connecticut.

The 38 Russell Road parcel was combined with 42 Russell Road; the total combined area of the subject property is 11.134 acres. The parcel is located in the CP-A Zone along the southerly side of Russell Road, immediately east of 18-20 Russell Road and west of 46 Russell Road. Vacant land exists on the opposite side of Russell Road. An existing gas main owned by Tennessee Gas Pipeline exists west of the property on land of others.

The northwesterly portion of the property is developed with a fenced in parking lot for tractor trailer boxes.

The northeasterly side of the property is developed with two small industrial/office buildings with related parking and infrastructure.

A third building and related parking was previously approved for future construction in this same area and is the subject of this site plan modification application.

The southerly portion remains undeveloped with mature woods.

There are Inland wetlands soils on the property. They exist along the southerly and westerly portions of the property. There is a total of 2.3 acres of inland wetlands soil on the property. The limits of the inland wetland soils in the area of the proposed development were flagged in the field by Tom Pietras of Pietras Environmental Group, LLC (PEG) and field located by our office. Other portions of the limit of inland wetlands were taken from plans by others.

Based on the National Resource Conservation Service on-site soils in the area of the proposed development mainly consist of Agawam Fine Sandy Loam, which are well drained soils. Tom Pietras of PEG found the same type of soils along with Ninigret Soil, also moderately well drained. Based on these records, the soil in area of the lawn is an A soil, the soil in the area of the woods and meadow are B soils.

The developed portion of the site is managed with a formal drainage system. The undeveloped portion drains naturally in a southerly direction. The westerly portion mostly slopes away from Russell Road in a southwesterly direction.

The existing facility is accessed off Russell Road as will the new building. The total building coverage (existing + proposed) is (12,364 + 8,100) = 20,464 sf = 4.2%.

The existing and proposed building are developed and approved with bituminous access drives, walks and parking areas. The existing and proposed impervious coverage (buildings, concrete & bituminous) is 95,529 sf = 19.7%

The storm water from the existing developed area is managed by an approved formal drainage system that utilizes infiltration chambers and discharge pipes to the Russell Road drainage. The formal drainage system exists and is functioning.

The new building and bituminous concrete areas will be managed partially by the existing infiltration chambers and a new detention basin.

The existing approved site plan allows for natural overland flow to the existing inland wetlands. The proposed site plan modification maintains the previously approved drainage patterns. The increased flow to the inland wetlands is managed through a new detention basin.

The rear portion of the new building and loading area will have sheet flow to the new detention basin. The majority of the stormwater run-off generated by this area will be collected and managed by a new forebay and detention basin. The detention basin will have a capped 12" HDPE outlet pipe with an orifice to control the rate of flow trough the pipe. Stormwater shall be retained in the forebay for initial sediment collection, and infiltration. The detention basin will have an emergency overflow weir to protect against the possibility of stormwater backing up into the proposed parking area.

The attached study utilizes SCS TR20 methodology and HYDROCADD software to determine the rates of storm water flow pre-development and post-development conditions. The drainage areas considered in this study include the areas draining to the existing catch basin in Russell Road, Russell Road and the existing inland wetlands. A computer model of existing and proposed conditions was created and the 2, 5, 10, 25, 50 and 100 year design storm events and a 1" Rainfall event were routed through the model to determine the pre-development and post-development rates of storm water flows to the existing catch basin, Russell Road and the inland wetlands. The results are as follows:

Detention Basin

Storm	Peak Storage Elev. (Ft)	Spillway Elev. (Ft)	Spillway Freeboard (Ft)
2	149.7	151.5	1.80
5	150.1	151.5	1.40
10	150.4	151.5	1.10
25	150.8	151.5	0.70
50	151.1	151.5	0.40
100	151.4	151.5	0.10

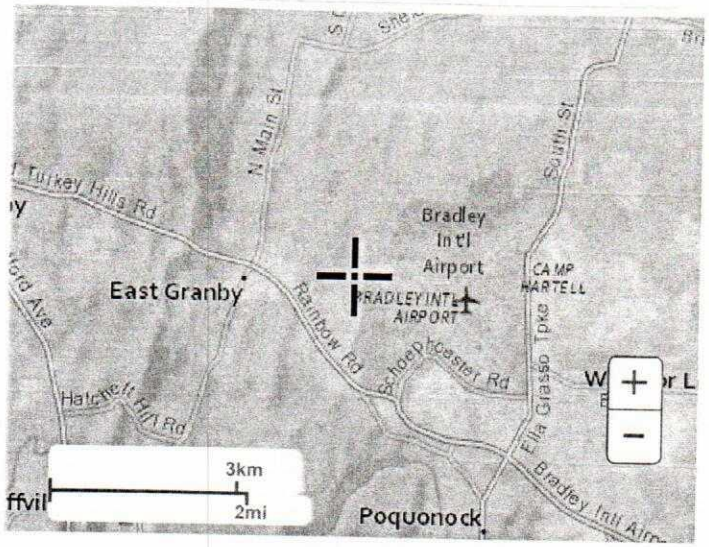
Flow to Wetlands

Storm	Previously Approved Flow (cfs)	Proposed Flow (cfs)	Flow Difference (cfs)
2	0.56	0.29	-0.27
5	1.42	0.61	-0.81
10	2.26	0.88	-1.38
25	3.56	1.42	-2.14
50	4.56	1.82	-2.74
100	5.74	2.41	-3.33

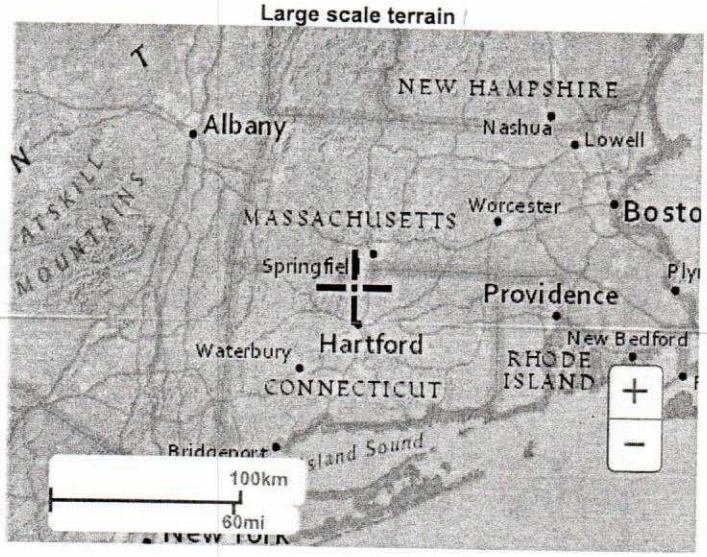
CONCLUSIONS:

The post development flow to the wetlands shows no increase in the flow rates compared to what was originally approved. The proposed detention basin and controlled outlet is adequately sized to manage the run-off from the proposed development.

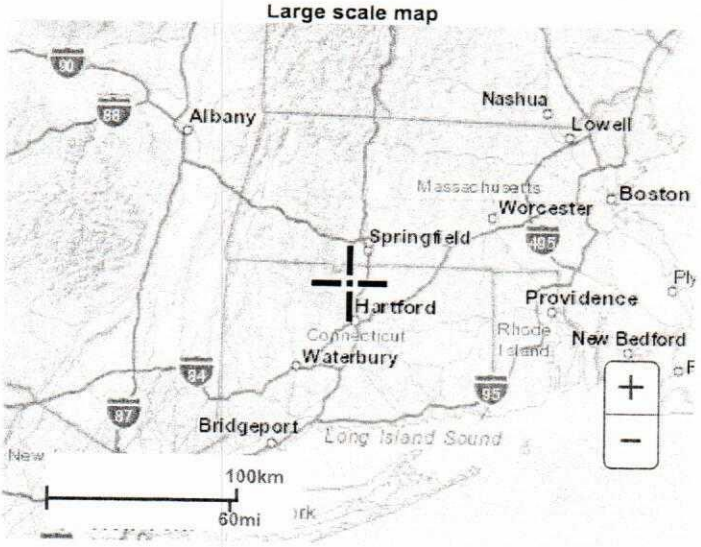
In summary, the storm water run-off generated by the proposed development is adequately managed by the proposed formal detention basin while maintaining satisfactory low flow and low volumes of run-off to the existing catch basin and Russell Road.



Large scale terrain



Large scale map



38 RUSSELL ROAD, EAST GRANBY, CONN.

Latitude: 41.9418 Longitude: -72.7052

NOAA Atlas 14, Volume 10, Version 3
Location name: East Granby, Connecticut, USA*
Latitude: 41.9418°, Longitude: -72.7052°
Elevation: 157 ft**
* source: ESRI Maps
** source: USGS

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	0.348 (0.266-0.453)	0.417 (0.319-0.543)	0.530 (0.404-0.693)	0.623 (0.472-0.819)	0.751 (0.553-1.03)	0.848 (0.613-1.19)	0.949 (0.669-1.38)	1.06 (0.712-1.59)	1.22 (0.792-1.90)	1.36 (0.859-2.14)
10-min	0.493 (0.377-0.642)	0.591 (0.452-0.770)	0.750 (0.572-0.982)	0.882 (0.669-1.16)	1.06 (0.784-1.46)	1.20 (0.868-1.69)	1.34 (0.947-1.96)	1.51 (1.01-2.25)	1.74 (1.12-2.68)	1.92 (1.22-3.04)
15-min	0.580 (0.444-0.755)	0.695 (0.531-0.906)	0.883 (0.673-1.16)	1.04 (0.787-1.36)	1.25 (0.922-1.72)	1.41 (1.02-1.99)	1.58 (1.11-2.31)	1.77 (1.19-2.64)	2.04 (1.32-3.16)	2.26 (1.43-3.57)
30-min	0.779 (0.596-1.01)	0.939 (0.718-1.22)	1.20 (0.915-1.57)	1.42 (1.07-1.86)	1.71 (1.26-2.36)	1.94 (1.40-2.72)	2.17 (1.53-3.17)	2.43 (1.63-3.63)	2.80 (1.82-4.34)	3.11 (1.97-4.91)
60-min	0.978 (0.748-1.27)	1.18 (0.904-1.54)	1.52 (1.16-1.98)	1.79 (1.36-2.36)	2.17 (1.60-2.99)	2.46 (1.78-3.46)	2.76 (1.94-4.03)	3.10 (2.07-4.62)	3.57 (2.31-5.52)	3.96 (2.50-6.25)
2-hr	1.26 (0.972-1.63)	1.52 (1.17-1.96)	1.94 (1.48-2.51)	2.28 (1.74-2.98)	2.76 (2.05-3.78)	3.12 (2.27-4.36)	3.49 (2.48-5.10)	3.94 (2.64-5.84)	4.58 (2.97-7.06)	5.13 (3.26-8.06)
3-hr	1.45 (1.12-1.87)	1.75 (1.35-2.26)	2.23 (1.72-2.89)	2.63 (2.01-3.42)	3.18 (2.37-4.35)	3.59 (2.63-5.02)	4.03 (2.88-5.88)	4.55 (3.07-6.74)	5.34 (3.47-8.20)	6.01 (3.82-9.41)
6-hr	1.82 (1.42-2.33)	2.21 (1.72-2.83)	2.84 (2.20-3.66)	3.37 (2.60-4.36)	4.09 (3.07-5.56)	4.62 (3.41-6.45)	5.20 (3.76-7.58)	5.92 (4.00-8.71)	7.02 (4.58-10.7)	7.97 (5.09-12.4)
12-hr	2.23 (1.74-2.83)	2.74 (2.14-3.49)	3.58 (2.79-4.58)	4.28 (3.32-5.50)	5.24 (3.96-7.10)	5.94 (4.42-8.26)	6.72 (4.89-9.77)	7.69 (5.22-11.3)	9.22 (6.03-14.0)	10.6 (6.75-16.3)
24-hr	2.58 (2.04-3.26)	3.23 (2.55-4.09)	4.30 (3.37-5.45)	5.18 (4.04-6.61)	6.40 (4.87-8.64)	7.28 (5.46-10.1)	8.27 (6.08-12.0)	9.55 (6.50-13.9)	11.6 (7.60-17.5)	13.4 (8.60-20.6)
2-day	2.87 (2.28-3.60)	3.65 (2.89-4.58)	4.92 (3.89-6.21)	5.98 (4.70-7.58)	7.43 (5.70-10.0)	8.49 (6.41-11.8)	9.68 (7.19-14.1)	11.3 (7.69-16.3)	13.9 (9.13-20.8)	16.2 (10.5-24.8)
3-day	3.13 (2.50-3.91)	3.99 (3.18-4.99)	5.39 (4.28-6.77)	6.56 (5.17-8.28)	8.16 (6.28-10.9)	9.31 (7.07-12.9)	10.6 (7.93-15.5)	12.4 (8.48-17.9)	15.3 (10.1-22.9)	18.0 (11.6-27.4)
4-day	3.38 (2.70-4.21)	4.30 (3.43-5.36)	5.81 (4.62-7.27)	7.05 (5.58-8.88)	8.77 (6.77-11.7)	10.0 (7.62-13.8)	11.4 (8.54-16.6)	13.3 (9.13-19.2)	16.5 (10.9-24.6)	19.3 (12.5-29.4)
7-day	4.07 (3.27-5.05)	5.12 (4.11-6.36)	6.84 (5.47-8.52)	8.27 (6.57-10.4)	10.2 (7.93-13.6)	11.7 (8.89-15.9)	13.3 (9.94-19.1)	15.4 (10.6-22.1)	19.0 (12.5-28.1)	22.2 (14.3-33.5)
10-day	4.76 (3.83-5.87)	5.88 (4.73-7.26)	7.70 (6.18-9.55)	9.22 (7.35-11.5)	11.3 (8.79-15.0)	12.8 (9.80-17.4)	14.5 (10.9-20.8)	16.8 (11.6-23.9)	20.5 (13.6-30.2)	23.8 (15.4-35.8)
20-day	6.88 (5.58-8.43)	8.06 (6.53-9.88)	9.98 (8.06-12.3)	11.6 (9.29-14.3)	13.8 (10.7-18.0)	15.4 (11.8-20.6)	17.2 (12.8-24.0)	19.4 (13.5-27.4)	22.9 (15.3-33.6)	26.0 (16.9-38.9)
30-day	8.68 (7.07-10.6)	9.88 (8.04-12.1)	11.8 (9.59-14.5)	13.5 (10.8-16.6)	15.7 (12.2-20.3)	17.3 (13.2-23.0)	19.1 (14.2-26.4)	21.2 (14.8-29.9)	24.4 (16.3-35.6)	27.1 (17.6-40.4)
45-day	10.9 (8.95-13.3)	12.2 (9.94-14.8)	14.2 (11.5-17.3)	15.9 (12.8-19.5)	18.2 (14.2-23.2)	19.9 (15.2-26.0)	21.7 (16.0-29.4)	23.7 (16.6-33.1)	26.3 (17.7-38.2)	28.4 (18.6-42.3)
60-day	12.8 (10.5-15.6)	14.1 (11.6-17.1)	16.2 (13.2-19.8)	18.0 (14.6-22.0)	20.4 (15.9-25.9)	22.2 (16.9-28.8)	24.1 (17.6-32.2)	25.8 (18.1-36.0)	28.1 (18.9-40.6)	29.7 (19.4-44.0)

[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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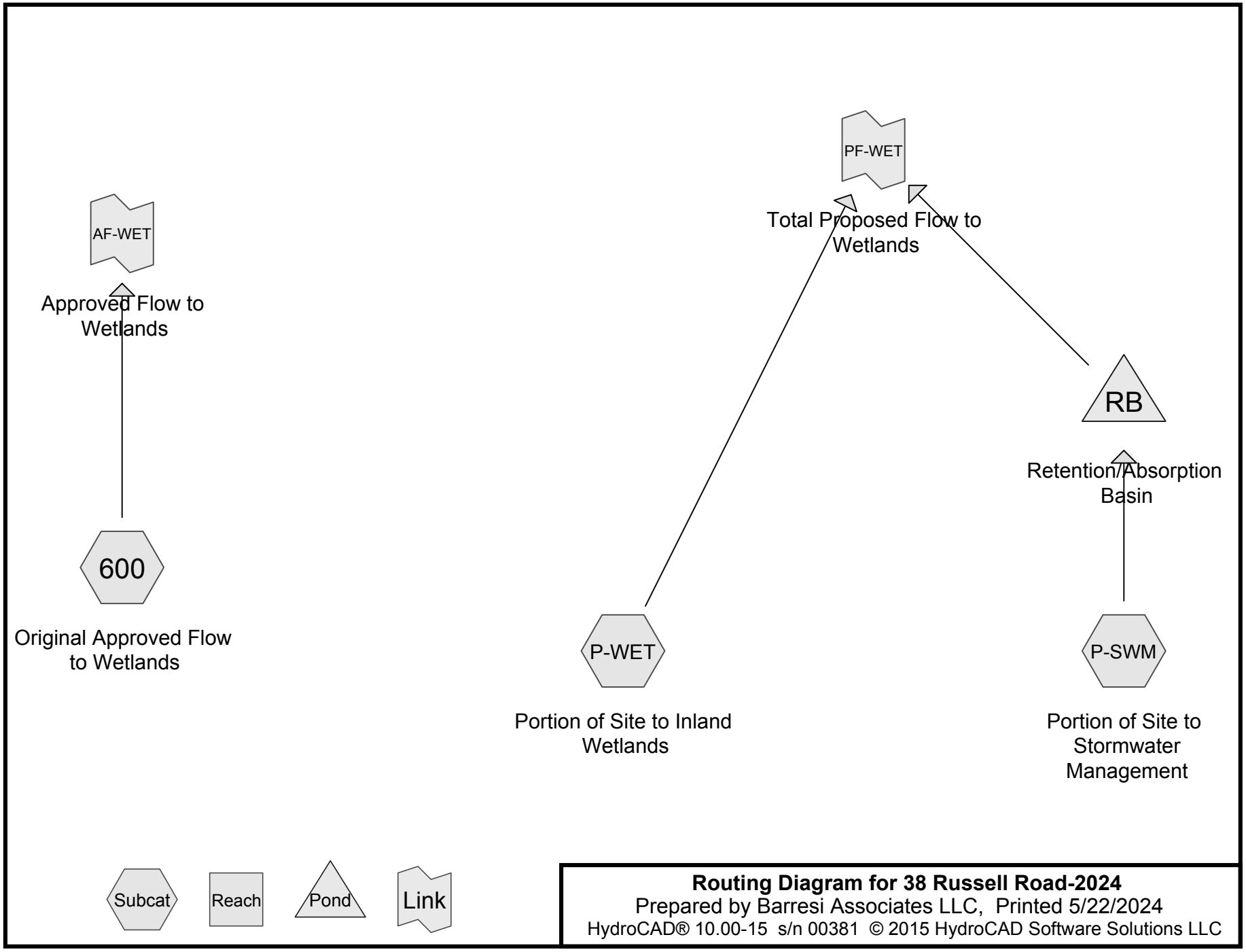
PF graphical



Routing Diagram for 38 Russell Road-2024

Prepared by Barresi Associates LLC, Printed 5/22/2024

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
460	98	Bituminous/Conc. (P-WET)
57,599	57	LAWN, LANDSCAPING & WEEDS (600)
31,252	40	Lawn (P-SWM, P-WET)
12,488	98	Pavement (P-SWM)
9,178	98	ROOF & PAVEMENT (600)
4,050	98	Roof (P-SWM)
11,850	60	Woods (P-WET)
126,877	**62**	**TOTAL AREA**

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 600: Original Approved Runoff Area=66,777 sf 13.74% Impervious Runoff Depth=0.00"
Flow Length=330' Slope=0.0320 '/' Tc=11.7 min CN=63 Runoff=0.00 cfs 0 cf

Subcatchment P-SWM: Portion of Site to Runoff Area=27,100 sf 61.03% Impervious Runoff Depth=0.03"
Flow Length=240' Slope=0.0367 '/' Tc=6.1 min CN=75 Runoff=0.00 cfs 68 cf

Subcatchment P-WET: Portion of Site to Runoff Area=33,000 sf 1.39% Impervious Runoff Depth=0.00"
Flow Length=180' Slope=0.0500 '/' Tc=8.5 min CN=48 Runoff=0.00 cfs 0 cf

Pond RB: Retention/Absorption Basin Peak Elev=149.08' Storage=68 cf Inflow=0.00 cfs 68 cf
Outflow=0.00 cfs 0 cf

Link AF-WET: Approved Flow to Wetlands Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link PF-WET: Total Proposed Flow to Wetlands Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Total Runoff Area = 126,877 sf Runoff Volume = 68 cf Average Runoff Depth = 0.01"
79.37% Pervious = 100,701 sf 20.63% Impervious = 26,176 sf

Summary for Subcatchment 600: Original Approved Flow to Wetlands

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall Event Rainfall=1.00"

	Area (sf)	CN	Description
*	9,178	98	ROOF & PAVEMENT
*	57,599	57	LAWN, LANDSCAPING & WEEDS
	66,777	63	Weighted Average
	57,599		86.26% Pervious Area
	9,178		13.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	330	0.0320	0.47		**Lag/CN Method,**

Summary for Subcatchment P-SWM: Portion of Site to Stormwater Management

Runoff = 0.00 cfs @ 13.78 hrs, Volume= 68 cf, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall Event Rainfall=1.00"

	Area (sf)	CN	Description
*	4,050	98	Roof
*	12,488	98	Pavement
*	10,562	40	Lawn
	27,100	75	Weighted Average
	10,562		38.97% Pervious Area
	16,538		61.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	240	0.0367	0.65		**Lag/CN Method,**

Summary for Subcatchment P-WET: Portion of Site to Inland Wetlands

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 1" Rainfall Event Rainfall=1.00"

	Area (sf)	CN	Description
*	460	98	Bituminous/Conc.
*	11,850	60	Woods
*	20,690	40	Lawn
	33,000	48	Weighted Average
	32,540		98.61% Pervious Area
	460		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	180	0.0500	0.35		**Lag/CN Method,**

Summary for Pond RB: Retention/Absorption Basin

Inflow Area = 27,100 sf, 61.03% Impervious, Inflow Depth = 0.03" for 1" Rainfall Event
Inflow = 0.00 cfs @ 13.78 hrs, Volume= 68 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 149.08' @ 24.36 hrs Surf.Area= 880 sf Storage= 68 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	5,560 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	830	0	0
150.00	1,450	1,140	1,140
151.00	2,200	1,825	2,965
152.00	2,990	2,595	5,560

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**5.0" Vert. Orifice cut in PVC Cap** C= 0.600

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=149.00' (Free Discharge)
↑—1=Orifice cut in PVC Cap (Controls 0.00 cfs)

Summary for Link AF-WET: Approved Flow to Wetlands

Inflow Area = 66,777 sf, 13.74% Impervious, Inflow Depth = 0.00" for 1" Rainfall Event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link PF-WET: Total Proposed Flow to Wetlands

Inflow Area = 60,100 sf, 28.28% Impervious, Inflow Depth = 0.00" for 1" Rainfall Event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 600: Original Approved Runoff Area=66,777 sf 13.74% Impervious Runoff Depth=0.53"
Flow Length=330' Slope=0.0320 '/' Tc=11.7 min CN=63 Runoff=0.56 cfs 2,965 cf

Subcatchment P-SWM: Portion of Site to Runoff Area=27,100 sf 61.03% Impervious Runoff Depth=1.11"
Flow Length=240' Slope=0.0367 '/' Tc=6.1 min CN=75 Runoff=0.78 cfs 2,516 cf

Subcatchment P-WET: Portion of Site to Runoff Area=33,000 sf 1.39% Impervious Runoff Depth=0.10"
Flow Length=180' Slope=0.0500 '/' Tc=8.5 min CN=48 Runoff=0.01 cfs 261 cf

Pond RB: Retention/Absorption Basin Peak Elev=149.71' Storage=741 cf Inflow=0.78 cfs 2,516 cf
Outflow=0.29 cfs 2,231 cf

Link AF-WET: Approved Flow to Wetlands Inflow=0.56 cfs 2,965 cf
Primary=0.56 cfs 2,965 cf

Link PF-WET: Total Proposed Flow to Wetlands Inflow=0.29 cfs 2,492 cf
Primary=0.29 cfs 2,492 cf

Total Runoff Area = 126,877 sf Runoff Volume = 5,743 cf Average Runoff Depth = 0.54"
79.37% Pervious = 100,701 sf 20.63% Impervious = 26,176 sf

Summary for Subcatchment 600: Original Approved Flow to Wetlands

Runoff = 0.56 cfs @ 12.21 hrs, Volume= 2,965 cf, Depth= 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Design Storm Rainfall=3.23"

	Area (sf)	CN	Description
*	9,178	98	ROOF & PAVEMENT
*	57,599	57	LAWN, LANDSCAPING & WEEDS
	66,777	63	Weighted Average
	57,599		86.26% Pervious Area
	9,178		13.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	330	0.0320	0.47		**Lag/CN Method,**

Summary for Subcatchment P-SWM: Portion of Site to Stormwater Management

Runoff = 0.78 cfs @ 12.10 hrs, Volume= 2,516 cf, Depth= 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Design Storm Rainfall=3.23"

	Area (sf)	CN	Description
*	4,050	98	Roof
*	12,488	98	Pavement
*	10,562	40	Lawn
	27,100	75	Weighted Average
	10,562		38.97% Pervious Area
	16,538		61.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	240	0.0367	0.65		**Lag/CN Method,**

Summary for Subcatchment P-WET: Portion of Site to Inland Wetlands

Runoff = 0.01 cfs @ 13.82 hrs, Volume= 261 cf, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Design Storm Rainfall=3.23"

	Area (sf)	CN	Description
*	460	98	Bituminous/Conc.
*	11,850	60	Woods
*	20,690	40	Lawn
	33,000	48	Weighted Average
	32,540		98.61% Pervious Area
	460		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	180	0.0500	0.35		**Lag/CN Method,**

Summary for Pond RB: Retention/Absorption Basin

Inflow Area = 27,100 sf, 61.03% Impervious, Inflow Depth = 1.11" for 2 Year Design Sto
Inflow = 0.78 cfs @ 12.10 hrs, Volume= 2,516 cf
Outflow = 0.29 cfs @ 12.41 hrs, Volume= 2,231 cf, Atten= 62%, Lag= 19.0 min
Primary = 0.29 cfs @ 12.41 hrs, Volume= 2,231 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 149.71' @ 12.41 hrs Surf.Area= 1,268 sf Storage= 741 cf

Plug-Flow detention time= 116.8 min calculated for 2,231 cf (89% of inflow)
Center-of-Mass det. time= 62.9 min (921.3 - 858.3)

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	5,560 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	830	0	0
150.00	1,450	1,140	1,140
151.00	2,200	1,825	2,965
152.00	2,990	2,595	5,560

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**5.0" Vert. Orifice cut in PVC Cap** C= 0.600

Primary OutFlow Max=0.29 cfs @ 12.41 hrs HW=149.71' (Free Discharge)
↑—1=Orifice cut in PVC Cap (Orifice Controls 0.29 cfs @ 2.17 fps)

Summary for Link AF-WET: Approved Flow to Wetlands

Inflow Area = 66,777 sf, 13.74% Impervious, Inflow Depth = 0.53" for 2 Year Design Sto
Inflow = 0.56 cfs @ 12.21 hrs, Volume= 2,965 cf
Primary = 0.56 cfs @ 12.21 hrs, Volume= 2,965 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link PF-WET: Total Proposed Flow to Wetlands

Inflow Area = 60,100 sf, 28.28% Impervious, Inflow Depth > 0.50" for 2 Year Design Sto
Inflow = 0.29 cfs @ 12.43 hrs, Volume= 2,492 cf
Primary = 0.29 cfs @ 12.43 hrs, Volume= 2,492 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 600: Original Approved Runoff Area=66,777 sf 13.74% Impervious Runoff Depth=1.09"
Flow Length=330' Slope=0.0320 '/' Tc=11.7 min CN=63 Runoff=1.42 cfs 6,041 cf

Subcatchment P-SWM: Portion of Site to Runoff Area=27,100 sf 61.03% Impervious Runoff Depth=1.89"
Flow Length=240' Slope=0.0367 '/' Tc=6.1 min CN=75 Runoff=1.36 cfs 4,279 cf

Subcatchment P-WET: Portion of Site to Runoff Area=33,000 sf 1.39% Impervious Runoff Depth=0.35"
Flow Length=180' Slope=0.0500 '/' Tc=8.5 min CN=48 Runoff=0.11 cfs 965 cf

Pond RB: Retention/Absorption Basin Peak Elev=150.09' Storage=1,269 cf Inflow=1.36 cfs 4,279 cf
Outflow=0.50 cfs 3,993 cf

Link AF-WET: Approved Flow to Wetlands Inflow=1.42 cfs 6,041 cf
Primary=1.42 cfs 6,041 cf

Link PF-WET: Total Proposed Flow to Wetlands Inflow=0.61 cfs 4,958 cf
Primary=0.61 cfs 4,958 cf

Total Runoff Area = 126,877 sf Runoff Volume = 11,285 cf Average Runoff Depth = 1.07"
79.37% Pervious = 100,701 sf 20.63% Impervious = 26,176 sf

Summary for Subcatchment 600: Original Approved Flow to Wetlands

Runoff = 1.42 cfs @ 12.18 hrs, Volume= 6,041 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 Year Design Storm Rainfall=4.30"

	Area (sf)	CN	Description
*	9,178	98	ROOF & PAVEMENT
*	57,599	57	LAWN, LANDSCAPING & WEEDS
	66,777	63	Weighted Average
	57,599		86.26% Pervious Area
	9,178		13.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	330	0.0320	0.47		**Lag/CN Method,**

Summary for Subcatchment P-SWM: Portion of Site to Stormwater Management

Runoff = 1.36 cfs @ 12.09 hrs, Volume= 4,279 cf, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 Year Design Storm Rainfall=4.30"

	Area (sf)	CN	Description
*	4,050	98	Roof
*	12,488	98	Pavement
*	10,562	40	Lawn
	27,100	75	Weighted Average
	10,562		38.97% Pervious Area
	16,538		61.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	240	0.0367	0.65		**Lag/CN Method,**

Summary for Subcatchment P-WET: Portion of Site to Inland Wetlands

Runoff = 0.11 cfs @ 12.36 hrs, Volume= 965 cf, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 5 Year Design Storm Rainfall=4.30"

	Area (sf)	CN	Description
*	460	98	Bituminous/Conc.
*	11,850	60	Woods
*	20,690	40	Lawn
	33,000	48	Weighted Average
	32,540		98.61% Pervious Area
	460		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	180	0.0500	0.35		**Lag/CN Method,**

Summary for Pond RB: Retention/Absorption Basin

Inflow Area = 27,100 sf, 61.03% Impervious, Inflow Depth = 1.89" for 5 Year Design Sto
Inflow = 1.36 cfs @ 12.09 hrs, Volume= 4,279 cf
Outflow = 0.50 cfs @ 12.40 hrs, Volume= 3,993 cf, Atten= 63%, Lag= 18.2 min
Primary = 0.50 cfs @ 12.40 hrs, Volume= 3,993 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 150.09' @ 12.40 hrs Surf.Area= 1,515 sf Storage= 1,269 cf

Plug-Flow detention time= 84.8 min calculated for 3,993 cf (93% of inflow)
Center-of-Mass det. time= 49.9 min (892.4 - 842.5)

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	5,560 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	830	0	0
150.00	1,450	1,140	1,140
151.00	2,200	1,825	2,965
152.00	2,990	2,595	5,560

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**5.0" Vert. Orifice cut in PVC Cap** C= 0.600

Primary OutFlow Max=0.50 cfs @ 12.40 hrs HW=150.09' (Free Discharge)
↑—1=Orifice cut in PVC Cap (Orifice Controls 0.50 cfs @ 3.66 fps)

Summary for Link AF-WET: Approved Flow to Wetlands

Inflow Area = 66,777 sf, 13.74% Impervious, Inflow Depth = 1.09" for 5 Year Design Sto
Inflow = 1.42 cfs @ 12.18 hrs, Volume= 6,041 cf
Primary = 1.42 cfs @ 12.18 hrs, Volume= 6,041 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link PF-WET: Total Proposed Flow to Wetlands

Inflow Area = 60,100 sf, 28.28% Impervious, Inflow Depth > 0.99" for 5 Year Design Sto
Inflow = 0.61 cfs @ 12.38 hrs, Volume= 4,958 cf
Primary = 0.61 cfs @ 12.38 hrs, Volume= 4,958 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 600: Original Approved Runoff Area=66,777 sf 13.74% Impervious Runoff Depth=1.62"
Flow Length=330' Slope=0.0320 '/' Tc=11.7 min CN=63 Runoff=2.26 cfs 9,038 cf

Subcatchment P-SWM: Portion of Site to Runoff Area=27,100 sf 61.03% Impervious Runoff Depth=2.60"
Flow Length=240' Slope=0.0367 '/' Tc=6.1 min CN=75 Runoff=1.88 cfs 5,863 cf

Subcatchment P-WET: Portion of Site to Runoff Area=33,000 sf 1.39% Impervious Runoff Depth=0.66"
Flow Length=180' Slope=0.0500 '/' Tc=8.5 min CN=48 Runoff=0.30 cfs 1,803 cf

Pond RB: Retention/Absorption Basin Peak Elev=150.41' Storage=1,791 cf Inflow=1.88 cfs 5,863 cf
Outflow=0.62 cfs 5,576 cf

Link AF-WET: Approved Flow to Wetlands Inflow=2.26 cfs 9,038 cf
Primary=2.26 cfs 9,038 cf

Link PF-WET: Total Proposed Flow to Wetlands Inflow=0.88 cfs 7,379 cf
Primary=0.88 cfs 7,379 cf

Total Runoff Area = 126,877 sf Runoff Volume = 16,704 cf Average Runoff Depth = 1.58"
79.37% Pervious = 100,701 sf 20.63% Impervious = 26,176 sf

Summary for Subcatchment 600: Original Approved Flow to Wetlands

Runoff = 2.26 cfs @ 12.18 hrs, Volume= 9,038 cf, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Design Storm Rainfall=5.18"

	Area (sf)	CN	Description
*	9,178	98	ROOF & PAVEMENT
*	57,599	57	LAWN, LANDSCAPING & WEEDS
	66,777	63	Weighted Average
	57,599		86.26% Pervious Area
	9,178		13.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	330	0.0320	0.47		**Lag/CN Method,**

Summary for Subcatchment P-SWM: Portion of Site to Stormwater Management

Runoff = 1.88 cfs @ 12.09 hrs, Volume= 5,863 cf, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Design Storm Rainfall=5.18"

	Area (sf)	CN	Description
*	4,050	98	Roof
*	12,488	98	Pavement
*	10,562	40	Lawn
	27,100	75	Weighted Average
	10,562		38.97% Pervious Area
	16,538		61.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	240	0.0367	0.65		**Lag/CN Method,**

Summary for Subcatchment P-WET: Portion of Site to Inland Wetlands

Runoff = 0.30 cfs @ 12.17 hrs, Volume= 1,803 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Design Storm Rainfall=5.18"

	Area (sf)	CN	Description
*	460	98	Bituminous/Conc.
*	11,850	60	Woods
*	20,690	40	Lawn
	33,000	48	Weighted Average
	32,540		98.61% Pervious Area
	460		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	180	0.0500	0.35		**Lag/CN Method,**

Summary for Pond RB: Retention/Absorption Basin

Inflow Area = 27,100 sf, 61.03% Impervious, Inflow Depth = 2.60" for 10 Year Design St
Inflow = 1.88 cfs @ 12.09 hrs, Volume= 5,863 cf
Outflow = 0.62 cfs @ 12.42 hrs, Volume= 5,576 cf, Atten= 67%, Lag= 19.7 min
Primary = 0.62 cfs @ 12.42 hrs, Volume= 5,576 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 150.41' @ 12.42 hrs Surf.Area= 1,755 sf Storage= 1,791 cf

Plug-Flow detention time= 74.3 min calculated for 5,576 cf (95% of inflow)
Center-of-Mass det. time= 47.6 min (880.9 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	5,560 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	830	0	0
150.00	1,450	1,140	1,140
151.00	2,200	1,825	2,965
152.00	2,990	2,595	5,560

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**5.0" Vert. Orifice cut in PVC Cap** C= 0.600

Primary OutFlow Max=0.62 cfs @ 12.42 hrs HW=150.41' (Free Discharge)
↑—1=Orifice cut in PVC Cap (Orifice Controls 0.62 cfs @ 4.56 fps)

Summary for Link AF-WET: Approved Flow to Wetlands

Inflow Area = 66,777 sf, 13.74% Impervious, Inflow Depth = 1.62" for 10 Year Design St
Inflow = 2.26 cfs @ 12.18 hrs, Volume= 9,038 cf
Primary = 2.26 cfs @ 12.18 hrs, Volume= 9,038 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link PF-WET: Total Proposed Flow to Wetlands

Inflow Area = 60,100 sf, 28.28% Impervious, Inflow Depth > 1.47" for 10 Year Design St
Inflow = 0.88 cfs @ 12.29 hrs, Volume= 7,379 cf
Primary = 0.88 cfs @ 12.29 hrs, Volume= 7,379 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 600: Original Approved Runoff Area=66,777 sf 13.74% Impervious Runoff Depth=2.46"
Flow Length=330' Slope=0.0320 '/' Tc=11.7 min CN=63 Runoff=3.56 cfs 13,691 cf

Subcatchment P-SWM: Portion of Site to Runoff Area=27,100 sf 61.03% Impervious Runoff Depth=3.63"
Flow Length=240' Slope=0.0367 '/' Tc=6.1 min CN=75 Runoff=2.64 cfs 8,188 cf

Subcatchment P-WET: Portion of Site to Runoff Area=33,000 sf 1.39% Impervious Runoff Depth=1.19"
Flow Length=180' Slope=0.0500 '/' Tc=8.5 min CN=48 Runoff=0.75 cfs 3,271 cf

Pond RB: Retention/Absorption Basin Peak Elev=150.83' Storage=2,594 cf Inflow=2.64 cfs 8,188 cf
Outflow=0.75 cfs 7,900 cf

Link AF-WET: Approved Flow to Wetlands Inflow=3.56 cfs 13,691 cf
Primary=3.56 cfs 13,691 cf

Link PF-WET: Total Proposed Flow to Wetlands Inflow=1.42 cfs 11,171 cf
Primary=1.42 cfs 11,171 cf

Total Runoff Area = 126,877 sf Runoff Volume = 25,149 cf Average Runoff Depth = 2.38"
79.37% Pervious = 100,701 sf 20.63% Impervious = 26,176 sf

Summary for Subcatchment 600: Original Approved Flow to Wetlands

Runoff = 3.56 cfs @ 12.17 hrs, Volume= 13,691 cf, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Design Storm Rainfall=6.40"

	Area (sf)	CN	Description
*	9,178	98	ROOF & PAVEMENT
*	57,599	57	LAWN, LANDSCAPING & WEEDS
	66,777	63	Weighted Average
	57,599		86.26% Pervious Area
	9,178		13.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	330	0.0320	0.47		**Lag/CN Method,**

Summary for Subcatchment P-SWM: Portion of Site to Stormwater Management

Runoff = 2.64 cfs @ 12.09 hrs, Volume= 8,188 cf, Depth= 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Design Storm Rainfall=6.40"

	Area (sf)	CN	Description
*	4,050	98	Roof
*	12,488	98	Pavement
*	10,562	40	Lawn
	27,100	75	Weighted Average
	10,562		38.97% Pervious Area
	16,538		61.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	240	0.0367	0.65		**Lag/CN Method,**

Summary for Subcatchment P-WET: Portion of Site to Inland Wetlands

Runoff = 0.75 cfs @ 12.14 hrs, Volume= 3,271 cf, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Design Storm Rainfall=6.40"

Area (sf)	CN	Description
* 460	98	Bituminous/Conc.
* 11,850	60	Woods
* 20,690	40	Lawn
33,000	48	Weighted Average
32,540		98.61% Pervious Area
460		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	180	0.0500	0.35		**Lag/CN Method,**

Summary for Pond RB: Retention/Absorption Basin

Inflow Area = 27,100 sf, 61.03% Impervious, Inflow Depth = 3.63" for 25 Year Design St
Inflow = 2.64 cfs @ 12.09 hrs, Volume= 8,188 cf
Outflow = 0.75 cfs @ 12.45 hrs, Volume= 7,900 cf, Atten= 71%, Lag= 21.8 min
Primary = 0.75 cfs @ 12.45 hrs, Volume= 7,900 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 150.83' @ 12.45 hrs Surf.Area= 2,070 sf Storage= 2,594 cf

Plug-Flow detention time= 68.0 min calculated for 7,898 cf (96% of inflow)
Center-of-Mass det. time= 48.2 min (871.8 - 823.7)

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	5,560 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	830	0	0
150.00	1,450	1,140	1,140
151.00	2,200	1,825	2,965
152.00	2,990	2,595	5,560

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**5.0" Vert. Orifice cut in PVC Cap** C= 0.600

Primary OutFlow Max=0.75 cfs @ 12.45 hrs HW=150.83' (Free Discharge)
↑—1=Orifice cut in PVC Cap (Orifice Controls 0.75 cfs @ 5.53 fps)

Summary for Link AF-WET: Approved Flow to Wetlands

Inflow Area = 66,777 sf, 13.74% Impervious, Inflow Depth = 2.46" for 25 Year Design St
Inflow = 3.56 cfs @ 12.17 hrs, Volume= 13,691 cf
Primary = 3.56 cfs @ 12.17 hrs, Volume= 13,691 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link PF-WET: Total Proposed Flow to Wetlands

Inflow Area = 60,100 sf, 28.28% Impervious, Inflow Depth > 2.23" for 25 Year Design St
Inflow = 1.42 cfs @ 12.16 hrs, Volume= 11,171 cf
Primary = 1.42 cfs @ 12.16 hrs, Volume= 11,171 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 600: Original Approved Runoff Area=66,777 sf 13.74% Impervious Runoff Depth=3.11"
Flow Length=330' Slope=0.0320 '/' Tc=11.7 min CN=63 Runoff=4.56 cfs 17,317 cf

Subcatchment P-SWM: Portion of Site to Runoff Area=27,100 sf 61.03% Impervious Runoff Depth=4.40"
Flow Length=240' Slope=0.0367 '/' Tc=6.1 min CN=75 Runoff=3.19 cfs 9,930 cf

Subcatchment P-WET: Portion of Site to Runoff Area=33,000 sf 1.39% Impervious Runoff Depth=1.64"
Flow Length=180' Slope=0.0500 '/' Tc=8.5 min CN=48 Runoff=1.13 cfs 4,509 cf

Pond RB: Retention/Absorption Basin Peak Elev=151.12' Storage=3,224 cf Inflow=3.19 cfs 9,930 cf
Outflow=0.83 cfs 9,642 cf

Link AF-WET: Approved Flow to Wetlands Inflow=4.56 cfs 17,317 cf
Primary=4.56 cfs 17,317 cf

Link PF-WET: Total Proposed Flow to Wetlands Inflow=1.86 cfs 14,151 cf
Primary=1.86 cfs 14,151 cf

Total Runoff Area = 126,877 sf Runoff Volume = 31,756 cf Average Runoff Depth = 3.00"
79.37% Pervious = 100,701 sf 20.63% Impervious = 26,176 sf

Summary for Subcatchment 600: Original Approved Flow to Wetlands

Runoff = 4.56 cfs @ 12.17 hrs, Volume= 17,317 cf, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year Design Storm Rainfall=7.28"

	Area (sf)	CN	Description
*	9,178	98	ROOF & PAVEMENT
*	57,599	57	LAWN, LANDSCAPING & WEEDS
	66,777	63	Weighted Average
	57,599		86.26% Pervious Area
	9,178		13.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	330	0.0320	0.47		**Lag/CN Method,**

Summary for Subcatchment P-SWM: Portion of Site to Stormwater Management

Runoff = 3.19 cfs @ 12.09 hrs, Volume= 9,930 cf, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year Design Storm Rainfall=7.28"

	Area (sf)	CN	Description
*	4,050	98	Roof
*	12,488	98	Pavement
*	10,562	40	Lawn
	27,100	75	Weighted Average
	10,562		38.97% Pervious Area
	16,538		61.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	240	0.0367	0.65		**Lag/CN Method,**

Summary for Subcatchment P-WET: Portion of Site to Inland Wetlands

Runoff = 1.13 cfs @ 12.14 hrs, Volume= 4,509 cf, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year Design Storm Rainfall=7.28"

Area (sf)	CN	Description
* 460	98	Bituminous/Conc.
* 11,850	60	Woods
* 20,690	40	Lawn
33,000	48	Weighted Average
32,540		98.61% Pervious Area
460		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	180	0.0500	0.35		**Lag/CN Method,**

Summary for Pond RB: Retention/Absorption Basin

Inflow Area = 27,100 sf, 61.03% Impervious, Inflow Depth = 4.40" for 50 Year Design St
Inflow = 3.19 cfs @ 12.09 hrs, Volume= 9,930 cf
Outflow = 0.83 cfs @ 12.47 hrs, Volume= 9,642 cf, Atten= 74%, Lag= 23.0 min
Primary = 0.83 cfs @ 12.47 hrs, Volume= 9,642 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 151.12' @ 12.47 hrs Surf.Area= 2,291 sf Storage= 3,224 cf

Plug-Flow detention time= 66.4 min calculated for 9,639 cf (97% of inflow)
Center-of-Mass det. time= 49.7 min (867.9 - 818.1)

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	5,560 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	830	0	0
150.00	1,450	1,140	1,140
151.00	2,200	1,825	2,965
152.00	2,990	2,595	5,560

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**5.0" Vert. Orifice cut in PVC Cap** C= 0.600

Primary OutFlow Max=0.83 cfs @ 12.47 hrs HW=151.12' (Free Discharge)
↑—1=Orifice cut in PVC Cap (Orifice Controls 0.83 cfs @ 6.10 fps)

Summary for Link AF-WET: Approved Flow to Wetlands

Inflow Area = 66,777 sf, 13.74% Impervious, Inflow Depth = 3.11" for 50 Year Design St
Inflow = 4.56 cfs @ 12.17 hrs, Volume= 17,317 cf
Primary = 4.56 cfs @ 12.17 hrs, Volume= 17,317 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link PF-WET: Total Proposed Flow to Wetlands

Inflow Area = 60,100 sf, 28.28% Impervious, Inflow Depth > 2.83" for 50 Year Design St
Inflow = 1.86 cfs @ 12.15 hrs, Volume= 14,151 cf
Primary = 1.86 cfs @ 12.15 hrs, Volume= 14,151 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 600: Original Approved Runoff Area=66,777 sf 13.74% Impervious Runoff Depth=3.88"
Flow Length=330' Slope=0.0320 '/' Tc=11.7 min CN=63 Runoff=5.74 cfs 21,603 cf

Subcatchment P-SWM: Portion of Site to Runoff Area=27,100 sf 61.03% Impervious Runoff Depth=5.29"
Flow Length=240' Slope=0.0367 '/' Tc=6.1 min CN=75 Runoff=3.82 cfs 11,937 cf

Subcatchment P-WET: Portion of Site to Runoff Area=33,000 sf 1.39% Impervious Runoff Depth=2.20"
Flow Length=180' Slope=0.0500 '/' Tc=8.5 min CN=48 Runoff=1.61 cfs 6,048 cf

Pond RB: Retention/Absorption Basin Peak Elev=151.43' Storage=3,976 cf Inflow=3.82 cfs 11,937 cf
Outflow=0.91 cfs 11,650 cf

Link AF-WET: Approved Flow to Wetlands Inflow=5.74 cfs 21,603 cf
Primary=5.74 cfs 21,603 cf

Link PF-WET: Total Proposed Flow to Wetlands Inflow=2.41 cfs 17,698 cf
Primary=2.41 cfs 17,698 cf

Total Runoff Area = 126,877 sf Runoff Volume = 39,589 cf Average Runoff Depth = 3.74"
79.37% Pervious = 100,701 sf 20.63% Impervious = 26,176 sf

Summary for Subcatchment 600: Original Approved Flow to Wetlands

Runoff = 5.74 cfs @ 12.16 hrs, Volume= 21,603 cf, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Design Storm Rainfall=8.27"

	Area (sf)	CN	Description
*	9,178	98	ROOF & PAVEMENT
*	57,599	57	LAWN, LANDSCAPING & WEEDS
	66,777	63	Weighted Average
	57,599		86.26% Pervious Area
	9,178		13.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	330	0.0320	0.47		**Lag/CN Method,**

Summary for Subcatchment P-SWM: Portion of Site to Stormwater Management

Runoff = 3.82 cfs @ 12.09 hrs, Volume= 11,937 cf, Depth= 5.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Design Storm Rainfall=8.27"

	Area (sf)	CN	Description
*	4,050	98	Roof
*	12,488	98	Pavement
*	10,562	40	Lawn
	27,100	75	Weighted Average
	10,562		38.97% Pervious Area
	16,538		61.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	240	0.0367	0.65		**Lag/CN Method,**

Summary for Subcatchment P-WET: Portion of Site to Inland Wetlands

Runoff = 1.61 cfs @ 12.13 hrs, Volume= 6,048 cf, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 Year Design Storm Rainfall=8.27"

	Area (sf)	CN	Description
*	460	98	Bituminous/Conc.
*	11,850	60	Woods
*	20,690	40	Lawn
	33,000	48	Weighted Average
	32,540		98.61% Pervious Area
	460		1.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	180	0.0500	0.35		**Lag/CN Method,**

Summary for Pond RB: Retention/Absorption Basin

Inflow Area = 27,100 sf, 61.03% Impervious, Inflow Depth = 5.29" for 100 Year Design S
Inflow = 3.82 cfs @ 12.09 hrs, Volume= 11,937 cf
Outflow = 0.91 cfs @ 12.49 hrs, Volume= 11,650 cf, Atten= 76%, Lag= 24.2 min
Primary = 0.91 cfs @ 12.49 hrs, Volume= 11,650 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 151.43' @ 12.49 hrs Surf.Area= 2,537 sf Storage= 3,976 cf

Plug-Flow detention time= 66.4 min calculated for 11,650 cf (98% of inflow)
Center-of-Mass det. time= 52.2 min (865.1 - 812.9)

Volume	Invert	Avail.Storage	Storage Description
#1	149.00'	5,560 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.00	830	0	0
150.00	1,450	1,140	1,140
151.00	2,200	1,825	2,965
152.00	2,990	2,595	5,560

Device	Routing	Invert	Outlet Devices
#1	Primary	149.30'	**5.0" Vert. Orifice cut in PVC Cap** C= 0.600

Primary OutFlow Max=0.91 cfs @ 12.49 hrs HW=151.43' (Free Discharge)
1=Orifice cut in PVC Cap (Orifice Controls 0.91 cfs @ 6.67 fps)

Summary for Link AF-WET: Approved Flow to Wetlands

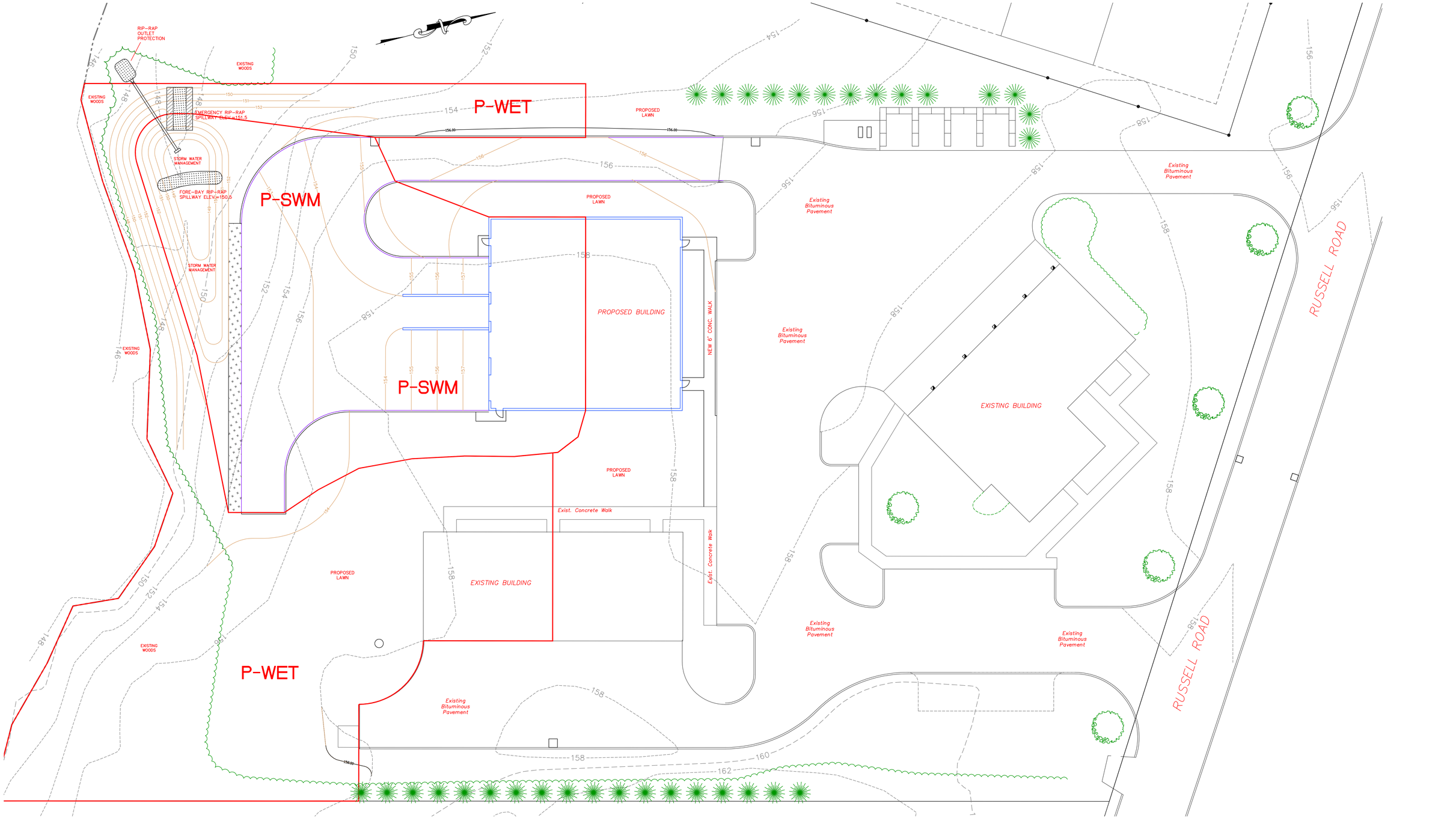
Inflow Area = 66,777 sf, 13.74% Impervious, Inflow Depth = 3.88" for 100 Year Design S
Inflow = 5.74 cfs @ 12.16 hrs, Volume= 21,603 cf
Primary = 5.74 cfs @ 12.16 hrs, Volume= 21,603 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Link PF-WET: Total Proposed Flow to Wetlands

Inflow Area = 60,100 sf, 28.28% Impervious, Inflow Depth > 3.53" for 100 Year Design S
Inflow = 2.41 cfs @ 12.14 hrs, Volume= 17,698 cf
Primary = 2.41 cfs @ 12.14 hrs, Volume= 17,698 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

DRAINAGE AREA MAP

STATE OF CONNECTICUT · THOMAS J. BARRESI · No. 70085 · LICENSED PROFESSIONAL ENGINEER

STATE OF CONNECTICUT · THOMAS J. BARRESI · No. 70085 · LICENSED LAND SURVEYOR

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON

BARRESI ASSOCIATES LLC
1695 POQUONOCK AVENUE – WINDSOR, CONN. 06095
(860) 219-9260 www.barresillc.com

DATE	REVISION

MODIFICATION TO APPROVED SITE PLAN

PREPARED FOR

RUSSELL ROAD ASSOCIATES, LLC

38 RUSSELL ROAD – BUILDING 2

EAST GRANBY, CONNECTICUT

SCALE: 1 IN = 20 FT

APRIL 26, 2024