

**STORM WATER
SIZING AND MANAGEMENT
PLAN**

for

Lot #2
Uptowne Point LLC
2361 Brickyard Road
Canandaigua, New York



prepared by

Joyce Consulting Group, PC
5120 Laura Lane
Canandaigua, NY 14424

September 30, 2022
Revised December 13, 2022

**STORM WATER SIZING
MANAGEMENT PLAN**
2361 Brickyard Road – Lot #2
Canandaigua, New York

Project Owner: Uptowne Pointe, LLC
Operator/General Contractor: To Be Determined
Civil Engineer: Joyce Consulting Group, PC

SITE DESCRIPTION

Description of the Project

The project involves the construction of a new mini-storage facility at 2361 Brickyard Road Lot #2, with associated driveways, landscape improvements, and stormwater management systems. The new development will have a footprint of approximately 0.8 acres with 0.4 acres of new impervious area.

Site Soil Survey

According to soil survey information collected and mapped by the National Resources Conservation Service (NRCS) the site is mostly silt loams rated with a hydrologic soil group of C/D as shown below in Figure 1. Due to the nature of dual rated soils, this report models soils as Hydrologic soil group D.

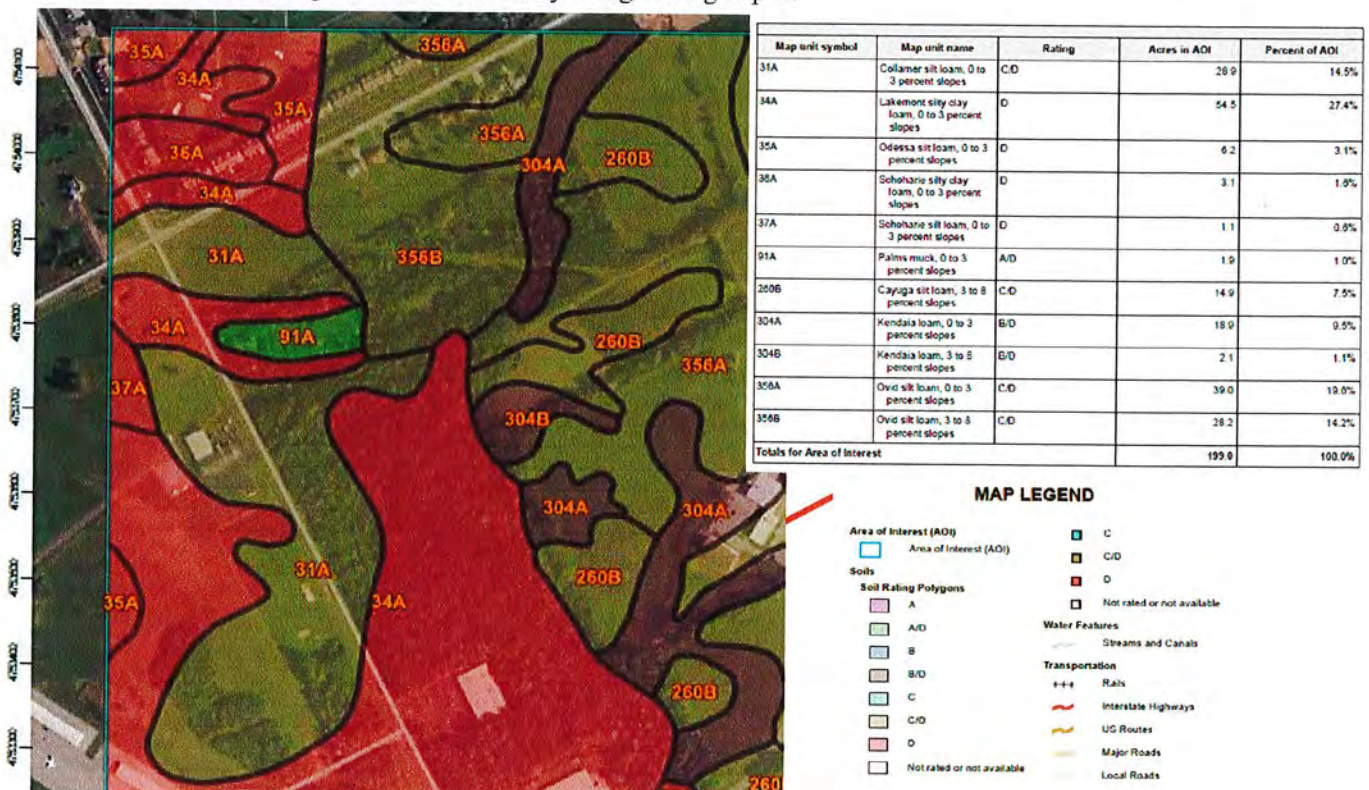


Figure 1: NRCS Web Soil Survey NCSS August 17, 2022

Site Location related to Archeological Significance

According to the NYS Office of Parks, Recreation and Historic Preservation (excerpt from website below in Figure 2) the site is located in an archeologically sensitive area and an archeologic survey will be completed as part of the work for the Town's Stormwater Management Area and this project.



Figure 2: NYS Cultural Resource Information System (CRIS) Online September 2022

Floodplain Mapping

According to FEMA, this site does not fall within any FEMA special flood hazard zones per CP #360598 0005 C last revised March 3, 1997 (See Figure 3 below).

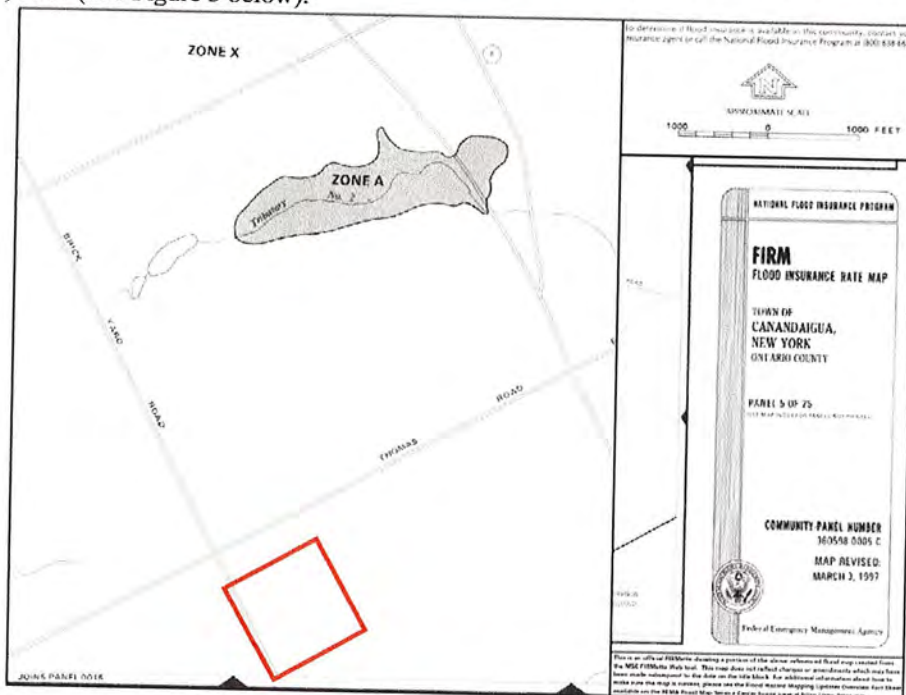


Figure 3: FEMA Firmette Online September 2022

Site Hydrology

The existing 3.0 acre site, which is mostly woodland, is relatively flat with a gentle pitch the southwest corner of the site. The site drains towards a municipal collection system along the east side of Brickyard Road. The proposed project intends to maintain this existing drainage pattern. Runoff from the proposed project will be collected in one of three proposed dry swales with infiltration capability, similar to a rain garden, prior to flowing downstream and off-site.

The proposed project looks to develop the lot for use as mini-storage, with a single metal frame building, areas of parking, and driveways. The difference in impervious area pre- and post- development is:

	Pre Development	Post Development
Impervious Area	0.0 acres	0.4 acres (0.4 add'l/new acres)

Stormwater Quality for Enhanced Phosphorous Removal:

Ultimately the stormwater runoff from the development site discharges to Sucker Brook, which immediately discharges to Canandaigua Lake. Discharge to Sucker Brook and/or Canandaigua Lake requires enhanced phosphorous treatment and therefore water quality treatment practices that provide phosphorous removal are being incorporated into the proposed stormwater management system in the form of dry swale infiltration systems. The water quality volume has been designed to capture and treat 100% of the volume from the 1-year 24-hour design storm for new impervious areas located within the development footprint.

Runoff Reduction Volume – Green Infrastructure Technique: Dry Swale Areas

Runoff Reduction Volume is achievable within proposed green infrastructure areas around the perimeter of the development in the form of dry swale infiltration areas (below the overflows)

Volume Reduction in Stormwater Treatment Areas is 3,728 cf

Dry Swale #1: Volume is 2,147 cf

Pretreatment Provided: 24" wide grassed filter strip, peastone filter strip
 Volume of Depression = (Surface Area)(Depth below Overflow)
 = (2,148 sf)(0.6 ft) = 1,288 cf
 Volume of Soil Media = (Surface Area)(Depth of Media)(Porosity of Media)
 = (2,148sf)(2ft)(0.2)= 859 cf

Dry Swale #2: Volume is 555 cf

Pretreatment Provided: 24" wide grassed filter strip, peastone filter strip
 Volume of Depression = (Surface Area)(Depth below Overflow)
 = (555 sf)(0.6 ft) = 333 cf
 Volume of Soil Media = (Surface Area)(Depth of Media)(Porosity of Media)
 = (555 sf)(2ft)(0.2)= 222 cf

Dry Swale #3: Volume is 1,026 cf

Pretreatment Provided: 24" wide grassed filter strip, peastone filter strip
 Volume of Depression = (Surface Area)(Depth below Overflow)
 = (1,026 sf)(0.6 ft) = 616 cf
 Volume of Soil Media = (Surface Area)(Depth of Media)(Porosity of Media)
 = (1,026 sf)(2ft)(0.2)= 410 cf

Summary of Water Quality and Runoff Reduction for the Developed Site:

Proposed Technique (Designation in NYS SMDM):	Contributing Impervious Area (Acre)	WQv Required for contributing Impervious (cf)	Volume of Practice (cf)	RRv Capacity Provided
Dry Swale #1	0.22	1,352	2,147	1,352 cf
Dry Swale #2	0.07	483	555	483 cf
Dry Swale #3	0.11	730	1,026	730 cf

Water Quality Volume (WQv) from new impervious area draining towards Dry Swale #1

$$WQv = [(P)(Rv)(A)]/12 = [(1.89)(0.58)(0.34)]/12 = .031 \text{ acre/ft} = 1,352 \text{ cf}$$

$$Rv = 0.05 + 0.009(I) = 0.58$$

$$I = \text{Impervious Cover (Percent)} = 58.8\%$$

$$P = 1.89 \text{ (Figure 4.2 One Year Design Storm in NYS Stormwater Design Manual)}$$

$$A = 14,968 \text{ sf (0.34 acres)}$$

Water Quality Volume (WQv) from new impervious area draining towards Dry Swale #2

$$WQv = [(P)(Rv)(A)]/12 = [(1.89)(0.47)(0.15)]/12 = .011 \text{ acre/ft} = 483 \text{ cf}$$

$$Rv = 0.05 + 0.009(I) = 0.47$$

$$I = \text{Impervious Cover (Percent)} = 46.7\%$$

$$P = 1.89 \text{ (Figure 4.2 One Year Design Storm in NYS Stormwater Design Manual)}$$

$$A = 6,550 \text{ sf (0.15 acres)}$$

Water Quality Volume (WQv) from new impervious area draining towards Dry Swale #3

$$WQv = [(P)(Rv)(A)]/12 = [(1.89)(0.76)(0.14)]/12 = .017 \text{ acre/ft} = 730 \text{ cf}$$

$$Rv = 0.05 + 0.009(I) = 0.76$$

$$I = \text{Impervious Cover (Percent)} = 78.6\%$$

$$P = 1.89 \text{ (Figure 4.2 One Year Design Storm in NYS Stormwater Design Manual)}$$

$$A = 6,276 \text{ sf (0.14 acres)}$$

Minimum Runoff Reduction Volume RRv:

Per the NYS Stormwater Management Design Manual, the minimum runoff reduction volume (RRv min) is calculated as follows:

$$RRv(\text{min}) = [(P)(Rv)(A)(S)]/12 = [(1.89)(0.95)(0.4)(0.30)]/12 = .018 \text{ acre/ft or } 782 \text{ cf}$$

$$Rv = 0.05 + 0.009(I) = 0.95, \text{ where } (I) = \text{Impervious Cover (Percent)} = 100\%$$

$$P = 1.89 \text{ (Figure 4.2 One Year Design Storm in NYS Stormwater Design Manual)}$$

$$A = \text{Total Area of New Impervious Cover} = 0.4 \text{ acres}$$

$$S = \text{Hydrologic Soil Group (HSG) Specific Reduction Factor (S)} = 0.20$$

$$\text{HSG A} = 0.55, \text{ HSG B} = 0.40, \text{ HSG C} = 0.30, \text{ HSG D} = 0.20$$

The existing and proposed drainage areas have been modeled using HydroCAD Version 10.10 hydrologic modeling software. Please refer to the attached calculations for information regarding the existing and proposed hydrologic models. Calculations to determine runoff from the 2-, 10-, 25-, and 100-year 24-hour design storms have also been included in this report and are based on the hydrologic model from HydroCAD 10.10.

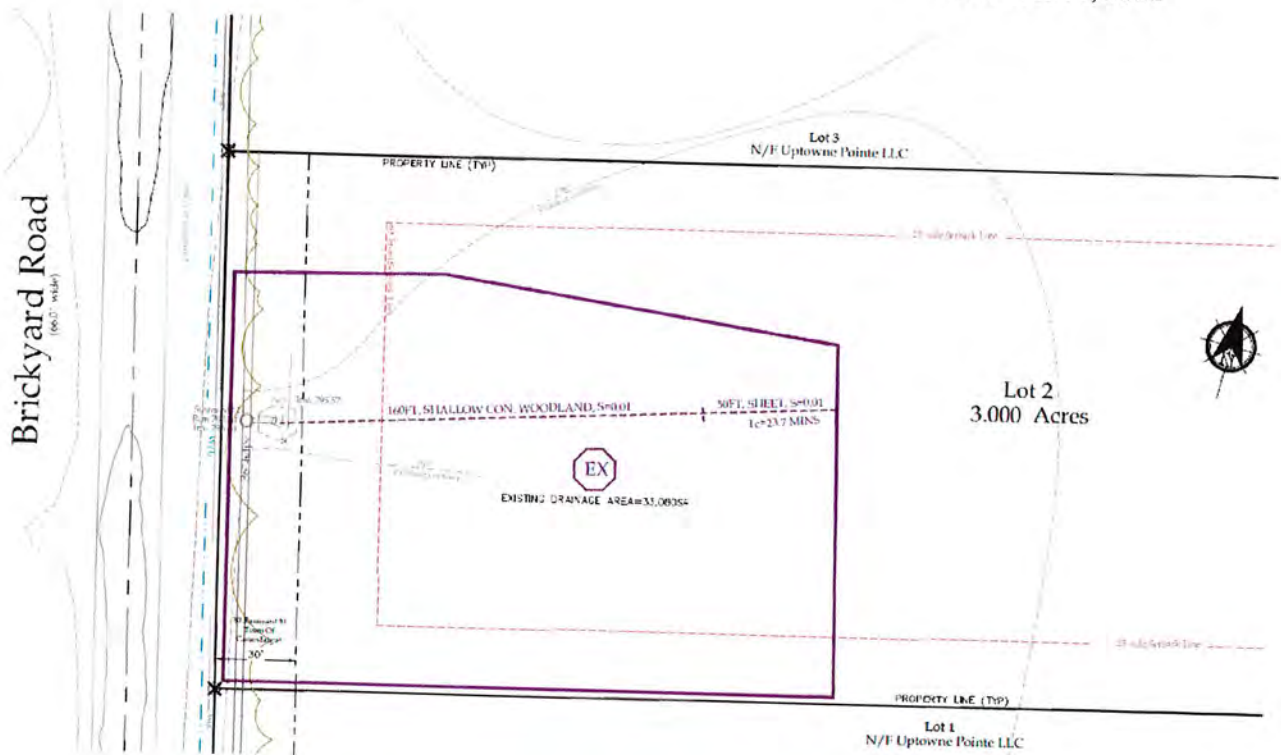


Figure 4A: Pre- Construction Drainage Area– see also Site Plan

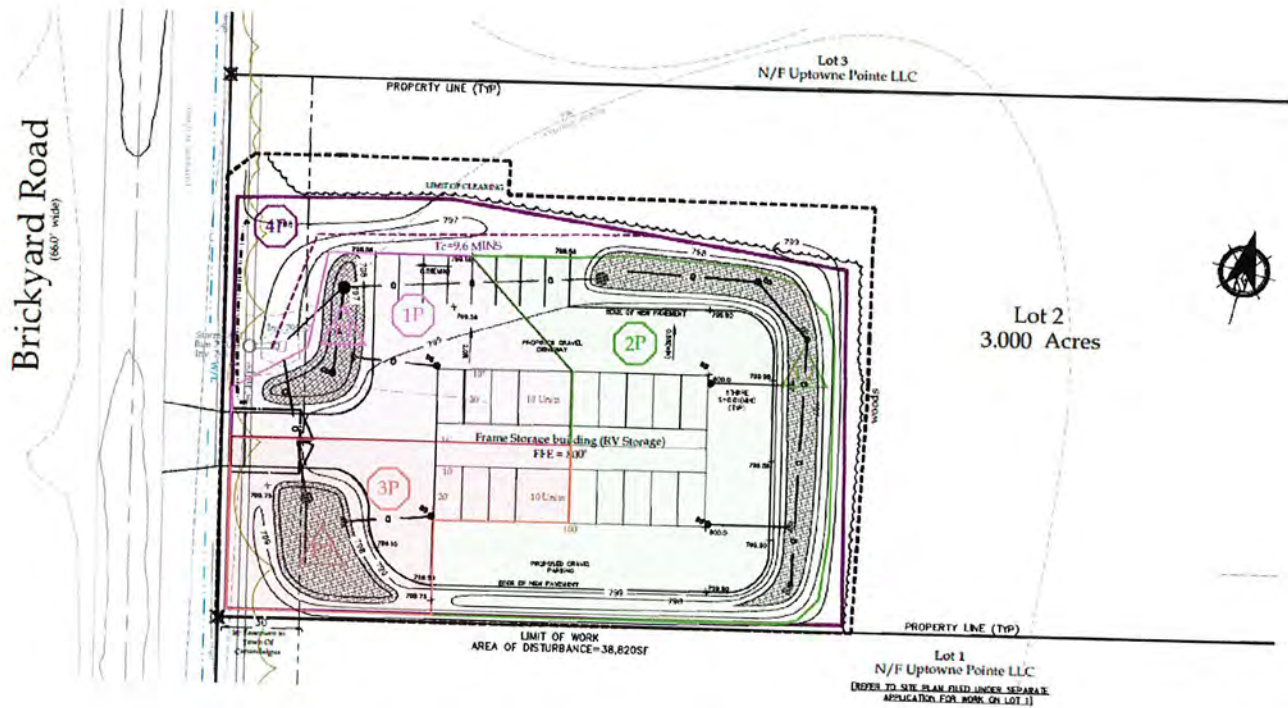
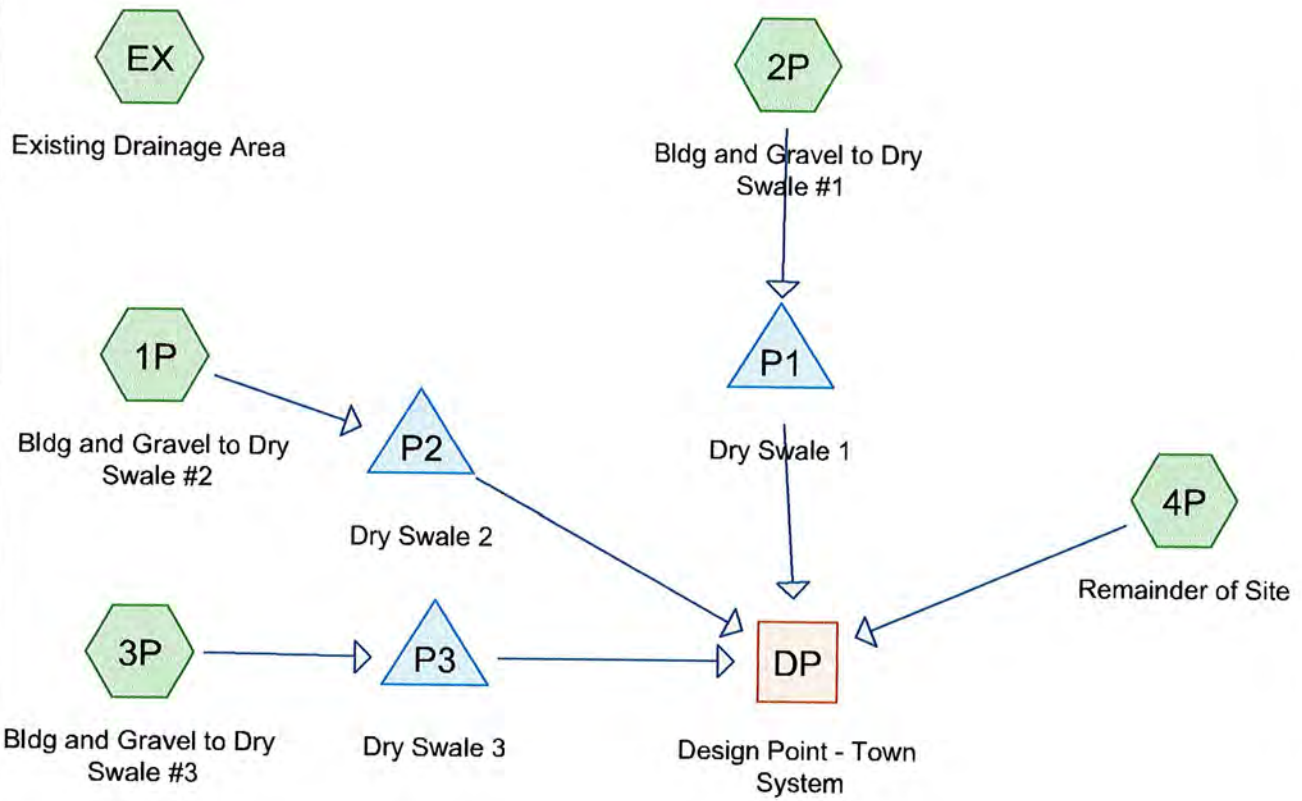


Figure 4B: Post-Construction Drainage Area – see also Site Plan

Comparison of Existing and Proposed Runoff Conditions:

<i>Return Period (Rainfall Depth inches)</i>	<i>Design Point Brickyard Road Peak Runoff (cfs)</i>	
	<i>Existing</i>	<i>Proposed</i>
1-year (1.89")	0.22	0.07
2-year (2.19")	0.34	0.11
10-year (3.14")	0.78	0.31
25-year (3.87")	1.16	0.77
100-year (5.29")	1.96	1.66



Routing Diagram for Drainage Study redesign Lot 2 whole site
 Prepared by Joyce Consulting Group, PC, Printed 12/13/2022
 HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 1-Year Rainfall=1.89"

Printed 12/13/2022

Page 2

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1P: Bldg and Gravel to Dry Runoff Area=6,550 sf 73.28% Impervious Runoff Depth>1.15"
Tc=6.0 min CN=93 Runoff=0.27 cfs 0.014 af

Subcatchment 2P: Bldg and Gravel to Dry Runoff Area=14,968 sf 63.80% Impervious Runoff Depth>1.00"
Tc=6.0 min CN=91 Runoff=0.55 cfs 0.029 af

Subcatchment 3P: Bldg and Gravel to Dry Runoff Area=6,276 sf 50.03% Impervious Runoff Depth>0.88"
Tc=6.0 min CN=89 Runoff=0.21 cfs 0.011 af

Subcatchment 4P: Remainder of Site Runoff Area=5,286 sf 0.00% Impervious Runoff Depth>0.45"
Flow Length=165' Slope=0.0100 '/' Tc=9.6 min CN=80 Runoff=0.07 cfs 0.005 af

Subcatchment EX: Existing Drainage Area Runoff Area=33,080 sf 0.00% Impervious Runoff Depth>0.35"
Flow Length=210' Slope=0.0100 '/' Tc=23.7 min CN=77 Runoff=0.22 cfs 0.022 af

Reach DP: Design Point - Town System
Inflow=0.07 cfs 0.005 af
Outflow=0.07 cfs 0.005 af

Pond P1: Dry Swale 1 Peak Elev=797.17' Storage=1,251 cf Inflow=0.55 cfs 0.029 af
Outflow=0.00 cfs 0.000 af

Pond P2: Dry Swale 2 Peak Elev=797.58' Storage=625 cf Inflow=0.27 cfs 0.014 af
Outflow=0.00 cfs 0.000 af

Pond P3: Dry Swale 3 Peak Elev=797.05' Storage=458 cf Inflow=0.21 cfs 0.011 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 1.519 ac Runoff Volume = 0.080 af Average Runoff Depth = 0.63"
73.56% Pervious = 1.117 ac 26.44% Impervious = 0.402 ac

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua
NRCC 24-hr A 1-Year Rainfall=1.89"

Printed 12/13/2022

Page 3

Summary for Subcatchment 1P: Bldg and Gravel to Dry Swale #2

Runoff = 0.27 cfs @ 12.13 hrs, Volume= 0.014 af, Depth> 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=1.89"

Area (sf)	CN	Description
1,400	98	Roofs, HSG D
3,400	98	Paved parking, HSG D
1,750	80	>75% Grass cover, Good, HSG D
6,550	93	Weighted Average
1,750		26.72% Pervious Area
4,800		73.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2P: Bldg and Gravel to Dry Swale #1

Runoff = 0.55 cfs @ 12.13 hrs, Volume= 0.029 af, Depth> 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=1.89"

Area (sf)	CN	Description
6,750	98	Paved parking, HSG D
5,418	80	>75% Grass cover, Good, HSG D
2,800	98	Roofs, HSG D
14,968	91	Weighted Average
5,418		36.20% Pervious Area
9,550		63.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 3P: Bldg and Gravel to Dry Swale #3

Runoff = 0.21 cfs @ 12.13 hrs, Volume= 0.011 af, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=1.89"

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 1-Year Rainfall=1.89"

Printed 12/13/2022

Page 4

Area (sf)	CN	Description
1,740	98	Paved parking, HSG D
3,136	80	>75% Grass cover, Good, HSG D
1,400	98	Roofs, HSG D
6,276	89	Weighted Average
3,136		49.97% Pervious Area
3,140		50.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4P: Remainder of Site

Runoff = 0.07 cfs @ 12.19 hrs, Volume= 0.005 af, Depth> 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=1.89"

Area (sf)	CN	Description
5,286	80	>75% Grass cover, Good, HSG D
5,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0100	0.10		Sheet Flow,
1.2	115	0.0100	1.61		Grass: Short n= 0.150 P2= 2.50"
					Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
9.6	165	Total			

Summary for Subcatchment EX: Existing Drainage Area

Runoff = 0.22 cfs @ 12.40 hrs, Volume= 0.022 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 1-Year Rainfall=1.89"

Area (sf)	CN	Description
33,080	77	Woods, Good, HSG D
33,080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	50	0.0100	0.05		Sheet Flow,
5.3	160	0.0100	0.50		Woods: Light underbrush n= 0.400 P2= 2.50"
					Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
23.7	210	Total			

Summary for Reach DP: Design Point - Town System

Inflow Area = 0.759 ac, 52.87% Impervious, Inflow Depth > 0.07" for 1-Year event
 Inflow = 0.07 cfs @ 12.19 hrs, Volume= 0.005 af
 Outflow = 0.07 cfs @ 12.19 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond P1: Dry Swale 1

Inflow Area = 0.344 ac, 63.80% Impervious, Inflow Depth > 1.00" for 1-Year event
 Inflow = 0.55 cfs @ 12.13 hrs, Volume= 0.029 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 797.17' @ 20.00 hrs Surf.Area= 2,357 sf Storage= 1,251 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	795.00'	13,816 cf	Dry Swale 1 (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	2,148	0.0	0	0
795.01	2,148	20.0	4	4
797.00	2,148	20.0	855	859
797.01	2,148	100.0	21	881
797.99	3,395	100.0	2,716	3,597
798.00	3,395	100.0	34	3,631
799.00	3,395	100.0	3,395	7,026
801.00	3,395	100.0	6,790	13,816

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=795.00' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Controls 0.00 cfs)

↑ **1=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond P2: Dry Swale 2

Inflow Area = 0.150 ac, 73.28% Impervious, Inflow Depth > 1.15" for 1-Year event
 Inflow = 0.27 cfs @ 12.13 hrs, Volume= 0.014 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 797.58' @ 20.00 hrs Surf.Area= 818 sf Storage= 625 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	795.00'	4,000 cf	DrySwale 2 (Prismatic) Listed below (Recalc)
#2	796.00'	6 cf	2.00'D x 2.00'H Outlet Control Structure
		4,006 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	555	0.0	0	0
795.01	555	20.0	1	1
797.00	555	20.0	221	222
797.01	555	100.0	6	228
797.99	1,000	100.0	762	990
798.00	1,000	100.0	10	1,000
799.00	1,000	100.0	1,000	2,000
801.00	1,000	100.0	2,000	4,000

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=795.00' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Controls 0.00 cfs)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond P3: Dry Swale 3

Inflow Area = 0.144 ac, 50.03% Impervious, Inflow Depth > 0.88" for 1-Year event
 Inflow = 0.21 cfs @ 12.13 hrs, Volume= 0.011 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 1-Year Rainfall=1.89"

Printed 12/13/2022

Page 7

Peak Elev= 797.05' @ 20.00 hrs Surf.Area= 1,037 sf Storage= 458 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	795.00'	5,208 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	1,026	0.0	0	0
795.01	1,026	20.0	2	2
797.00	1,026	20.0	408	410
797.01	1,026	100.0	10	421
797.99	1,314	100.0	1,147	1,567
798.00	1,314	100.0	13	1,580
799.00	1,314	100.0	1,314	2,894
801.00	1,000	100.0	2,314	5,208

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=795.00' TW=0.00' (Dynamic Tailwater)

2=Culvert (Controls 0.00 cfs)

1=Orifice/Grate (Controls 0.00 cfs)

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 2-Year Rainfall=2.19"

Printed 12/13/2022

Page 8

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1P: Bldg and Gravel to Dry Runoff Area=6,550 sf 73.28% Impervious Runoff Depth>1.41"
Tc=6.0 min CN=93 Runoff=0.33 cfs 0.018 af

Subcatchment 2P: Bldg and Gravel to Dry Runoff Area=14,968 sf 63.80% Impervious Runoff Depth>1.25"
Tc=6.0 min CN=91 Runoff=0.69 cfs 0.036 af

Subcatchment 3P: Bldg and Gravel to Dry Runoff Area=6,276 sf 50.03% Impervious Runoff Depth>1.11"
Tc=6.0 min CN=89 Runoff=0.26 cfs 0.013 af

Subcatchment 4P: Remainder of Site Runoff Area=5,286 sf 0.00% Impervious Runoff Depth>0.63"
Flow Length=165' Slope=0.0100 '/' Tc=9.6 min CN=80 Runoff=0.11 cfs 0.006 af

Subcatchment EX: Existing Drainage Area Runoff Area=33,080 sf 0.00% Impervious Runoff Depth>0.50"
Flow Length=210' Slope=0.0100 '/' Tc=23.7 min CN=77 Runoff=0.34 cfs 0.032 af

Reach DP: Design Point - Town System Inflow=0.11 cfs 0.009 af
Outflow=0.11 cfs 0.009 af

Pond P1: Dry Swale 1 Peak Elev=797.30' Storage=1,564 cf Inflow=0.69 cfs 0.036 af
Outflow=0.00 cfs 0.000 af

Pond P2: Dry Swale 2 Peak Elev=797.61' Storage=648 cf Inflow=0.33 cfs 0.018 af
Outflow=0.01 cfs 0.003 af

Pond P3: Dry Swale 3 Peak Elev=797.16' Storage=582 cf Inflow=0.26 cfs 0.013 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 1.519 ac Runoff Volume = 0.105 af Average Runoff Depth = 0.83"
73.56% Pervious = 1.117 ac 26.44% Impervious = 0.402 ac

Summary for Subcatchment 1P: Bldg and Gravel to Dry Swale #2

Runoff = 0.33 cfs @ 12.13 hrs, Volume= 0.018 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr A 2-Year Rainfall=2.19"

Area (sf)	CN	Description
1,400	98	Roofs, HSG D
3,400	98	Paved parking, HSG D
1,750	80	>75% Grass cover, Good, HSG D
6,550	93	Weighted Average
1,750		26.72% Pervious Area
4,800		73.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2P: Bldg and Gravel to Dry Swale #1

Runoff = 0.69 cfs @ 12.13 hrs, Volume= 0.036 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr A 2-Year Rainfall=2.19"

Area (sf)	CN	Description
6,750	98	Paved parking, HSG D
5,418	80	>75% Grass cover, Good, HSG D
2,800	98	Roofs, HSG D
14,968	91	Weighted Average
5,418		36.20% Pervious Area
9,550		63.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 3P: Bldg and Gravel to Dry Swale #3

Runoff = 0.26 cfs @ 12.13 hrs, Volume= 0.013 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr A 2-Year Rainfall=2.19"

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 2-Year Rainfall=2.19"

Printed 12/13/2022

Page 10

Area (sf)	CN	Description
1,740	98	Paved parking, HSG D
3,136	80	>75% Grass cover, Good, HSG D
1,400	98	Roofs, HSG D
6,276	89	Weighted Average
3,136		49.97% Pervious Area
3,140		50.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4P: Remainder of Site

Runoff = 0.11 cfs @ 12.18 hrs, Volume= 0.006 af, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 2-Year Rainfall=2.19"

Area (sf)	CN	Description
5,286	80	>75% Grass cover, Good, HSG D
5,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0100	0.10		Sheet Flow,
1.2	115	0.0100	1.61		Grass: Short n= 0.150 P2= 2.50"
					Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
9.6	165	Total			

Summary for Subcatchment EX: Existing Drainage Area

Runoff = 0.34 cfs @ 12.38 hrs, Volume= 0.032 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 2-Year Rainfall=2.19"

Area (sf)	CN	Description
33,080	77	Woods, Good, HSG D
33,080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	50	0.0100	0.05		Sheet Flow,
5.3	160	0.0100	0.50		Woods: Light underbrush n= 0.400 P2= 2.50"
					Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
23.7	210	Total			

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 2-Year Rainfall=2.19"

Printed 12/13/2022

Page 11

Summary for Reach DP: Design Point - Town System

Inflow Area = 0.759 ac, 52.87% Impervious, Inflow Depth > 0.15" for 2-Year event
Inflow = 0.11 cfs @ 12.18 hrs, Volume= 0.009 af
Outflow = 0.11 cfs @ 12.18 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond P1: Dry Swale 1

Inflow Area = 0.344 ac, 63.80% Impervious, Inflow Depth > 1.25" for 2-Year event
Inflow = 0.69 cfs @ 12.13 hrs, Volume= 0.036 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 797.30' @ 20.00 hrs Surf.Area= 2,520 sf Storage= 1,564 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	795.00'	13,816 cf	Dry Swale 1 (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	2,148	0.0	0	0
795.01	2,148	20.0	4	4
797.00	2,148	20.0	855	859
797.01	2,148	100.0	21	881
797.99	3,395	100.0	2,716	3,597
798.00	3,395	100.0	34	3,631
799.00	3,395	100.0	3,395	7,026
801.00	3,395	100.0	6,790	13,816

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=795.00' TW=0.00' (Dynamic Tailwater)

2=Culvert (Controls 0.00 cfs)

1=Orifice/Grate (Controls 0.00 cfs)

Summary for Pond P2: Dry Swale 2

Inflow Area = 0.150 ac, 73.28% Impervious, Inflow Depth > 1.41" for 2-Year event
 Inflow = 0.33 cfs @ 12.13 hrs, Volume= 0.018 af
 Outflow = 0.01 cfs @ 14.59 hrs, Volume= 0.003 af, Atten= 97%, Lag= 147.5 min
 Primary = 0.01 cfs @ 14.59 hrs, Volume= 0.003 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 797.61' @ 14.59 hrs Surf.Area= 831 sf Storage= 648 cf

Plug-Flow detention time= 336.8 min calculated for 0.003 af (16% of inflow)
 Center-of-Mass det. time= 223.8 min (993.3 - 769.5)

Volume	Invert	Avail.Storage	Storage Description
#1	795.00'	4,000 cf	DrySwale 2 (Prismatic) Listed below (Recalc)
#2	796.00'	6 cf	2.00'D x 2.00'H Outlet Control Structure
		4,006 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	555	0.0	0	0
795.01	555	20.0	1	1
797.00	555	20.0	221	222
797.01	555	100.0	6	228
797.99	1,000	100.0	762	990
798.00	1,000	100.0	10	1,000
799.00	1,000	100.0	1,000	2,000
801.00	1,000	100.0	2,000	4,000

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.01 cfs @ 14.59 hrs HW=797.61' TW=0.00' (Dynamic Tailwater)
 ↑ **2=Culvert** (Passes 0.01 cfs of 0.71 cfs potential flow)
 ↑ **1=Orifice/Grate** (Weir Controls 0.01 cfs @ 0.35 fps)

Summary for Pond P3: Dry Swale 3

Inflow Area = 0.144 ac, 50.03% Impervious, Inflow Depth > 1.11" for 2-Year event
 Inflow = 0.26 cfs @ 12.13 hrs, Volume= 0.013 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 2-Year Rainfall=2.19"

Printed 12/13/2022

Page 13

Peak Elev= 797.16' @ 20.00 hrs Surf.Area= 1,071 sf Storage= 582 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	795.00'	5,208 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	1,026	0.0	0	0
795.01	1,026	20.0	2	2
797.00	1,026	20.0	408	410
797.01	1,026	100.0	10	421
797.99	1,314	100.0	1,147	1,567
798.00	1,314	100.0	13	1,580
799.00	1,314	100.0	1,314	2,894
801.00	1,000	100.0	2,314	5,208

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=795.00' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Controls 0.00 cfs)

↑ **1=Orifice/Grate** (Controls 0.00 cfs)

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 10-Year Rainfall=3.14"

Printed 12/13/2022

Page 14

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1P: Bldg and Gravel to Dry Runoff Area=6,550 sf 73.28% Impervious Runoff Depth>2.27"
Tc=6.0 min CN=93 Runoff=0.51 cfs 0.028 af

Subcatchment 2P: Bldg and Gravel to Dry Runoff Area=14,968 sf 63.80% Impervious Runoff Depth>2.09"
Tc=6.0 min CN=91 Runoff=1.11 cfs 0.060 af

Subcatchment 3P: Bldg and Gravel to Dry Runoff Area=6,276 sf 50.03% Impervious Runoff Depth>1.91"
Tc=6.0 min CN=89 Runoff=0.43 cfs 0.023 af

Subcatchment 4P: Remainder of Site Runoff Area=5,286 sf 0.00% Impervious Runoff Depth>1.26"
Flow Length=165' Slope=0.0100 ' Tc=9.6 min CN=80 Runoff=0.22 cfs 0.013 af

Subcatchment EX: Existing Drainage Area Runoff Area=33,080 sf 0.00% Impervious Runoff Depth>1.07"
Flow Length=210' Slope=0.0100 ' Tc=23.7 min CN=77 Runoff=0.78 cfs 0.068 af

Reach DP: Design Point - Town System

Inflow=0.31 cfs 0.031 af
Outflow=0.31 cfs 0.031 af

Pond P1: Dry Swale 1

Peak Elev=797.62' Storage=2,415 cf Inflow=1.11 cfs 0.060 af
Outflow=0.02 cfs 0.004 af

Pond P2: Dry Swale 2

Peak Elev=797.67' Storage=701 cf Inflow=0.51 cfs 0.028 af
Outflow=0.17 cfs 0.014 af

Pond P3: Dry Swale 3

Peak Elev=797.54' Storage=1,000 cf Inflow=0.43 cfs 0.023 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 1.519 ac Runoff Volume = 0.192 af Average Runoff Depth = 1.52"
73.56% Pervious = 1.117 ac 26.44% Impervious = 0.402 ac

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 10-Year Rainfall=3.14"

Printed 12/13/2022

Page 15

Summary for Subcatchment 1P: Bldg and Gravel to Dry Swale #2

Runoff = 0.51 cfs @ 12.13 hrs, Volume= 0.028 af, Depth> 2.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.14"

Area (sf)	CN	Description
1,400	98	Roofs, HSG D
3,400	98	Paved parking, HSG D
1,750	80	>75% Grass cover, Good, HSG D
6,550	93	Weighted Average
1,750		26.72% Pervious Area
4,800		73.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2P: Bldg and Gravel to Dry Swale #1

Runoff = 1.11 cfs @ 12.13 hrs, Volume= 0.060 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.14"

Area (sf)	CN	Description
6,750	98	Paved parking, HSG D
5,418	80	>75% Grass cover, Good, HSG D
2,800	98	Roofs, HSG D
14,968	91	Weighted Average
5,418		36.20% Pervious Area
9,550		63.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 3P: Bldg and Gravel to Dry Swale #3

Runoff = 0.43 cfs @ 12.13 hrs, Volume= 0.023 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.14"

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 10-Year Rainfall=3.14"

Printed 12/13/2022

Page 16

Area (sf)	CN	Description
1,740	98	Paved parking, HSG D
3,136	80	>75% Grass cover, Good, HSG D
1,400	98	Roofs, HSG D
6,276	89	Weighted Average
3,136		49.97% Pervious Area
3,140		50.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4P: Remainder of Site

Runoff = 0.22 cfs @ 12.17 hrs, Volume= 0.013 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.14"

Area (sf)	CN	Description
5,286	80	>75% Grass cover, Good, HSG D
5,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0100	0.10		Sheet Flow, Grass: Short n= 0.150 P2= 2.50" Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
1.2	115	0.0100	1.61		
9.6	165	Total			

Summary for Subcatchment EX: Existing Drainage Area

Runoff = 0.78 cfs @ 12.36 hrs, Volume= 0.068 af, Depth> 1.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 10-Year Rainfall=3.14"

Area (sf)	CN	Description
33,080	77	Woods, Good, HSG D
33,080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	50	0.0100	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.50" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
5.3	160	0.0100	0.50		
23.7	210	Total			

Summary for Reach DP: Design Point - Town System

Inflow Area = 0.759 ac, 52.87% Impervious, Inflow Depth > 0.49" for 10-Year event
 Inflow = 0.31 cfs @ 12.27 hrs, Volume= 0.031 af
 Outflow = 0.31 cfs @ 12.27 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond P1: Dry Swale 1

Inflow Area = 0.344 ac, 63.80% Impervious, Inflow Depth > 2.09" for 10-Year event
 Inflow = 1.11 cfs @ 12.13 hrs, Volume= 0.060 af
 Outflow = 0.02 cfs @ 17.38 hrs, Volume= 0.004 af, Atten= 99%, Lag= 315.1 min
 Primary = 0.02 cfs @ 17.38 hrs, Volume= 0.004 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 797.62' @ 17.38 hrs Surf.Area= 2,918 sf Storage= 2,415 cf

Plug-Flow detention time= 484.9 min calculated for 0.004 af (7% of inflow)
 Center-of-Mass det. time= 318.0 min (1,085.2 - 767.2)

Volume	Invert	Avail.Storage	Storage Description	
#1	795.00'	13,816 cf	Dry Swale 1 (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	2,148	0.0	0	0
795.01	2,148	20.0	4	4
797.00	2,148	20.0	855	859
797.01	2,148	100.0	21	881
797.99	3,395	100.0	2,716	3,597
798.00	3,395	100.0	34	3,631
799.00	3,395	100.0	3,395	7,026
801.00	3,395	100.0	6,790	13,816

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.02 cfs @ 17.38 hrs HW=797.62' TW=0.00' (Dynamic Tailwater)

2=Culvert (Passes 0.02 cfs of 0.55 cfs potential flow)
 1=Orifice/Grate (Weir Controls 0.02 cfs @ 0.41 fps)

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 10-Year Rainfall=3.14"

Printed 12/13/2022

Page 18

Summary for Pond P2: Dry Swale 2

Inflow Area = 0.150 ac, 73.28% Impervious, Inflow Depth > 2.27" for 10-Year event
 Inflow = 0.51 cfs @ 12.13 hrs, Volume= 0.028 af
 Outflow = 0.17 cfs @ 12.32 hrs, Volume= 0.014 af, Atten= 67%, Lag= 11.4 min
 Primary = 0.17 cfs @ 12.32 hrs, Volume= 0.014 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 797.67' @ 12.32 hrs Surf.Area= 860 sf Storage= 701 cf

Plug-Flow detention time= 151.0 min calculated for 0.014 af (48% of inflow)
 Center-of-Mass det. time= 80.2 min (840.2 - 760.0)

Volume	Invert	Avail.Storage	Storage Description
#1	795.00'	4,000 cf	DrySwale 2 (Prismatic) Listed below (Recalc)
#2	796.00'	6 cf	2.00'D x 2.00'H Outlet Control Structure
		4,006 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	555	0.0	0	0
795.01	555	20.0	1	1
797.00	555	20.0	221	222
797.01	555	100.0	6	228
797.99	1,000	100.0	762	990
798.00	1,000	100.0	10	1,000
799.00	1,000	100.0	1,000	2,000
801.00	1,000	100.0	2,000	4,000

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.17 cfs @ 12.32 hrs HW=797.67' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 0.17 cfs of 0.73 cfs potential flow)

↑ **1=Orifice/Grate** (Weir Controls 0.17 cfs @ 0.88 fps)

Summary for Pond P3: Dry Swale 3

Inflow Area = 0.144 ac, 50.03% Impervious, Inflow Depth > 1.91" for 10-Year event
 Inflow = 0.43 cfs @ 12.13 hrs, Volume= 0.023 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Drainage Study redesign Lot 2 whole site

NRCC 24-hr A 10-Year Rainfall=3.14"

Prepared by Joyce Consulting Group, PC

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Page 19

Peak Elev= 797.54' @ 20.00 hrs Surf.Area= 1,180 sf Storage= 1,000 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	795.00'	5,208 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	1,026	0.0	0	0
795.01	1,026	20.0	2	2
797.00	1,026	20.0	408	410
797.01	1,026	100.0	10	421
797.99	1,314	100.0	1,147	1,567
798.00	1,314	100.0	13	1,580
799.00	1,314	100.0	1,314	2,894
801.00	1,000	100.0	2,314	5,208

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=795.00' TW=0.00' (Dynamic Tailwater)↑ **2=Culvert** (Controls 0.00 cfs)↑ **1=Orifice/Grate** (Controls 0.00 cfs)

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 25-Year Rainfall=3.87"

Printed 12/13/2022

Page 20

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1P: Bldg and Gravel to Dry Runoff Area=6,550 sf 73.28% Impervious Runoff Depth>2.94"
Tc=6.0 min CN=93 Runoff=0.66 cfs 0.037 af

Subcatchment 2P: Bldg and Gravel to Dry Runoff Area=14,968 sf 63.80% Impervious Runoff Depth>2.75"
Tc=6.0 min CN=91 Runoff=1.43 cfs 0.079 af

Subcatchment 3P: Bldg and Gravel to Dry Runoff Area=6,276 sf 50.03% Impervious Runoff Depth>2.56"
Tc=6.0 min CN=89 Runoff=0.57 cfs 0.031 af

Subcatchment 4P: Remainder of Site Runoff Area=5,286 sf 0.00% Impervious Runoff Depth>1.81"
Flow Length=165' Slope=0.0100 ' Tc=9.6 min CN=80 Runoff=0.31 cfs 0.018 af

Subcatchment EX: Existing Drainage Area Runoff Area=33,080 sf 0.00% Impervious Runoff Depth>1.58"
Flow Length=210' Slope=0.0100 ' Tc=23.7 min CN=77 Runoff=1.16 cfs 0.100 af

Reach DP: Design Point - Town System

Inflow=0.77 cfs 0.069 af
Outflow=0.77 cfs 0.069 af

Pond P1: Dry Swale 1

Peak Elev=797.65' Storage=2,523 cf Inflow=1.43 cfs 0.079 af
Outflow=0.10 cfs 0.023 af

Pond P2: Dry Swale 2

Peak Elev=797.74' Storage=763 cf Inflow=0.66 cfs 0.037 af
Outflow=0.47 cfs 0.022 af

Pond P3: Dry Swale 3

Peak Elev=797.62' Storage=1,098 cf Inflow=0.57 cfs 0.031 af
Outflow=0.02 cfs 0.006 af

Total Runoff Area = 1.519 ac Runoff Volume = 0.265 af Average Runoff Depth = 2.09"
73.56% Pervious = 1.117 ac 26.44% Impervious = 0.402 ac

Summary for Subcatchment 1P: Bldg and Gravel to Dry Swale #2

Runoff = 0.66 cfs @ 12.13 hrs, Volume= 0.037 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr A 25-Year Rainfall=3.87"

Area (sf)	CN	Description
1,400	98	Roofs, HSG D
3,400	98	Paved parking, HSG D
1,750	80	>75% Grass cover, Good, HSG D
6,550	93	Weighted Average
1,750		26.72% Pervious Area
4,800		73.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2P: Bldg and Gravel to Dry Swale #1

Runoff = 1.43 cfs @ 12.13 hrs, Volume= 0.079 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr A 25-Year Rainfall=3.87"

Area (sf)	CN	Description
6,750	98	Paved parking, HSG D
5,418	80	>75% Grass cover, Good, HSG D
2,800	98	Roofs, HSG D
14,968	91	Weighted Average
5,418		36.20% Pervious Area
9,550		63.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 3P: Bldg and Gravel to Dry Swale #3

Runoff = 0.57 cfs @ 12.13 hrs, Volume= 0.031 af, Depth> 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 NRCC 24-hr A 25-Year Rainfall=3.87"

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 25-Year Rainfall=3.87"

Printed 12/13/2022

Page 22

Area (sf)	CN	Description
1,740	98	Paved parking, HSG D
3,136	80	>75% Grass cover, Good, HSG D
1,400	98	Roofs, HSG D
6,276	89	Weighted Average
3,136		49.97% Pervious Area
3,140		50.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4P: Remainder of Site

Runoff = 0.31 cfs @ 12.17 hrs, Volume= 0.018 af, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 25-Year Rainfall=3.87"

Area (sf)	CN	Description
5,286	80	>75% Grass cover, Good, HSG D
5,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0100	0.10		Sheet Flow,
1.2	115	0.0100	1.61		Grass: Short n= 0.150 P2= 2.50"
					Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
9.6	165	Total			

Summary for Subcatchment EX: Existing Drainage Area

Runoff = 1.16 cfs @ 12.35 hrs, Volume= 0.100 af, Depth> 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 25-Year Rainfall=3.87"

Area (sf)	CN	Description
33,080	77	Woods, Good, HSG D
33,080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	50	0.0100	0.05		Sheet Flow,
5.3	160	0.0100	0.50		Woods: Light underbrush n= 0.400 P2= 2.50"
					Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
23.7	210	Total			

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 25-Year Rainfall=3.87"

Printed 12/13/2022

Page 23

Summary for Reach DP: Design Point - Town System

Inflow Area = 0.759 ac, 52.87% Impervious, Inflow Depth > 1.10" for 25-Year event
 Inflow = 0.77 cfs @ 12.20 hrs, Volume= 0.069 af
 Outflow = 0.77 cfs @ 12.20 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond P1: Dry Swale 1

Inflow Area = 0.344 ac, 63.80% Impervious, Inflow Depth > 2.75" for 25-Year event
 Inflow = 1.43 cfs @ 12.13 hrs, Volume= 0.079 af
 Outflow = 0.10 cfs @ 13.12 hrs, Volume= 0.023 af, Atten= 93%, Lag= 59.4 min
 Primary = 0.10 cfs @ 13.12 hrs, Volume= 0.023 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 797.65' @ 13.12 hrs Surf.Area= 2,965 sf Storage= 2,523 cf

Plug-Flow detention time= 239.7 min calculated for 0.023 af (30% of inflow)

Center-of-Mass det. time= 146.5 min (908.2 - 761.7)

Volume	Invert	Avail.Storage	Storage Description	
#1	795.00'	13,816 cf	Dry Swale 1 (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	2,148	0.0	0	0
795.01	2,148	20.0	4	4
797.00	2,148	20.0	855	859
797.01	2,148	100.0	21	881
797.99	3,395	100.0	2,716	3,597
798.00	3,395	100.0	34	3,631
799.00	3,395	100.0	3,395	7,026
801.00	3,395	100.0	6,790	13,816

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.10 cfs @ 13.12 hrs HW=797.65' TW=0.00' (Dynamic Tailwater)

2=Culvert (Passes 0.10 cfs of 0.56 cfs potential flow)

1=Orifice/Grate (Weir Controls 0.10 cfs @ 0.75 fps)

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 25-Year Rainfall=3.87"

Printed 12/13/2022

Page 24

Summary for Pond P2: Dry Swale 2

Inflow Area = 0.150 ac, 73.28% Impervious, Inflow Depth > 2.94" for 25-Year event
 Inflow = 0.66 cfs @ 12.13 hrs, Volume= 0.037 af
 Outflow = 0.47 cfs @ 12.21 hrs, Volume= 0.022 af, Atten= 29%, Lag= 4.7 min
 Primary = 0.47 cfs @ 12.21 hrs, Volume= 0.022 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 797.74' @ 12.21 hrs Surf.Area= 891 sf Storage= 763 cf

Plug-Flow detention time= 122.9 min calculated for 0.022 af (60% of inflow)
 Center-of-Mass det. time= 60.5 min (815.5 - 755.0)

Volume	Invert	Avail.Storage	Storage Description
#1	795.00'	4,000 cf	DrySwale 2 (Prismatic) Listed below (Recalc) 2.00'D x 2.00'H Outlet Control Structure
#2	796.00'	6 cf	
		4,006 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	555	0.0	0	0
795.01	555	20.0	1	1
797.00	555	20.0	221	222
797.01	555	100.0	6	228
797.99	1,000	100.0	762	990
798.00	1,000	100.0	10	1,000
799.00	1,000	100.0	1,000	2,000
801.00	1,000	100.0	2,000	4,000

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.46 cfs @ 12.21 hrs HW=797.74' TW=0.00' (Dynamic Tailwater)
 2=Culvert (Passes 0.46 cfs of 0.75 cfs potential flow)
 1=Orifice/Grate (Weir Controls 0.46 cfs @ 1.23 fps)

Summary for Pond P3: Dry Swale 3

Inflow Area = 0.144 ac, 50.03% Impervious, Inflow Depth > 2.56" for 25-Year event
 Inflow = 0.57 cfs @ 12.13 hrs, Volume= 0.031 af
 Outflow = 0.02 cfs @ 14.23 hrs, Volume= 0.006 af, Atten= 96%, Lag= 125.9 min
 Primary = 0.02 cfs @ 14.23 hrs, Volume= 0.006 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Drainage Study redesign Lot 2 whole site

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 25-Year Rainfall=3.87"

Prepared by Joyce Consulting Group, PC

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Page 25

Peak Elev= 797.62' @ 14.23 hrs Surf.Area= 1,205 sf Storage= 1,098 cf

Plug-Flow detention time= 313.8 min calculated for 0.006 af (19% of inflow)

Center-of-Mass det. time= 204.9 min (972.4 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1	795.00'	5,208 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	1,026	0.0	0	0
795.01	1,026	20.0	2	2
797.00	1,026	20.0	408	410
797.01	1,026	100.0	10	421
797.99	1,314	100.0	1,147	1,567
798.00	1,314	100.0	13	1,580
799.00	1,314	100.0	1,314	2,894
801.00	1,000	100.0	2,314	5,208

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.02 cfs @ 14.23 hrs HW=797.62' TW=0.00' (Dynamic Tailwater)

2=Culvert (Passes 0.02 cfs of 0.71 cfs potential flow)

1=Orifice/Grate (Weir Controls 0.02 cfs @ 0.43 fps)

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1P: Bldg and Gravel to Dry Runoff Area=6,550 sf 73.28% Impervious Runoff Depth>4.26"
 Tc=6.0 min CN=93 Runoff=0.93 cfs 0.053 af

Subcatchment 2P: Bldg and Gravel to Dry Runoff Area=14,968 sf 63.80% Impervious Runoff Depth>4.06"
 Tc=6.0 min CN=91 Runoff=2.06 cfs 0.116 af

Subcatchment 3P: Bldg and Gravel to Dry Runoff Area=6,276 sf 50.03% Impervious Runoff Depth>3.85"
 Tc=6.0 min CN=89 Runoff=0.83 cfs 0.046 af

Subcatchment 4P: Remainder of Site Runoff Area=5,286 sf 0.00% Impervious Runoff Depth>2.96"
 Flow Length=165' Slope=0.0100 '/' Tc=9.6 min CN=80 Runoff=0.50 cfs 0.030 af

Subcatchment EX: Existing Drainage Area Runoff Area=33,080 sf 0.00% Impervious Runoff Depth>2.68"
 Flow Length=210' Slope=0.0100 '/' Tc=23.7 min CN=77 Runoff=1.96 cfs 0.169 af

Reach DP: Design Point - Town System Inflow=1.66 cfs 0.150 af
 Outflow=1.66 cfs 0.150 af

Pond P1: Dry Swale 1 Peak Elev=797.78' Storage=2,897 cf Inflow=2.06 cfs 0.116 af
 Outflow=0.59 cfs 0.061 af

Pond P2: Dry Swale 2 Peak Elev=797.82' Storage=830 cf Inflow=0.93 cfs 0.053 af
 Outflow=0.79 cfs 0.039 af

Pond P3: Dry Swale 3 Peak Elev=797.69' Storage=1,184 cf Inflow=0.83 cfs 0.046 af
 Outflow=0.22 cfs 0.021 af

Total Runoff Area = 1.519 ac Runoff Volume = 0.415 af Average Runoff Depth = 3.28"
73.56% Pervious = 1.117 ac 26.44% Impervious = 0.402 ac

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 100-Year Rainfall=5.29"

Printed 12/13/2022

Page 27

Summary for Subcatchment 1P: Bldg and Gravel to Dry Swale #2

Runoff = 0.93 cfs @ 12.13 hrs, Volume= 0.053 af, Depth> 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.29"

Area (sf)	CN	Description
1,400	98	Roofs, HSG D
3,400	98	Paved parking, HSG D
1,750	80	>75% Grass cover, Good, HSG D
6,550	93	Weighted Average
1,750		26.72% Pervious Area
4,800		73.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 2P: Bldg and Gravel to Dry Swale #1

Runoff = 2.06 cfs @ 12.13 hrs, Volume= 0.116 af, Depth> 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.29"

Area (sf)	CN	Description
6,750	98	Paved parking, HSG D
5,418	80	>75% Grass cover, Good, HSG D
2,800	98	Roofs, HSG D
14,968	91	Weighted Average
5,418		36.20% Pervious Area
9,550		63.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 3P: Bldg and Gravel to Dry Swale #3

Runoff = 0.83 cfs @ 12.13 hrs, Volume= 0.046 af, Depth> 3.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.29"

Drainage Study redesign Lot 2 whole site

NRCC 24-hr A 100-Year Rainfall=5.29"

Prepared by Joyce Consulting Group, PC

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Page 28

Area (sf)	CN	Description
1,740	98	Paved parking, HSG D
3,136	80	>75% Grass cover, Good, HSG D
1,400	98	Roofs, HSG D
6,276	89	Weighted Average
3,136		49.97% Pervious Area
3,140		50.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Summary for Subcatchment 4P: Remainder of Site

Runoff = 0.50 cfs @ 12.17 hrs, Volume= 0.030 af, Depth> 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.29"

Area (sf)	CN	Description
5,286	80	>75% Grass cover, Good, HSG D
5,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0100	0.10		Sheet Flow,
					Grass: Short n= 0.150 P2= 2.50"
1.2	115	0.0100	1.61		Shallow Concentrated Flow,
					Unpaved Kv= 16.1 fps
9.6	165	Total			

Summary for Subcatchment EX: Existing Drainage Area

Runoff = 1.96 cfs @ 12.35 hrs, Volume= 0.169 af, Depth> 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
NRCC 24-hr A 100-Year Rainfall=5.29"

Area (sf)	CN	Description
33,080	77	Woods, Good, HSG D
33,080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.4	50	0.0100	0.05		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 2.50"
5.3	160	0.0100	0.50		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
23.7	210	Total			

Drainage Study redesign Lot 2 whole site

Prepared by Joyce Consulting Group, PC

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Brickyard Road LOT @ Uptowne Pointe, Canandaigua

NRCC 24-hr A 100-Year Rainfall=5.29"

Printed 12/13/2022

Page 29

Summary for Reach DP: Design Point - Town System

Inflow Area = 0.759 ac, 52.87% Impervious, Inflow Depth > 2.37" for 100-Year event
 Inflow = 1.66 cfs @ 12.24 hrs, Volume= 0.150 af
 Outflow = 1.66 cfs @ 12.24 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond P1: Dry Swale 1

Inflow Area = 0.344 ac, 63.80% Impervious, Inflow Depth > 4.06" for 100-Year event
 Inflow = 2.06 cfs @ 12.13 hrs, Volume= 0.116 af
 Outflow = 0.59 cfs @ 12.34 hrs, Volume= 0.061 af, Atten= 71%, Lag= 12.8 min
 Primary = 0.59 cfs @ 12.34 hrs, Volume= 0.061 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 797.78' @ 12.34 hrs Surf.Area= 3,122 sf Storage= 2,897 cf

Plug-Flow detention time= 151.0 min calculated for 0.060 af (52% of inflow)

Center-of-Mass det. time= 81.1 min (835.3 - 754.2)

Volume	Invert	Avail.Storage	Storage Description	
#1	795.00'	13,816 cf	Dry Swale 1 (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	2,148	0.0	0	0
795.01	2,148	20.0	4	4
797.00	2,148	20.0	855	859
797.01	2,148	100.0	21	881
797.99	3,395	100.0	2,716	3,597
798.00	3,395	100.0	34	3,631
799.00	3,395	100.0	3,395	7,026
801.00	3,395	100.0	6,790	13,816

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.59 cfs @ 12.34 hrs HW=797.77' TW=0.00' (Dynamic Tailwater)

2=Culvert (Barrel Controls 0.59 cfs @ 3.02 fps)

1=Orifice/Grate (Passes 0.59 cfs of 0.63 cfs potential flow)

Summary for Pond P2: Dry Swale 2

Inflow Area = 0.150 ac, 73.28% Impervious, Inflow Depth > 4.26" for 100-Year event
 Inflow = 0.93 cfs @ 12.13 hrs, Volume= 0.053 af
 Outflow = 0.79 cfs @ 12.17 hrs, Volume= 0.039 af, Atten= 15%, Lag= 2.8 min
 Primary = 0.79 cfs @ 12.17 hrs, Volume= 0.039 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 797.82' @ 12.17 hrs Surf.Area= 925 sf Storage= 830 cf

Plug-Flow detention time= 102.1 min calculated for 0.039 af (72% of inflow)
 Center-of-Mass det. time= 47.7 min (796.4 - 748.7)

Volume	Invert	Avail.Storage	Storage Description
#1	795.00'	4,000 cf	DrySwale 2 (Prismatic) Listed below (Recalc)
#2	796.00'	6 cf	2.00'D x 2.00'H Outlet Control Structure
		4,006 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	555	0.0	0	0
795.01	555	20.0	1	1
797.00	555	20.0	221	222
797.01	555	100.0	6	228
797.99	1,000	100.0	762	990
798.00	1,000	100.0	10	1,000
799.00	1,000	100.0	1,000	2,000
801.00	1,000	100.0	2,000	4,000

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.77 cfs @ 12.17 hrs HW=797.81' TW=0.00' (Dynamic Tailwater)
 2=Culvert (Barrel Controls 0.77 cfs @ 3.94 fps)
 1=Orifice/Grate (Passes 0.77 cfs of 0.84 cfs potential flow)

Summary for Pond P3: Dry Swale 3

Inflow Area = 0.144 ac, 50.03% Impervious, Inflow Depth > 3.85" for 100-Year event
 Inflow = 0.83 cfs @ 12.13 hrs, Volume= 0.046 af
 Outflow = 0.22 cfs @ 12.37 hrs, Volume= 0.021 af, Atten= 73%, Lag= 14.3 min
 Primary = 0.22 cfs @ 12.37 hrs, Volume= 0.021 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Drainage Study redesign Lot 2 whole site

NRCC 24-hr A 100-Year Rainfall=5.29"

Prepared by Joyce Consulting Group, PC

Printed 12/13/2022

HydroCAD® 10.10-4a s/n 06645 © 2020 HydroCAD Software Solutions LLC

Page 31

Peak Elev= 797.69' @ 12.37 hrs Surf.Area= 1,225 sf Storage= 1,184 cf

Plug-Flow detention time= 160.2 min calculated for 0.021 af (46% of inflow)

Center-of-Mass det. time= 86.3 min (845.7 - 759.4)

Volume	Invert	Avail.Storage	Storage Description	
#1	795.00'	5,208 cf	Custom Stage Data (Prismatic) Listed below (Recalc)	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
795.00	1,026	0.0	0	0
795.01	1,026	20.0	2	2
797.00	1,026	20.0	408	410
797.01	1,026	100.0	10	421
797.99	1,314	100.0	1,147	1,567
798.00	1,314	100.0	13	1,580
799.00	1,314	100.0	1,314	2,894
801.00	1,000	100.0	2,314	5,208

Device	Routing	Invert	Outlet Devices
#1	Device 2	797.60'	10.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	796.00'	6.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 796.00' / 796.00' S= 0.0000 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.22 cfs @ 12.37 hrs HW=797.69' TW=0.00' (Dynamic Tailwater)↑ **2=Culvert** (Passes 0.22 cfs of 0.74 cfs potential flow)↑ **1=Orifice/Grate** (Weir Controls 0.22 cfs @ 0.97 fps)