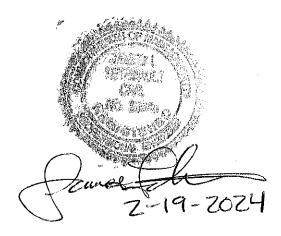
DRAINAGE REPORT

for

RICE POND VILLAGE 17 RICE ROAD, MILLBURY

OCTOBER 24, 2023 REVISED DECEMBER 29, 2023 REVISED FEBRUARY 19, 2024



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INTRODUCTION

The proposed Rice Pond Village development is an apartment development of three buildings each with 64 units for a total of 192 and located at 17 Rice Road in Millbury. The site has an area of 15.6 acres and contains one single family home, a garage and pool area with a large lawn around it but is otherwise undeveloped and wooded.

The topography of the site is defined by a ridge in the middle of the site which separates areas sloping downward to the northeast to the abutting Providence & Worcester Railroad property from areas sloping downward to the southwesterly side of the property to an existing unnamed pond.

The pond receives overland runoff from this site and also from abutters to the south of this property, having frontage on Rice Road. In addition, it receives runoff from some 58 acres of the residential areas south of South Main Street.

A copy of the Web Soil Survey by NRCS is included at the back of this Report and it shows that soils on site are almost all Merrimac series soils categorized as hydrologic soil group A soils. We have excavated some official deep observation holes on site and, at several of these, observed soils had a sandy loam texture inconsistent with that mapping. Nevertheless, this report makes the conservative assumption that that mapping is correct.

There is a small area of Scarboro & Walpole series soils categorized as hydrologic soil group D soils immediately south of the unnamed pond.

There is also a small area of Canton series soils categorized as hydrologic soil group B soils at the southwesterly corner of the property and the entirety of the above referenced offsite drainage area lies over hydrologic soil group B soils, mostly Canton series soils.

Because wooded cover is being converted to lawn and landscaped areas, paved driveways, parking and roofs, the rate of stormwater runoff from the site would increase if no measures were taken to prevent it.

Except for the first few feet of the proposed entrance drive, all of the runoff from the new impervious surfaces will be collected by the site's drainage system and infiltrated.

Roof runoff from building #3 as well as nearly all the proposed parking area will be directed to infiltration structure #1 located near the abutting railroad property.

Roof runoff from building #2, from the clubhouse, from the lawn area west of the clubhouse and building #2 picked up by area drains and a small portion of the parking area will be directed to infiltration structure #2 located on the west side of the proposed entrance driveway.

Roof runoff from building #1 will be directed to infiltration structure #3 located on the east side of the proposed entrance driveway.

In all three cases, because of the very significant size of the proposed structures and because they are located in sand texture soils, there will be no piped outflow of stormwater, even in the 100 year storm event.

The body of this report contains the results of drainage calculations performed for the predevelopment and postdevelopment conditions during 2, 10, 25 and 100 year return frequency type III storm events. The 24 hour rainfalls associated with these storms are 3.20, 4.90, 6.10 and 8.50 inches respectively. Calculations were made using the HydroCAD stormwater modeling program. This program calculates hydrographs using a method very similar to that outlined in the Soil Conservation Service Technical Release Number 20 (TR-20). HydroCAD uses the TR-20 "curve number" evaluations of ground cover and the same times of concentration.

In calculating runoff, we have made certain assumptions. We assume that the maximum distance over which sheet flow will occur is 50 feet.

The following table compares the peak predevelopment and postdevelopment flows of stormwater at the design point:

DESIGN POINT

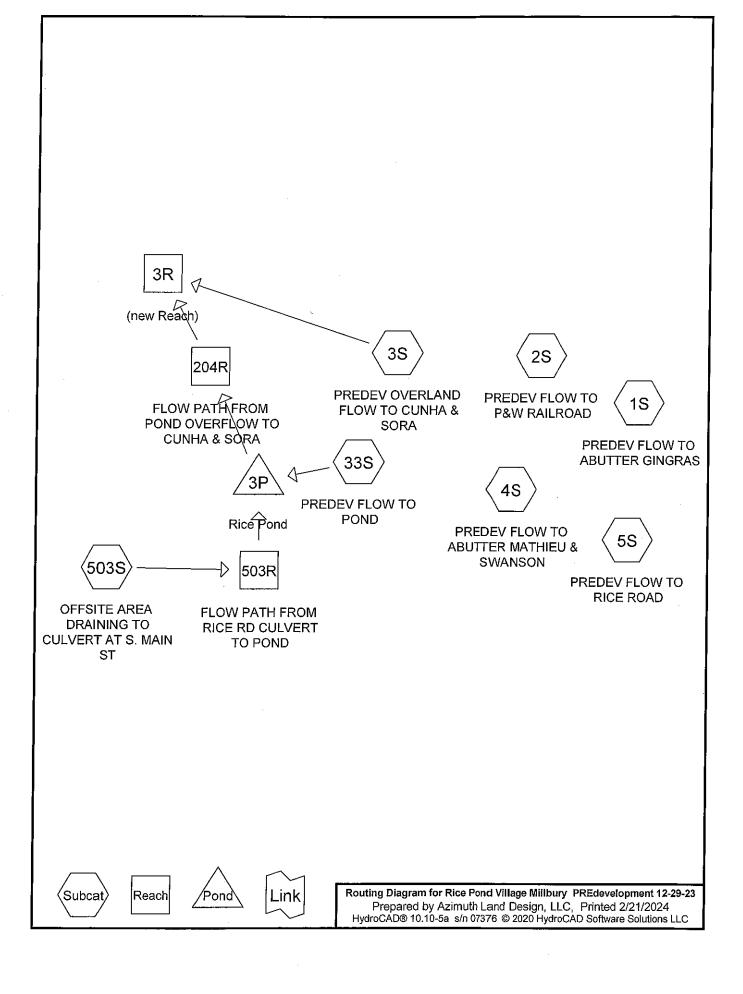
	PEAK FLOW RATE (in cfs)					
•	2 yr storm	10 yr storm	25 yr storm	100 yr storm		
Abutter Gingras property lin	ie					
Subcat #1 pre	0.00 pre	0.00 pre	0.02 pre	0.23 pre		
Subcat #11 post	0.00	0.00	0.00	0.06		
Providence & Worcester rail	lroad property	line	•			
Subcat #2 pre	0.00 pre	0.02	0.13 pre	1.79 pre		
Subcat #12 post	0.00	0.01	0.08	0.75		
Abutter Cunha & Sora prope	erty line					
Reach #3 pre	21.21 pre	62.99 pre	97.00 pre	170.93 pre		
Reach #13 post	21.10	61.78	94.51	164.97		
Abutter Mathieu & Swanson	property line					
Subcat #4 pre	0.00 pre	0.00 pre	0.01 pre	0.09 pre		
Subcat #14 post	0.00	0.00	0.01	0.08		
Rice Road right of way line						
Subcat #5 pre	0.00 pre	0.09 pre	0.37 pre	1.71 pre		
Subcat #15 post	0.00	0.01	0.07	0.37		

EXPLANATION OF HOW PRE AND POST DRAINAGE AREAS ARE THE SAME

I want to also take this opportunity to explain how these drainage calculations correctly compare the same drainage area in pre and postdevelopment conditions.

At first glance, this might not seem to be the case. But that is because subcatchments #'s 4 and 14, the pre and postdevelopment flows from the site to the abutter Mathieu & Swanson are also parts of subcatchments #'s 33 and 233. They're being double counted and they're not the same pre and post. Leaving aside subcatchments 4 and 14 the total areas pre and post are the same.

PREDEVELOPMENT



Summary for Subcatchment 1S: PREDEV FLOW TO ABUTTER GINGRAS

Runoff

0.00 cfs @ 5.00 hrs, Volume=

0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	A	rea (sf)	CN	Description			
		6,858	30	Woods, Go	od, HSG A		
_		10,008	39	>75% Gras	s cover, Go	ood, HSG A	
		16,866	35	Neighted A	verage		
	16,866 100.00% Pervious Area				ervioūs Are	a	
	_						
	Tc	Length	Slope		Capacity	Description	
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	4.3	50	0.1000	0.19		Sheet Flow,	
						Grass: Dense n= 0.240 P2= 3.15"	
	0.9	100	0.1400	1.87		Shallow Concentrated Flow,	
_						Woodland Kv= 5.0 fps	
	5.2	150	Total				

Summary for Subcatchment 2S: PREDEV FLOW TO P&W RAILROAD

Runoff

0.00 cfs @

5.00 hrs, Volume=

0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	_					
_	A	rea (sf)	CN	Description		
	1	79,428	30	Woods, Go	od, HSG A	
		35,859	39	>75% Ġras	s cover. Go	ood, HSG A
		3,896			ing, HSG A	·
-	2	19,183		Weighted A		
		15,287			rvious Area	
		3,896			ervious Are	
		3,030		1.70 % Impe	ei vious Aie	a
	Тс	Length	Slope	Velocity	Capacity	Description
		(feet)	(ft/ft)	(ft/sec)	(cfs)	Description
-	(min)				(015)	
	9.4	50	0.0400	0.09		Sheet Flow,
						Woods: Light underbrush n= 0.400 P2= 3.15"
	0.9	91	0.1200	1.73		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	0.7	197	0.1060	4.99	14.98	Channel Flow,
						Area= 3.0 sf Perim= 4.0' r= 0.75'
						n= 0.080 Earth, long dense weeds
_	11.0	338	Total			

Summary for Subcatchment 3S: PREDEV OVERLAND FLOW TO CUNHA & SORA

Runoff = 0.01 cfs @ 20.00 hrs, Volume=

0.002 af, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

A	rea (sf)	CN	Description		
1	148,793	30 '	Woods, Go	od, HSG A	
	30,807	98 1	Nater Surfa	ace, HSG A	
1	79,600	42	Neighted A	verage	
1	48,793	{	32.85% Pei	rvious Area	
	30,807	•	17.15% Imp	pervious Ar	ea 💮 💮
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.0	50	0.0140	0.03		Sheet Flow,
					Woods: Dense underbrush n= 0.800 P2= 3.15"
2.3	186	0.0710	1.33		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
1.8	400	0.0090	3.75	59.94	Channel Flow,
					Area= 16.0 sf Perim= 14.6' r= 1.10'
		<u></u>			n= 0.040 Earth, cobble bottom, clean sides
29.1	636	Total			

Summary for Subcatchment 4S: PREDEV FLOW TO ABUTTER MATHIEU & SWANSON

Runoff =

0.00 cfs @

5.00 hrs, Volume=

0.000 af. Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	Α	rea (sf)	CN E	Description		
		21,387	30 V	Voods, Go	od, HSG A	
Ī	-	21,387	100.00% Pervious Area			a
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
-	10.6	50	0.1200	0.08	, ,	Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.15"
	0.4	57	0.1800	2.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
_	11.0	107	Total			

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Summary for Subcatchment 5S: PREDEV FLOW TO RICE ROAD

Runoff 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Depth> 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	A	rea (sf)	CN	Description		·	
		22,350	30	Noods, Go	od, HSG A		
		30,632	39 :	>75% Gras	s cover, Go	ood, HSG A	
*		5,307	98_ I	Existing roo	of and drive	way	
		58,289	41 \	Neighted A	verage		,
		52,982	Ç	90.90% Pervious Area			
		5,307	ę	9.10% Impervious Area			
	Тс	Length	Slope	Velocity	Capacity	Description	
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	5.3	50	0.0600	0.16		Sheet Flow,	
						Grass: Dense n= 0.240 P2= 3.15"	
	3.7	212	0.0370	0.96		Shallow Concentrated Flow,	
						Woodland Kv= 5.0 fps	
	9.0	262	Total				

Summary for Subcatchment 33S: PREDEV FLOW TO POND

Runoff

1.76 cfs @ 12.32 hrs, Volume=

0.231 af, Depth> 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	Area (sf)	CN	Description
	30,502	98	Water Surface, HSG A
*	13,200	98	Roofs & Driveways, HSG A
	71,225	39	>75% Grass cover, Good, HSG A
	49,927	30	Woods, Good, HSG A
	14,588	30	Woods, Good, HSG A
*	10,940	98	Roofs & Driveways, HSG B
	26,999	61	>75% Grass cover, Good, HSG B
	20,859	55	Woods, Good, HSG B
*	8,700	98	Roofs & Driveways, HSG D
	42,423	80 -	>75% Grass cover, Good, HSG D
	24,134	77	Woods, Good, HSG D
	313,497	61	Weighted Average
	250,155		79.80% Pervious Area
	63,342		20.20% Impervious Area

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Page 4

	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
Ī	11.9	50	0.0900	0.07		Sheet Flow,
						Woods: Dense underbrush n= 0.800 P2= 3.15"
	3.9	242	0.0430	1.04		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	15.8	292	Total			

Summary for Subcatchment 503S: OFFSITE AREA DRAINING TO CULVERT AT S. MAIN ST

Runoff

24.93 cfs @ 12.63 hrs, Volume=

3.584 af, Depth> 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

_	Area	(ac) C	N Des	cription					
	58.	560 7	70 1/2 a	/2 acre lots, 25% imp, HSG B					
-	43.920 75.00% Pervious Area						•		
	14.	640	25.0	0% Imperv	/ious Area				
	Тс	Length	Slope	Velocity	Capacity	Description			
_	_(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		_		
	40.4	3,090	0.0670	1.27		Lag/CN Method,			

Summary for Reach 3R: (new Reach)

Inflow Area =

69.880 ac, 24.04% Impervious, Inflow Depth > 0.61" for 2 YR STORM event

Inflow

21.21 cfs @ 13.09 hrs, Volume=

3.558 af

Outflow

21.21 cfs @ 13.09 hrs, Volume=

3.558 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Summary for Reach 204R: FLOW PATH FROM POND OVERFLOW TO CUNHA & SORA

Inflow Area =

65.757 ac, 24.48% Impervious, Inflow Depth > 0.66" for 2 YR STORM event

Inflow

21.62 cfs @ 12.93 hrs, Volume=

3.591 af

Outflow

21.21 cfs @ 13.09 hrs, Volume=

3.556 af. Atten= 2%. Lag= 9.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 1.78 fps, Min. Travel Time= 5.1 min

Avg. Velocity = 1.18 fps, Avg. Travel Time= 7.7 min

Peak Storage= 6.528 cf @ 13.00 hrs

Average Depth at Peak Storage= 0.83', Surface Width= 26.83'

Bank-Full Depth= 3.00' Flow Area= 141.0 sf, Capacity= 571.84 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 15.0 '/' Top Width= 92.00'

Length= 547.0' Slope= 0.0068 '/'

Inlet Invert= 389.50', Outlet Invert= 385.80'



Summary for Reach 503R: FLOW PATH FROM RICE RD CULVERT TO POND

Inflow Area = 58.560 ac, 25.00% Impervious, Inflow Depth > 0.73" for 2 YR STORM event

Inflow = 24.93 cfs @ 12.63 hrs, Volume= 3.584 af

Outflow = 24.73 cfs @ 12.72 hrs, Volume= 3.565 af, Atten= 1%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 3.39 fps, Min. Travel Time= 3.0 min Avg. Velocity = 2.03 fps, Avg. Travel Time= 5.0 min

Peak Storage= 4,436 cf @ 12.67 hrs Average Depth at Peak Storage= 0.78', Surface Width= 16.77' Bank-Full Depth= 3.00' Flow Area= 91.5 sf, Capacity= 723.88 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides Side Slope Z-value= 14.0 5.0 '/' Top Width= 59.00' Length= 608.0' Slope= 0.0255 '/' Inlet Invert= 405.50', Outlet Invert= 390.00'



Summary for Pond 3P: Rice Pond

Inflow Area = 65.757 ac, 24.48% Impervious, Inflow Depth > 0.69" for 2 YR STORM event

Inflow = 25.63 cfs @ 12.71 hrs, Volume= 3.796 af

Outflow = 21.62 cfs @ 12.93 hrs, Volume= 3.591 af, Atten= 16%, Lag= 13.3 min

Primary = 21.62 cfs @ 12.93 hrs, Volume= 3.591 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 390.66' @ 12.93 hrs Surf.Area= 40,641 sf Storage= 27,033 cf

Plug-Flow detention time= 37.9 min calculated for 3.591 af (95% of inflow) Center-of-Mass det. time= 21.0 min (880.3 - 859.3)

Volume	Invert	Avail.Storage	Storage Description
#1	389.80'	285,060 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

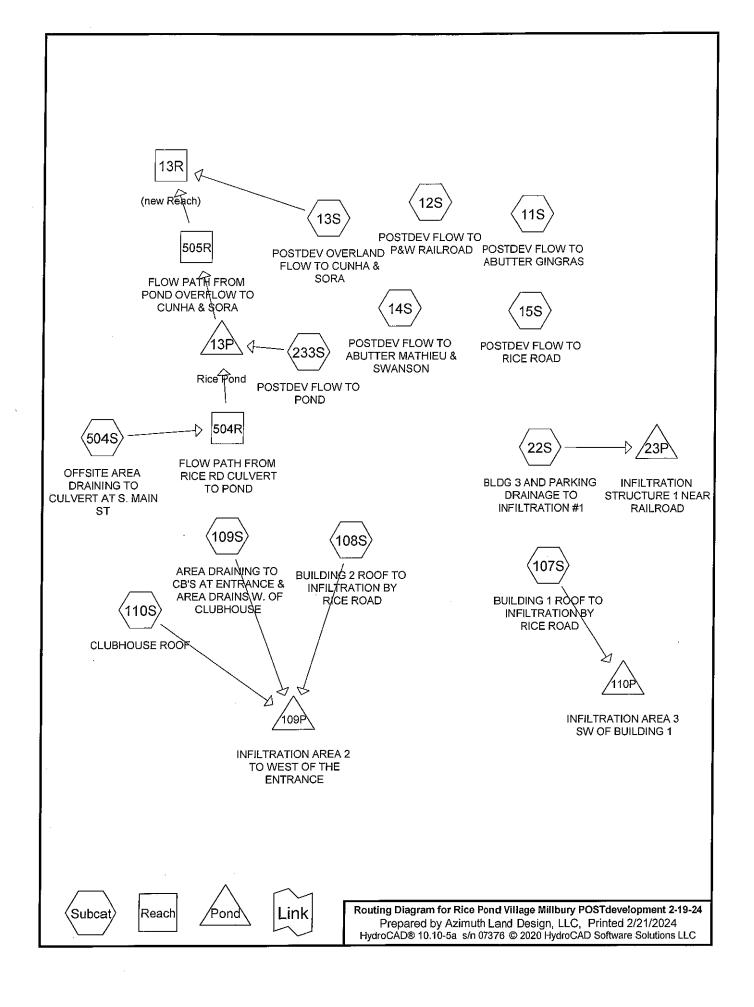
Rice Pond Village MillburyPREdevelopment 12-Type III 24-hr2 YR STORM Rainfall=3.20"Prepared by Azimuth Land Design, LLCPrinted2/21/2024HydroCAD® 10.10-5a s/n 07376© 2020 HydroCAD Software Solutions LLCPage 6

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
389.80	25,072	0	0
390.00	25,815	5,089	5,089
392.00	70,715	96,530	101,619
394.00	112,726	183,441	285,060

Device	Routing	Invert	Outlet Devices
#1	Primary	389.90'	171.9 deg x 2.0' long Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)

Primary OutFlow Max=21.58 cfs @ 12.93 hrs HW=390.66' (Free Discharge) 1=Sharp-Crested Vee/Trap Weir (Weir Controls 21.58 cfs @ 2.23 fps)

POSTDEVELOPMENT



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Summary for Subcatchment 11S: POSTDEV FLOW TO ABUTTER GINGRAS

Runoff

0.00 cfs @ 5.00 hrs, Volume=

0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3:20"

_	A	rea (sf)	CN	CN Description											
		2,556	39	>75% Gras	75% Grass cover, Good, HSG A										
		4,142	30	Woods, Go	Voods, Good, HSG A										
		6,698	33	Veighted Average											
		6,698		100.00% Pervious Area											
	-														
	Tc	Length	Slope		Capacity	Description									
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)										
	3.8	50	0.1400	0.22		Sheet Flow,									
				Grass: Dense n= 0.240 P2= 3.15"											
	0.3	17	0.0300	0.87		Shallow Concentrated Flow,									
						Woodland Kv= 5.0 fps									
	4 1	67	Total		·										

Summary for Subcatchment 12S: POSTDEV FLOW TO P&W RAILROAD

Runoff

0.00 cfs @

5.00 hrs, Volume=

0.000 af. Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	Α	rea (sf)	CN	Description	Description								
	26,710 30 Woods, Good, HSG A												
	41,448 39 >75% Grass cover, Good, HSG A												
68,158 35 Weighted Average													
	68,158 100.00% Pervious Area												
	Tc Length Slope Velocity Capacity (min) (feet) (ft/ft) (ft/sec) (cfs)					Description							
	13.9	50	0.0600	0.06		Sheet Flow,							
_	0.9	109	0.1500	0 1.94		Woods: Dense underbrush n= 0.800 P2= 3.15" Shallow Concentrated Flow, Woodland Kv= 5.0 fps							
	14.8	159	Total										

Summary for Subcatchment 13S: POSTDEV OVERLAND FLOW TO CUNHA & SORA

Runoff

0.01 cfs @ 20.00 hrs, Volume=

0.002 af, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

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Page 2

	Α	rea (sf)	CN I	Description					
	30,807 98 Water Surface, HSG A								
	6,132 39 >75% Grass cover, Good, HSG A								
_	.1	38,178	30 \	<u> Noods, Go</u>	od, HSG A				
	1	75,117	42 \	Veighted A	verage				
	1	44,310	3	32.41% Pei	rvious Area				
		30,807	1	7.59% Imp	pervious Ar	ea .			
	_								
	Tc	Length	Slope	Velocity	Capacity	Description			
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	8.4	50	0.0540	0.10		Sheet Flow,			
						Woods: Light underbrush n= 0.400 P2= 3.15"			
	2.3	186	0.0710	1.33		Shallow Concentrated Flow,			
						Woodland Kv= 5.0 fps			
	1.8	400	0.0090	3.75	59.94	Channel Flow,			
						Area= 16.0 sf Perim= 14.6' r= 1.10'			
						n= 0.040 Earth, cobble bottom, clean sides			
	12.5	636	Total		·				

Summary for Subcatchment 14S: POSTDEV FLOW TO ABUTTER MATHIEU & SWANSON

Runoff = $0.00 \, c$

0.00 cfs @

5.00 hrs, Volume=

0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

_	Α	rea (sf)	CN	Description									
		500	30	Woods, Go	/oods, Good, HSG A								
_		2,555	39	>75% Gras	75% Grass cover, Good, HSG A								
		3,055	38	Weighted A	/eighted Average								
		3,055		100.00% Pe	00.00% Pervious Area								
									1				
	Tc	Length	Slope	7	Capacity	Description							
_	(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)								
	4.1	21	0.0200	0.08		Sheet Flow,							
						Grass: Dense	n= 0.240	P2= 3.15"					

Summary for Subcatchment 15S: POSTDEV FLOW TO RICE ROAD

Runoff =

0.00 cfs @

5.00 hrs, Volume=

0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

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Page 3

_	Α	rea (sf)	CN	<u>Description</u>									
		200	98	· · · · · · · · · · · · · · · · · · ·									
		1,420	30	Woods, Go	od, HSG A	•							
		14,011	39	>75% Grass cover, Good, HSG A									
		15,631	39	9 Weighted Average									
		15,431	!	98.72% Pervious Area									
		200		1.28% Impervious Area									
				-	-								
	Tc	Length	Slope	Velocity	Capacity	Description							
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		<u> </u>						
	8.3	50	0.0200	0.10		Sheet Flow,							
						Grass: Dense n= 0.240 P2= 3.15"							
	0.2	26	0.0200	2.12		Shallow Concentrated Flow,							
						Grassed Waterway Kv= 15.0 fps							

Summary for Subcatchment 22S: BLDG 3 AND PARKING DRAINAGE TO INFILTRATION #1

Runoff = 8.96 cfs @ 12.08 hrs, Volume=

76 Total

8.5

0.598 af, Depth> 1.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	Α	rea (sf)	CN I	Description								
		23,213	3 39 >75% Grass cover, Good, HSG A									
*	1	36,909	98 [Drive, driveways & roofs HSG A								
	160,122 89 Weighted Average											
	23,213 14.50% Pervious Area											
	1	36,909	8	5.50% lmp	pervious Ar	ea						
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description						
_	5.3	50	0.0600	0.16		Sheet Flow,						
	0.4	78	0.0220	3.01		Grass: Dense n= 0.240 P2= 3.15" Shallow Concentrated Flow, Paved Kv= 20.3 fps						
_	5.7	128	Total									

Summary for Subcatchment 107S: BUILDING 1 ROOF TO INFILTRATION BY RICE ROAD

Runoff = 1.55 cfs @ 12.07 hrs, Volume=

0.112 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	Area (sf)	CN	Description				
21,120		98	Roofs, HSG A				
	21,120		100.00% Impervious Area				

Rice Pond Village Millbury POSTdevelopment 2-1 Type III 24-hr 2 YR STORM Rainfall=3.20" Prepared by Azimuth Land Design, LLC

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Page 4

Tc Length Slope Velocity Capacity Description (min) (feet) (ft/ft) (ft/sec) (cfs)

5.0 Direct Entry,

Summary for Subcatchment 108S: BUILDING 2 ROOF TO INFILTRATION BY RICE ROAD

Runoff

1.55 cfs @ 12.07 hrs, Volume=

0.112 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	Area (sf)	CN [Description									
	21,120	98 F	Roofs, HSG	loofs, HSG A								
	21,120	,	100.00% In	rea	,							
To (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description							
5.0	1				Direct Entry.							

ary for Subcatchment 109S: AREA DRAINING TO CB'S AT ENTRANCE & AREA DRAINS W. OF CLUB

Runoff

0.08 cfs @ 12.40 hrs, Volume=

0.012 af. Depth> 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

		rea (sf)	CN I	Description										
		1,699	39 :	39 >75% Grass cover, Good, HSG A										
		5,151	98 I	Paved park	ing, HSG A									
*		2,100	98 I	98 Pool and apron										
		13,449	39	· · · · · · · · · · · · · · · · · · ·										
		22,399	58 \											
		15,148	•	67.63% Pervious Area										
		7,251	(32.37% Impervious Area										
	Тс	Length	Slope		Capacity	Description								
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)									
	14.4	50	0.0050	0.06		Sheet Flow,								
						Grass: Dense n= 0.240 P2= 3.15"								
	0.7	90	0.0220	2.22		Shallow Concentrated Flow,								
						Grassed Waterway Kv= 15.0 fps								
	15.1	140	Total											

Summary for Subcatchment 110S: CLUBHOUSE ROOF

Runoff

0.35 cfs @ 12.07 hrs, Volume=

0.025 af, Depth> 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

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Page 5

A	rea (sf)	CN E	Description								
	4,800	98 F	Roofs, HSG A								
	4,800	1	100.00% Impervious Area								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description						
5.0					Direct Entry,		÷				

Summary for Subcatchment 233S: POSTDEV FLOW TO POND

Runoff

2.41 cfs @ 12.11 hrs, Volume=

0.229 af, Depth> 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

	Α	rea (sf)	CN I	Description								
		30,502	98 \	Nater Surf	ace, HSG A	4						
		85,544	39	>75% Gras	s cover, Go	ood, HSG A						
		45,408	30 \	Noods, Go	oods, Good, HSG A							
*		12,710			iveways HS							
*		10,940			iveways, H							
		26,999			•	ood, HSG B						
		20,859		,	od, HSG B							
*		8,700			iveways, H							
		42,423			•	ood, HSG D						
		<u> 24,134 </u>	4 77 Woods, Good, HSG D									
	308,219 61 Weighted Average											
		45,367		'9.61% Pei								
		62,852	2	20.39% Imp	pervious Ar	ea						
	_		•									
	Tc	Length	Slope	Velocity	Capacity	Description						
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
	0.5	50	0.0400	1.57		Sheet Flow,						
						Smooth surfaces n= 0.011 P2= 3.15"						
	1.1	188	0.0350	2.81		Shallow Concentrated Flow,						
		00	0.0400	0.50		Grassed Waterway Kv= 15.0 fps						
	3.1	92	0.0100	0.50		Shallow Concentrated Flow,						
_						Woodland Kv= 5.0 fps						
	4.7	330	Total									

Summary for Subcatchment 504S: OFFSITE AREA DRAINING TO CULVERT AT S. MAIN ST

Runoff

24.93 cfs @ 12.63 hrs, Volume=

3.584 af, Depth> 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 2 YR STORM Rainfall=3.20"

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Page 6

A	rea (ad	c) C	N Des	cription									
	58.56	0 7	70 1/2 acre lots, 25% imp, HSG B										
	43.92 14.64			0% Pervio 0% Imper									
(m		ength (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description							
40).4	3,090	0.0670	1.27		Lag/CN Method,							

Summary for Reach 13R: (new Reach)

69.656 ac, 24.10% Impervious, Inflow Depth > 0.61" for 2 YR STORM event Inflow Area =

Inflow 21.10 cfs @ 13.09 hrs, Volume= 3.556 af

Outflow 21.10 cfs @ 13.09 hrs, Volume= 3.556 af. Atten= 0%. Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Summary for Reach 504R: FLOW PATH FROM RICE RD CULVERT TO POND

58.560 ac, 25.00% Impervious, Inflow Depth > 0.73" for 2 YR STORM event Inflow Area =

24.93 cfs @ 12.63 hrs, Volume= Inflow 3.584 af

Outflow 24.73 cfs @ 12.72 hrs, Volume= 3.565 af, Atten= 1%, Lag= 5.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 3.39 fps, Min. Travel Time= 3.0 min

Avg. Velocity = 2.03 fps, Avg. Travel Time= 5.0 min

Peak Storage= 4,436 cf @ 12.67 hrs

Average Depth at Peak Storage= 0.78', Surface Width= 16.77' Bank-Full Depth= 3.00' Flow Area= 91.5 sf, Capacity= 723.88 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 14.0 5.0 '/' Top Width= 59.00'

Length= 608.0' Slope= 0.0255 '/'

Inlet Invert= 405.50', Outlet Invert= 390.00'



Summary for Reach 505R: FLOW PATH FROM POND OVERFLOW TO CUNHA & SORA

inflow Area = 65.636 ac, 24.50% Impervious, Inflow Depth > 0.66" for 2 YR STORM event

Inflow 21.50 cfs @ 12.93 hrs, Volume= 3.589 af

21.10 cfs @ 13.09 hrs, Volume= 3.554 af, Atten= 2%, Lag= 9.6 min Outflow

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Page 7

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 1.78 fps, Min. Travel Time= 5.1 min

Avg. Velocity = 1.18 fps, Avg. Travel Time= 7.7 min

Peak Storage= 6,501 cf @ 13.00 hrs

Average Depth at Peak Storage= 0.83', Surface Width= 26.78'

Bank-Full Depth= 3.00' Flow Area= 141.0 sf, Capacity= 571.84 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 15.0 '/' Top Width= 92.00'

Length= 547.0' Slope= 0.0068 '/'

Inlet Invert= 389.50'. Outlet Invert= 385.80'



Summary for Pond 13P: Rice Pond

Inflow Area = 65.636 ac, 24.50% Impervious, Inflow Depth > 0.69" for 2 YR STORM event

Inflow = 25.35 cfs @ 12.71 hrs, Volume= 3.794 af

Outflow = 21.50 cfs @ 12.93 hrs, Volume= 3.589 af, Atten= 15%, Lag= 12.8 min

Primary = 21.50 cfs @ 12.93 hrs, Volume= 3.589 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Peak Elev= 390.66' @ 12.93 hrs Surf.Area= 40,599 sf Storage= 26,956 cf

Plug-Flow detention time= 37.9 min calculated for 3.582 af (94% of inflow)

Center-of-Mass det. time= 21.1 min (879.9 - 858.9)

Volume	Invert	Avail.9	Storage	Storage	Description		
#1	389.80'	285	,060 cf	Custom	Stage Data (Pri	matic) Listed	d belov
Elevation (feet)		.Area (sq-ft)		:.Store c-feet)	Cum.Store (cubic-feet)		
389.80		5,072		0	0		
390.00 392.00		5,815 0,715	g	5,089 6,530	5,089 101,619		
394.00		2,726		3,441	285,060		

Device	Routing	Invert	Outlet Devices	
#1	Primary	389.90'	171.9 deg x 2.0' long Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)	

Primary OutFlow Max=21.46 cfs @ 12.93 hrs HW=390.66' (Free Discharge)
1=Sharp-Crested Vee/Trap Weir (Weir Controls 21.46 cfs @ 2.23 fps)

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Page 8

Summary for Pond 23P: INFILTRATION STRUCTURE 1 NEAR RAILROAD

Inflow Area = 3.676 ac, 85.50% Impervious, Inflow Depth > 1.95" for 2 YR STORM event

inflow 8.96 cfs @ 12.08 hrs, Volume= 0.598 af

Outflow 1.53 cfs @ 11.75 hrs, Volume= 0.598 af, Atten= 83%, Lag= 0.0 min

Discarded = 1.53 cfs @ 11.75 hrs, Volume= 0.598 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 375.00' @ 12.56 hrs Surf.Area= 7,984 sf Storage= 7,923 cf

Plug-Flow detention time= 35.2 min calculated for 0.598 af (100% of inflow)

Center-of-Mass det. time= 34.7 min (812.5 - 777.8)

<u>Volume</u>	Invert A	Avail.Storage	Storag	ge Description
#1	373.50'	14,382 cf	Custo	om Stage Data (Prismatic) Listed below (Recalc)
			75,848	8 cf Overall - 39,893 cf Embedded = 35,955 cf \times 40.0% Voids
#2	374.00'	29,734 cf		_it retain_it 5.0' x 110 Inside #1
			Inside:	= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf
			Outsid	de= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf
			1 Row	s adjusted for 2,306.6 cf perimeter wall
		44,116 cf	Total A	Available Storage
Elevation	Surf.Are	ea Inc	.Store	Cum.Store
(feet)	(sq-	ft) (cubi	c-feet)	(cubic-feet)
373.50	7,98	34	0	0
383.00	7,98	34 7	75,848	75,848

Discarded OutFlow Max=1.53 cfs @ 11.75 hrs HW=373.60' (Free Discharge) 1=Exfiltration (Exfiltration Controls 1.53 cfs)

Outlet Devices

Summary for Pond 109P: INFILTRATION AREA 2 TO WEST OF THE ENTRANCE

8.270 in/hr Exfiltration over Surface area

Inflow Area = 1.109 ac, 68.65% Impervious, Inflow Depth > 1.62" for 2 YR STORM event

Inflow 1.90 cfs @ 12.07 hrs, Volume= 0.150 af

Invert

373.50'

Outflow 0.46 cfs @ 11.78 hrs, Volume= 0.150 af, Atten= 76%, Lag= 0.0 min

0.46 cfs @ 11.78 hrs, Volume= Discarded = 0.150 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 392.96' @ 12.49 hrs Surf.Area= 2,384 sf Storage= 1,360 cf

Plug-Flow detention time= 16.3 min calculated for 0.150 af (100% of inflow)

Center-of-Mass det. time= 15.9 min (765.2 - 749.3)

Device

#1

Routing

Discarded

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#1

Discarded

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Page 9

Volume	Invert A	vail.Storage	Storage D	Description				
#1	392.00'	2,972 cf		Custom Stage Data (Prismatic) Listed below (Recalc)				
#2	392.50'	6,978 cf	•	16,688 cf Overall - 9,259 cf Embedded = 7,429 cf x 40.0% Voids				
#2	392.30	0,970 01	retain_it retain_it 4.0' x 31 Inside #1 Inside= 84.0"W x 48.0"H => 28.87 sf x 8.00'L = 230.9 cf					
				96.0"W x 56.0"H => 37.33 sf x 8.00'L = 298.7 cf				
			4 Rows ad	djusted for 181.2 cf perimeter wall				
		9,950 cf	Total Avail	ilable Storage				
Elevation	Surf.Are	a Inc	.Store	Cum.Store				
(feet)	(sq-ff	t) (cubio	c-feet) ((cubic-feet)				
392.00	2,38	4	0	. 0				
399.00	2,38	4 1	6,688	16,688				
Device R	outing	Invert Outle	et Devices					

Discarded OutFlow Max=0.46 cfs @ 11.78 hrs HW=392.08' (Free Discharge) 1=Exfiltration (Exfiltration Controls 0.46 cfs)

Summary for Pond 110P: INFILTRATION AREA 3 SW OF BUILDING 1

392.00' 8.270 in/hr Exfiltration over Surface area

Inflow Area = 0.485 ac,100.00% Impervious, Inflow Depth > 2.77" for 2 YR STORM event

Inflow = 1.55 cfs @ 12.07 hrs, Volume= 0.112 af

Outflow = 0.19 cfs @ 11.90 hrs, Volume= 0.112 af, Atten= 88%, Lag= 0.0 min

Discarded = 0.19 cfs @ 11.90 hrs, Volume= 0.112 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 393.12' @ 12.61 hrs Surf.Area= 3,368 sf Storage= 1,745 cf

Plug-Flow detention time= 68.6 min calculated for 0.112 af (100% of inflow) Center-of-Mass det. time= 67.8 min (805.6 - 737.8)

Volume	invert	Avail.Sto	rage Storage	Description
#1	392.00'	3,5	42 cf Custom	Stage Data (Prismatic) Listed below (Recalc)
			8,856 cf	Overall x 40.0% Voids
#2	392.50'	4,1		t retain_it 3.0' x 25
			Inside=	84.0"W x 36.0"H => 21.33 sf x 8.00'L = 170.6 cf
			Outside:	= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
			4 Rows	adjusted for 94.4 cf perimeter wall
		7,7	13 cf Total Av	vailable Storage
Elevatio	n Sı	ırf.Area	Inc.Store	Cum.Store
(feet		(sq-ft)	(cubic-feet)	(cubic-feet)
392.0	0	1,968	0	0
396.5	0	1,968	8,856	8,856
Device	Routing	Invert	Outlet Device	S
#1	Discarded	392.00'	2.410 in/hr Ex	diltration over Surface area

Rice Pond Village Millbury POSTdevelopment 2-1 Type III 24-hr2 YR STORM Rainfall=3.20"Prepared by Azimuth Land Design, LLCPrinted 2/21/2024HydroCAD® 10.10-5a s/n 07376 © 2020 HydroCAD Software Solutions LLCPage 10

Discarded OutFlow Max=0.19 cfs @ 11.90 hrs HW=392.52' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.19 cfs)

PREDEVELOPMENT

Summary for Subcatchment 1S: PREDEV FLOW TO ABUTTER GINGRAS

Runoff = 0.00 cfs @ 15.27 hrs, Volume=

0.002 af, Depth> 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

_	Α	rea (sf)	CN	Description	Pescription						
		6,858	30	Woods, Go	od, HSG A						
_		10,008	39	>75% Gras	s cover, Go	ood, HSG A					
		16,866	35	Weighted A	verage						
		16,866		100.00% Pe	ervious Are	a					
_	Tc (min)	Length (feet)	Slope (ft/ft)	•	Capacity (cfs)	Description					
	4.3	50	0.1000	0.19		Sheet Flow,					
	0.9	100	0.1400	1.87		Grass: Dense n= 0.240 P2= 3.15" Shallow Concentrated Flow, Woodland Kv= 5.0 fps					
	5.2	150	Total								

Summary for Subcatchment 2S: PREDEV FLOW TO P&W RAILROAD

Runoff = 0.02 cfs @ 17.23 hrs, Volume=

0.008 af, Depth> 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

A	<u>re</u> a (sf)	CN [Description						
1	79,428	30 \	30 Woods, Good, HSG A						
	35,859			•	ood, HSG A				
	3,896	98 F	Paved park	ing, HSG A					
2	19,183		Veighted A						
2	15,287			∿ious Area					
	3,896	1	.78% Impe	ervious Are	a				
-		01	3.4.1. 20	0 ''	B				
Tc	Length	Slope	Velocity	Capacity	Description				
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
9.4	50	0.0400	0.09		Sheet Flow,				
					Woods: Light underbrush n= 0.400 P2= 3.15"				
0.9	91	0.1200	1.73		Shallow Concentrated Flow,				
					Woodland Kv= 5.0 fps				
0.7	197	0.1060	4.99	14.98	•				
					Area= 3.0 sf Perim= 4.0' r= 0.75'				
					n= 0.080 Earth, long dense weeds				
11.0	338	Total							

Summary for Subcatchment 3S: PREDEV OVERLAND FLOW TO CUNHA & SORA

Runoff = 0.27 cfs @ 12.75 hrs, Volume=

0.079 af, Depth> 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

A	rea (sf)	ÇN I	Description		
148,793 30 Woods, Good, HSG A					
	30,807	<u>98 \</u>	<u>/Vater Surfa</u>	ace, HSG A	
· 1	79,600	42 \	Neighted A	verage	
1	48,793		32.85% Per	vious Area	
*	30,807	, í	17.15% Imp	ervious Ar	ea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.0	50	0.0140	0.03		Sheet Flow,
2.3	186	0.0710	1.33		Woods: Dense underbrush n= 0.800 P2= 3.15" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.8	400	0.0090	3.75	59.94	Channel Flow, Area= 16.0 sf Perim= 14.6' r= 1.10' n= 0.040 Earth, cobble bottom, clean sides
29.1	636	Total			

Summary for Subcatchment 4S: PREDEV FLOW TO ABUTTER MATHIEU & SWANSON

Runoff = 0.00 cfs @ 20.00 hrs, Volume=

0.000 af, Depth> 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

A	rea (sf)	CN [Description		
	21,387	30 \	Noods, Go	od, HSG A	· · · · · · · · · · · · · · · · · · ·
	21,387	1	100.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1200	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.15"
0.4	57	0.1800	2.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.0	107	Total		•	

Summary for Subcatchment 5S: PREDEV FLOW TO RICE ROAD

Runoff

0.09 cfs @ 12.47 hrs, Volume=

0.022 af, Depth> 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

	A	rea (sf)	CN	Description								
		22,350	30	Noods, Go	Voods, Good, HSG A							
		30,632	39 :	>75% Gras	s cover, Go	ood, HSG A						
*		5,307	98 I	Existing roo	f and drive	way						
		58,289	41 \	Neighted A	verage	·						
		52,982	(90.90% Per	vious Area							
		5,307	9	9.10% Impe	ervious Are	a						
	Tc	Length	Slope	Velocity	Capacity	Description						
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
	5.3	50	0.0600	0.16		Sheet Flow,						
						Grass: Dense n= 0.240 P2= 3.15"						
	3.7	212	0.0370	0.96		Shallow Concentrated Flow,						
						Woodland Kv= 5.0 fps						
	9.0	262	Total									

Summary for Subcatchment 33S: PREDEV FLOW TO POND

Runoff

7.31 cfs @ 12.24 hrs, Volume=

0.706 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

	Area (sf)	CN	Description
	30,502	98	Water Surface, HSG A
*	13,200	98	Roofs & Driveways, HSG A
	71,225	39	>75% Grass cover, Good, HSG A
	49,927	30	Woods, Good, HSG A
	14,588	30	Woods, Good, HSG A
*	10,940	98	Roofs & Driveways, HSG B
	26,999	61	>75% Grass cover, Good, HSG B
	20,859	55	Woods, Good, HSG B
*	8,700	98	Roofs & Driveways, HSG D
	42,423	80	>75% Grass cover, Good, HSG D
	24,134	77	Woods, Good, HSG D
	313,497	61	Weighted Average
	250,155		79.80% Pervious Area
	63,342		20.20% Impervious Area

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Page 4

_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	11.9	50	0.0900	0.07		Sheet Flow,
						Woods: Dense underbrush n= 0.800 P2= 3.15"
	3.9	242	0.0430	1.04		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	15.8	292	Total		•	

Summary for Subcatchment 503S: OFFSITE AREA DRAINING TO CULVERT AT S. MAIN ST

Runoff

64.39 cfs @ 12.59 hrs, Volume=

8.686 af, Depth> 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

_	Area	(ac) (CN Description									
	58.	58.560 70 1/2 acre lots, 25% imp, HSG B										
	43.920 75.00% Pervious Area											
	14.	640	25.0	0% Imperv	ious Area							
	Tc	Length	Slope	Velocity	Capacity	Description						
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
	40.4	3,090	0.0670	1.27		Lag/CN Method,						

Summary for Reach 3R: (new Reach)

Inflow Area =

69.880 ac, 24.04% Impervious, Inflow Depth > 1.57" for 10 YR STORM event

Inflow

62.99 cfs @ 12.88 hrs, Volume=

9.119 af

Outflow

62.99 cfs @ 12.88 hrs, Volume=

9.119 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs. dt= 0.03 hrs

Summary for Reach 204R: FLOW PATH FROM POND OVERFLOW TO CUNHA & SORA

Inflow Area =

65.757 ac, 24.48% Impervious, Inflow Depth > 1.66" for 10 YR STORM event

Inflow

63.42 cfs @ 12.76 hrs, Volume=

9.096 af

Outflow

62.73 cfs @ 12.88 hrs, Volume=

9.040 af, Atten= 1%, Lag= 7.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 2.33 fps, Min. Travel Time= 3.9 min

Avg. Velocity = 1.39 fps, Avg. Travel Time= 6.6 min

Peak Storage= 14,713 cf @ 12.82 hrs

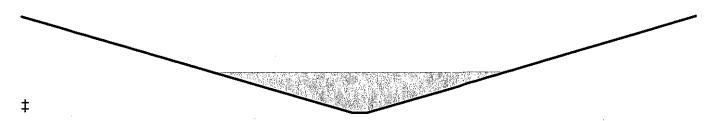
Average Depth at Peak Storage= 1.27', Surface Width= 40.22'

Bank-Full Depth= 3.00' Flow Area= 141.0 sf, Capacity= 571.84 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 15.0 '/' Top Width= 92.00' Length= 547.0' Slope= 0.0068 '/'

Inlet Invert= 389.50', Outlet Invert= 385.80'



Summary for Reach 503R: FLOW PATH FROM RICE RD CULVERT TO POND

Inflow Area = 58,560 ac, 25,00% Impervious, Inflow Depth > 1.78" for 10 YR STORM event

Inflow = 64.39 cfs @ 12.59 hrs, Volume= 8.686 af

Outflow = 64.13 cfs @ 12.66 hrs, Volume= 8.656 af, Atten= 0%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

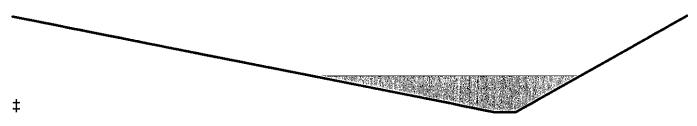
Max. Velocity= 4.31 fps, Min. Travel Time= 2.4 min Avg. Velocity = 2.36 fps, Avg. Travel Time= 4.3 min

Peak Storage= 9,051 cf @ 12.62 hrs Average Depth at Peak Storage= 1.15', Surface Width= 23.87' Bank-Full Depth= 3.00' Flow Area= 91.5 sf, Capacity= 723.88 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides Side Slope Z-value= 14.0 5.0 '/' Top Width= 59.00'

Length= 608.0' Slope= 0.0255 '/'

Inlet Invert= 405.50', Outlet Invert= 390.00'



Summary for Pond 3P: Rice Pond

Inflow Area = 65.757 ac, 24.48% Impervious, Inflow Depth > 1.71" for 10 YR STORM event

Inflow = 67.29 cfs @ 12.64 hrs, Volume= 9.362 af

Outflow = 63.42 cfs @ 12.76 hrs, Volume= 9.096 af, Atten= 6%, Lag= 7.6 min

Primary = 63.42 cfs @ 12.76 hrs, Volume= 9.096 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 391.10' @ 12.76 hrs Surf.Area= 50,605 sf Storage= 47,281 cf

Plug-Flow detention time= 23.9 min calculated for 9.078 af (97% of inflow) Center-of-Mass det. time= 14.2 min (852.9 - 838.6)

Volume	Invert	Avail.Storage	Storage Description
#1	389.801	285.060 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Rice Pond Village Millbury PREdevelopment 12 Type III 24-hr 10 YR STORM Rainfall=4.90" Prepared by Azimuth Land Design, LLC HydroCAD® 10.10-5a s/n 07376 © 2020 HydroCAD Software Solutions LLC Printed 2/21/2024

Page 6

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
389.80	25,072	0	0
390.00	25,815	5,089	5,089
392.00	70,715	96,530	101,619
394.00	112,726	183,441	285,060

Device	Routing	Invert	Outlet Devices			
#1	Primary	389.90'	171.9 deg x 2.0' long Sharp-Crested Vee/Trap Weir			

Primary OutFlow Max=63.38 cfs @ 12.76 hrs HW=391.10' (Free Discharge)
1=Sharp-Crested Vee/Trap Weir (Weir Controls 63.38 cfs @ 2.77 fps)

POSTDEVELOPMENT

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Summary for Subcatchment 11S: POSTDEV FLOW TO ABUTTER GINGRAS

Runoff

0.00 cfs @ 17.13 hrs, Volume=

0.000 af, Depth> 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

_	Area (sf) CN Description												
		2,556	39	>75% Grass cover, Good, HSG A									
		4,142	30	Woods, Go	Woods, Good, HSG A								
	6,698 33 Weighted Average												
		6,698		100.00% Pe	ervious Are	ea							
	Tc	Length	Slope	•	Capacity	Description							
_	(min)	(feet)	(ft/ft) (ft/sec)	(cfs)								
	3.8	50	0.1400	0.22		Sheet Flow,							
Grass: Dense n= 0.240 F					Grass: Dense n= 0.240 P2= 3.15"								
0.3 17 0.0300 0.87				0.87		Shallow Concentrated Flow,							
						Woodland Kv= 5.0 fps							
	4.1 67 Total												

Summary for Subcatchment 12S: POSTDEV FLOW TO P&W RAILROAD

Runoff

0.01 cfs @ 15.43 hrs, Volume=

0.006 af, Depth> 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

	Area (sf) CN Description								
26,710 30 Woods, Good, HSG A									
41,448 39 >75% Grass cover, Good, HSG A									
	•	68,158	35	Weighted A	verage				
		68,158		100.00% Pe	ervious Are	a			
	Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description			
_	13.9	50	0.0600	0.06		Sheet Flow,			
	0.9	109	0.1500	1.94		Woods: Dense underbrush n= 0.800 P2= 3.15" Shallow Concentrated Flow, Woodland Kv= 5.0 fps			
	14.8	159	Total						

Summary for Subcatchment 13S: POSTDEV OVERLAND FLOW TO CUNHA & SORA

Runoff

0.34 cfs @ 12.49 hrs, Volume=

0.078 af, Depth> 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

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Page 2

	А	rea (sf)	CN i	Description					
-	30,807 98 Water Surface, HSG A								
	6,132 39 >75% Grass cover, Good, HSG A								
138,178 30 Woods, Good, HSG A									
-		75,117		Neighted A					
		44,310		_	vious Area				
		30,807		17.59% lmp	oervious Ar	ea			
	Tc	Length	Slope		Capacity	Description			
(min) (feet) (ft/ft) (ft/sec) (cfs)									
	8.4	50	0.0540	0.10		Sheet Flow,			
						Woods: Light underbrush n= 0.400 P2= 3.15"			
	2.3	186	0.0710	1.33		Shallow Concentrated Flow,			
						Woodland Kv= 5.0 fps			
1.8 400 0.0090 3.75 59.94 Channel Flow ,									
						Area= 16.0 sf Perim= 14.6' r= 1.10'			
_						n= 0.040 Earth, cobble bottom, clean sides			
	12.5	636	Total						

Summary for Subcatchment 14S: POSTDEV FLOW TO ABUTTER MATHIEU & SWANSON

Runoff = 0.00 cfs @ 13.73 hrs, Volume=

0.001 af, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

	Α	rea (sf)	CN	Description							
•		500	30	Woods, Go	Woods, Good, HSG A						
		2,555	39	>75% Gras	s cover, Go	ood, HSG A					
		3,055	38	Weighted Average							
		3,055		100.00% Pe	ervious Are	a					
		Length	Slope	•	Capacity	Description					
_	(min)	(feet)	(ft/ft)) (ft/sec)_	(cfs)						
	4.1	21	0.0200	0.08		Sheet Flow,					
						Grass Dense	n = 0.240	P2= 3 15"			

Summary for Subcatchment 15S: POSTDEV FLOW TO RICE ROAD

Runoff = 0.01 cfs @ 12.54 hrs, Volume=

0.004 af, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

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Page 3

	Α	rea (sf)	CN	Description									
		200	98	Paved park	aved parking, HSG A								
		1,420	30	Woods, Go	Voods, Good, HSG A								
_		14,011	39	>75% Gras	s cover, Go	ood, HSG A							
15,631 39 Weighted Average													
15,431 98.72% Pervious Area													
		200		1.28% Impe	ervious Are	a .							
	Tc	Length	Slope	•	Capacity	Description							
_	(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)								
	8.3	50	0.0200	0.10		Sheet Flow,							
						Grass: Dense n= 0.240 P2= 3.15"							
	0.2	26	0.0200	2.12		Shallow Concentrated Flow,							
_						Grassed Waterway Kv= 15.0 fps							
	8.5	76	Total										

Summary for Subcatchment 22S: BLDG 3 AND PARKING DRAINAGE TO INFILTRATION #1

Runoff = 15.49 cfs @ 12.08 hrs, Volume=

1.063 af, Depth> 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

	<u> </u>	rea (sf)	CN [<u>Description</u>						
	23,213 39 >75% Grass cover, Good, HSG A									
*										
	1	60,122	89 \	Veighted A	verage					
		23,213	1	4.50% Pei	vious Area					
136,909 85.50% Impervious Area										
	Tc	Length	Slope	Velocity	Capacity	Description				
_	<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	5.3	50	0.0600	0.16		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 3.15"				
	0.4	78	0.0220	3.01		Shallow Concentrated Flow,				
						Paved Kv= 20.3 fps				
	5.7	128	Total							

Summary for Subcatchment 107S: BUILDING 1 ROOF TO INFILTRATION BY RICE ROAD

Runoff = 2.39 cfs @ 12.07 hrs, Volume=

0.175 af, Depth> 4.33"

	Area (sf)	CN	Description	
	21,120	98	Roofs, HSG A	
<u></u>	21,120		100.00% Impervious Area	

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Page 4

Tc Length Slope Velocity Capacity Description (ft/ft) (min) (feet) (ft/sec) (cfs) 5.0 Direct Entry,

Summary for Subcatchment 108S: BUILDING 2 ROOF TO INFILTRATION BY RICE ROAD

Runoff

2.39 cfs @ 12.07 hrs, Volume=

0.175 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

	rea (sf)	CN [Description		
	21,120	98 F	Roofs, HSC		
	21,120	1	00.00% Im	pervious A	Area
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	·				Direct Entry,

ary for Subcatchment 109S: AREA DRAINING TO CB'S AT ENTRANCE & AREA DRAINS W. OF CLUB

Runoff

0.43 cfs @ 12.24 hrs. Volume=

0.043 af, Depth> 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

		Area (sf)	CN	Description								
		1,699	39 ;	>75% Gras	s cover, Go	ood, HSG A						
		5,151	98	Paved park								
*		2,100	98	Pool and apron								
		13,449	39	>75% Gras	s cover, Go	ood, HSG A						
		22,399	58 \	Neighted A								
		15,148	(67.63% Pervious Area								
		7,251	;	32.37% Impervious Area								
	Tc	Length	Slope	Velocity	Capacity	Description						
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
	14.4	50	0.0050	0.06		Sheet Flow,						
						Grass: Dense n= 0.240 P2= 3.15"						
	0.7	90	0.0220	2.22		Shallow Concentrated Flow,						
						Grassed Waterway Kv= 15.0 fps						
	15.1	140	Total									

Summary for Subcatchment 110S: CLUBHOUSE ROOF

Runoff

0.54 cfs @ 12.07 hrs, Volume=

0.040 af, Depth> 4.33"

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Page 5

A	rea (sf)	CN [Description		•		
	4,800	98 F	Roofs, HSC	A			
	4,800	1	00.00% Im	pervious A	rea`		
_		٥.					
Tc	Length	Slope	Velocity	Capacity	Description		
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		/	
5.0					Direct Entry,		

Summary for Subcatchment 233S: POSTDEV FLOW TO POND

Runoff

10.24 cfs @ 12.08 hrs, Volume=

0.698 af, Depth> 1.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 10 YR STORM Rainfall=4.90"

	Α	rea (sf)	CN I	Description	1	· <u> </u>						
		30,502	98 \	Nater Surf	Vater Surface, HSG A							
		85,544	39	>75% Gras	75% Grass cover, Good, HSG A							
		45,408	30 \	Noods, Go								
*		12,710		Roofs & Driveways HSG A								
*		10,940		Roofs & Driveways, HSG B								
		26,999		>75% Grass cover, Good, HSG B								
		20,859		Woods, Good, HSG B								
*		8,700		Roofs & Driveways, HSG D								
	42,423 80 >75% Grass cover, Good, HSG D											
_		<u> 24,134 </u>	<u> 77 </u>	<u> Voods, Go</u>	od, HSG D							
		08,219		Veighted A								
		45,367			∿ious Area							
		62,852	2	20.39% lmp	pervious Ar	ea						
	Tc	Length	Slope	Velocity		Description						
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)							
	0.5	50	0.0400	1.57		Sheet Flow,						
						Smooth surfaces n= 0.011 P2= 3.15"						
	1.1	188	0.0350	2.81		Shallow Concentrated Flow,						
						Grassed Waterway Kv= 15.0 fps						
	3.1	92	0.0100	0.50		Shallow Concentrated Flow,						
						Woodland Kv= 5.0 fps						
	4.7	330	Total									

Summary for Subcatchment 504S: OFFSITE AREA DRAINING TO CULVERT AT S. MAIN ST

Runoff 64.39 cfs @ 12.59 hrs, Volume=

8.686 af, Depth> 1.78"

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Page 6

_	·Area	(ac) C	N Des	cription									
	58.	560	70 1/2	/2 acre lots, 25% imp, HSG B									
Ī	43.920 75.00% Pervious Area												
	14.	640	25.0	00% Imperv	ious Area								
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description							
-	40.4	3,090	0.0670	1.27	· · · · · · · · · · · · · · · · · · ·	Lag/CN Method,							

Summary for Reach 13R: (new Reach)

Inflow Area = 69.656 ac, 24.10% Impervious, Inflow Depth > 1.57" for 10 YR STORM event

Inflow = 61.78 cfs @ 12.89 hrs, Volume= 9.110 af

Outflow = 61.78 cfs @ 12.89 hrs, Volume= 9.110 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Summary for Reach 504R: FLOW PATH FROM RICE RD CULVERT TO POND

Inflow Area = 58.560 ac, 25.00% Impervious, Inflow Depth > 1.78" for 10 YR STORM event

Inflow = 64.39 cfs @ 12.59 hrs, Volume= 8.686 af

Outflow = 64.13 cfs @ 12.66 hrs, Volume= 8.656 af, Atten= 0%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 4.31 fps, Min. Travel Time= 2.4 min Avg. Velocity = 2.36 fps, Avg. Travel Time= 4.3 min

Peak Storage= 9,051 cf @ 12.62 hrs

Average Depth at Peak Storage= 1.15', Surface Width= 23.87' Bank-Full Depth= 3.00' Flow Area= 91.5 sf, Capacity= 723.88 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 14.0 5.0 '/' Top Width= 59.00'

Length= 608.0' Slope= 0.0255 '/'

Inlet Invert= 405.50', Outlet Invert= 390.00'



Summary for Reach 505R: FLOW PATH FROM POND OVERFLOW TO CUNHA & SORA

Inflow Area = 65.636 ac. 24.50% Impervious, Inflow Depth > 1.66" for 10 YR STORM event

Inflow = 62.24 cfs @ 12.77 hrs, Volume= 9.088 af

Outflow = 61.57 cfs @ 12.89 hrs, Volume= 9.032 af, Atten= 1%, Lag= 7.0 min

Rice Pond Village Millbury POSTdevelopment 2- Type III 24-hr 10 YR STORM Rainfall=4.90"

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Page 7

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 2.32 fps. Min. Travel Time= 3.9 min

Avg. Velocity = 1.39 fps, Avg. Travel Time= 6.5 min

Peak Storage= 14,509 cf @ 12.82 hrs

Average Depth at Peak Storage= 1.26', Surface Width= 39.94'

Bank-Full Depth= 3.00' Flow Area= 141.0 sf, Capacity= 571.84 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 15.0 '/' Top Width= 92.00'

Length= 547.0' Slope= 0.0068 '/'

Inlet Invert= 389.50', Outlet Invert= 385.80'



Summary for Pond 13P: Rice Pond

Inflow Area = 65.636 ac, 24.50% Impervious, Inflow Depth > 1.71" for 10 YR STORM event

Inflow = 65.88 cfs @ 12.65 hrs, Volume= 9.354 af

Outflow = 62.24 cfs @ 12.77 hrs, Volume= 9.088 af, Atten= 6%, Lag= 7.2 min

Primary = 62.24 cfs @ 12.77 hrs, Volume= 9.088 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Peak Elev= 391.09' @ 12.77 hrs Surf.Area= 50,389 sf Storage= 46,796 cf

Plug-Flow detention time= 23.9 min calculated for 9.070 af (97% of inflow)

Center-of-Mass det. time= 14.3 min (852.3 - 838.0)

Volume	lnv	vert Avail.	Storage	Storage D	escription			
#1	#1 389.80' 285,06		5,060 cf	Ocf Custom Stage Data (Prismatic) Listed below (Recalc)				
Elevation (feet)				:.Store c-feet)	Cum.Store (cubic-feet)			
389.8	30	25,072		0	0			
390.0	00	25,815		5,089	5,089			
392.0	00	70,715		96,530	101,619			
394.0	00	112,726		33,441	285,060			
Device	Routing	Inv	ert Outl	et Devices				
#1	Primary	389.9	90' 171.	9 deg x 2.0	long Sharp	Crested Vee/Trap Weir		

Primary OutFlow Max=62.20 cfs @ 12.77 hrs HW=391.09' (Free Discharge)
1=Sharp-Crested Vee/Trap Weir (Weir Controls 62.20 cfs @ 2.76 fps)

Cv= 2.46 (C= 3.08)

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Page 8

Summary for Pond 23P: INFILTRATION STRUCTURE 1 NEAR RAILROAD

Inflow Area = 3.676 ac, 85.50% Impervious, Inflow Depth > 3.47" for 10 YR STORM event

Inflow = 15.49 cfs @ 12.08 hrs, Volume= 1.063 af

Outflow = 1.53 cfs @ 11.60 hrs, Volume= 1.062 af, Atten= 90%, Lag= 0.0 min

Discarded = $1.53 \text{ cfs } \bar{\text{@}} 11.60 \text{ hrs, Volume} = 1.062 \text{ af}$

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 376.55' @ 12.90 hrs Surf.Area= 7,984 sf Storage= 17,740 cf

Plug-Flow detention time= 93.0 min calculated for 1.060 af (100% of inflow) Center-of-Mass det. time= 92.4 min (856.5 - 764.1)

Volume	Invert	Avail.Sto	rage	Storage D	escription		
#1	373.50'	14,3	82 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 75,848 cf Overall - 39,893 cf Embedded = 35,955 cf x 40.0% Voids			
#2	374.00'	29,7	34 cf	retain_it retain_it 5.0' x 110 Inside #1 Inside= 84.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf Outside= 96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf 1 Rows adjusted for 2,306.6 cf perimeter wall			
		44,1	16 cf	Total Avail	able Storage		
Elevatior (feet		f.Area (sq-ft)	Inc. (cubic	Store -feet)	Cum.Store (cubic-feet)		
373.50	<u> </u>	7,984	•••	0	0		
383.00	ס	7,984	75,848		75,848		
Device	Routing	Invert	Outle	t Devices		,a	
#1	Discarded	ded 373.50' 8.2		'0 in/hr Exfiltration over Surface area			

Discarded OutFlow Max=1.53 cfs @ 11.60 hrs HW=373.60' (Free Discharge) 1=Exfiltration (Exfiltration Controls 1.53 cfs)

Summary for Pond 109P: INFILTRATION AREA 2 TO WEST OF THE ENTRANCE

Inflow Area = 1.109 ac, 68.65% Impervious, Inflow Depth > 2.78" for 10 YR STORM event

Inflow = 3.12 cfs @ 12.08 hrs, Volume= 0.257 af

Outflow = 0.46 cfs @ 11.66 hrs, Volume= 0.257 af, Atten= 85%, Lag= 0.0 min

Discarded = 0.46 cfs @ 11.66 hrs, Volume= 0.257 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 394.03' @ 12.73 hrs Surf.Area= 2,384 sf Storage= 3,384 cf

Plug-Flow detention time= 50.6 min calculated for 0.256 af (100% of inflow) Center-of-Mass det. time= 50.1 min (802.2 - 752.1)

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Page 9

Volume	Invert A	Avail.Storage	Storage Description					
#1	392.00'	2,972 cf	5 , , , , , , , , , , , , , , , , , , ,					
40	000 501	0.070 f	16,688 cf Overall - 9,259 cf Embedded = 7,429 cf x 40.0% Voids					
#2	392.50'	6,978 cf	retain_it retain_it 4.0' x 31 Inside #1 Inside= 84.0"W x 48.0"H => 28.87 sf x 8.00'L = 230.9 cf					
			Outside= 96.0"W x 56.0"H => 37.33 sf x 8.00'L = 298.7 cf					
			4 Rows adjusted for 181.2 cf perimeter wall					
		9,950 cf	Total Available Storage					
Elevation	Surf.Are	ea Inc	c.Store Cum.Store					
(feet)	(sq-	ft) (cubi	ic-feet) (cubic-feet)					
392.00	2,38	34	0 0					
399.00	2,38	34 1	16,688 16,688					

Discarded OutFlow Max=0.46 cfs @ 11.66 hrs HW=392.07' (Free Discharge) 1=Exfiltration (Exfiltration Controls 0.46 cfs)

Invert Outlet Devices

Summary for Pond 110P: INFILTRATION AREA 3 SW OF BUILDING 1

392.00' 8.270 in/hr Exfiltration over Surface area

Inflow Area = 0.485 ac,100.00% Impervious, Inflow Depth > 4.33" for 10 YR STORM event

Inflow = 2.39 cfs @ 12.07 hrs, Volume= 0.175 af

Routing

Discarded

Device

#1

Outflow = 0.19 cfs @ 11.63 hrs, Volume= 0.167 af, Atten= 92%, Lag= 0.0 min

Discarded = 0.19 cfs @ 11.63 hrs. Volume= 0.167 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 393.80' @ 13.02 hrs Surf.Area= 3,368 sf Storage= 3,230 cf

Plug-Flow detention time= 142.7 min calculated for 0.166 af (95% of inflow) Center-of-Mass det. time= 124.1 min (858.6 - 734.5)

<u>Volume</u>	Invert	Avail.Sto	rage	Storage Do	scription	
#1	392.00'	3,5	42 cf	Custom S	age Data (Prismatic) List	ed below (Recalc)
				8,856 cf O	rerall x 40.0% Voids	
#2	392.50'	4,1	71 cf	_	tain_it 3.0' × 25	
				Inside= 84	0"W x 36.0"H => 21.33 sf	x 8.00'L = 170.6 cf
				Outside= 9	6.0"W x 44.0"H => 29.33	sf x 8.00'L = 234.7 cf
				4 Rows ad	usted for 94.4 cf perimete	r wall
		7,7	13 cf	Total Avail	ible Storage	
Elevatio	n Su	rf.Area	Inc.	Store	Cum.Store	
(fee	et)	(sq-ft)	(cubic	:-feet)	(cubic-feet)	
392.0	0	1,968		0	0	
396.5	50	1,968		8,856	8,856	
Device	Routing	Invert	Outle	et Devices		
#1	Discarded	392.00'	2.410	J In/hr Extil	ration over Surface area	

Rice Pond Village Millbury POSTdevelopment 2- Type III 24-hr 10 YR STORM Rainfall=4.90"
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Page 10

Discarded OutFlow Max=0.19 cfs @ 11.63 hrs HW=392.51' (Free Discharge) 1=Exfiltration (Exfiltration Controls 0.19 cfs)

PREDEVELOPMENT

Summary for Subcatchment 1S: PREDEV FLOW TO ABUTTER GINGRAS

Runoff

=

0.02 cfs @ 12.44 hrs, Volume=

0.007 af, Depth> 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

	Α	rea (sf)	CN Description						
		6,858	6,858 30 Woods, Good, HSG A						
		10,008	39	>75% Gras	s cover, Go	ood, HSG A			
	16,866 35 Weighted Average								
		16,866	•	100.00% Pe	ervious Are	a			
	_								
	Tc	Length	Slope	•	Capacity	Description			
_	<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)				
	4.3	50	0.1000	0.19		Sheet Flow,			
						Grass: Dense n= 0.240 P2= 3.15"			
	0.9	100	0.1400	1.87		Shallow Concentrated Flow,			
						Woodland Kv= 5.0 fps			
	5.2	150	Total						

Summary for Subcatchment 2S: PREDEV FLOW TO P&W RAILROAD

Runoff

0.13 cfs @ 13.84 hrs, Volume=

0.059 af, Depth> 0.14"

	A	rea (sf)	CN E	Description				
	1	79,428	30 V	Woods, Good, HSG A				
		35,859			•	ood, HSG A		
_		3,896	98 F	Paved park	ing, HSG A	\		
	2	19,183	33 V	Veighted A	verage			
	2	15,287	5	8.22% Pei	vious Area			
		3,896	1	.78% Impe	ervious Are	a		
	_							
		Length	Slope	Velocity	Capacity	Description		
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)			
	9.4	50	0.0400	0.09		Sheet Flow,		
						Woods: Light underbrush n= 0.400 P2= 3.15"		
	0.9	91	0.1200	1.73		Shallow Concentrated Flow,		
						Woodland Kv= 5.0 fps		
	0.7	197	0.1060	4.99	14.98	Channel Flow,		
						Area= 3.0 sf Perim= 4.0' r= 0.75'		
						n= 0.080 Earth, long dense weeds		
	11.0	338	Total					

Summary for Subcatchment 3S: PREDEV OVERLAND FLOW TO CUNHA & SORA

Runoff

=

1.03 cfs @ 12.60 hrs, Volume=

0.188 af, Depth> 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

A	rea (sf)	CN	Description		
• 1	148,793	30	Woods, Go	od, HSG A	
	30,807	98	Water Surfa	ace, HSG A	1
1	79,600	42	Weighted A	verage	
1	48,793	1	82.85% Pei	rvious Area	
	30,807		17.15% I mp	pervious Ar	ea
Tc (min)	Length (feet)	Slope (ft/ft)	•	Capacity (cfs)	Description
25.0	50	0.0140	0.03		Sheet Flow,
2.3	186	0.0710	1.33		Woods: Dense underbrush n= 0.800 P2= 3.15" Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.8	400	0.0090	3.75	59.94	Channel Flow, Area= 16.0 sf Perim= 14.6' r= 1.10' n= 0.040 Earth, cobble bottom, clean sides
29.1	636	Total			· · · · · · · · · · · · · · · · · · ·

Summary for Subcatchment 4S: PREDEV FLOW TO ABUTTER MATHIEU & SWANSON

Runoff

= 0.0

0.01 cfs @ 15.46 hrs, Volume=

0.002 af. Depth> 0.05"

A	rea (sf)	CN [Description		
	21,387	30 V	Voods, Go	od, HSG A	
	21,387	1	00.00% Pe	ervious Are	ea
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1200	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.15"
0.4	57	0.1800	2.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.0	107	Total			

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Page 3

Summary for Subcatchment 5S: PREDEV FLOW TO RICE ROAD

Runoff

0.37 cfs @ 12.33 hrs, Volume=

0.056 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

_	A	rea (sf)	CN	Description						
		22,350	30	Woods, Go	oods, Good, HSG A					
		30,632	39	>75% Gras	s cover, Go	ood, HSG A				
*		5,307	98	Existing roc	of and drive	way				
		58,289	58,289 41 Weighted Average							
Y		52,982	!	90.90% Per	vious Area					
		5,307	9	9.10% Impe	ervious Are	a				
				-						
	Tc	Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	5.3	50	0.0600	0.16		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 3.15"				
	3.7	212	0.0370	0.96		Shallow Concentrated Flow,				
						Woodland Kv= 5.0 fps				
	9.0	262	Total				_			

Summary for Subcatchment 33S: PREDEV FLOW TO POND

Runoff

12.29 cfs @ 12.23 hrs, Volume=

1.131 af, Depth> 1.89"

•

Rice Pond Village Millbury PREdevelopment 12 Type III 24-hr 25 YR STORM Rainfall=6.10" Printed 2/21/2024 Prepared by Azimuth Land Design, LLC

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Page 4

_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
Ī	11.9	50	0.0900	0.07		Sheet Flow,
						Woods: Dense underbrush n= 0.800 P2= 3.15"
	3.9	242	0.0430	1.04		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
	15.8	292	Total			

Summary for Subcatchment 503S: OFFSITE AREA DRAINING TO CULVERT AT S. MAIN ST

Runoff

96.19 cfs @ 12.57 hrs, Volume=

12.871 af, Depth> 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

_	Area	(ac) C	N Des	Description 1/2 acre lots, 25% imp, HSG B						
	58.	560 7	'0 1/2 a	acre lots, 2	5% imp, H	SG B				
	43.920 75.00% Pervious Area									
	14.	640	25.0	0% Imper	/ious Area					
		Length	Slope	Velocity	Capacity	Description				
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		·			
	40.4	3,090	0.0670	1.27		Lag/CN Method,				

Summary for Reach 3R: (new Reach)

Inflow Area =

69.880 ac, 24.04% Impervious, Inflow Depth > 2.37" for 25 YR STORM event

Inflow

97.00 cfs @ 12.82 hrs, Volume=

13.781 af

Outflow

97.00 cfs @ 12.82 hrs, Volume=

13.781 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Summary for Reach 204R: FLOW PATH FROM POND OVERFLOW TO CUNHA & SORA

Inflow Area =

65.757 ac, 24.48% Impervious, Inflow Depth > 2.49" for 25 YR STORM event

Inflow Outflow 96.97 cfs @ 12.72 hrs, Volume= 96.16 cfs @ 12.83 hrs, Volume=

13.662 af 13.592 af, Atten= 1%, Lag= 6.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 2.60 fps. Min. Travel Time= 3.5 min

Avg. Velocity = 1.48 fps. Avg. Travel Time= 6.1 min

Peak Storage= 20,261 cf @ 12.77 hrs

Average Depth at Peak Storage= 1.51', Surface Width= 47.18'

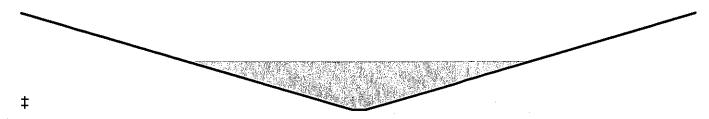
Bank-Full Depth= 3.00' Flow Area= 141.0 sf, Capacity= 571.84 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 15.0 '/' Top Width= 92.00'

Length= 547.0' Slope= 0.0068 '/'

Inlet Invert= 389.50', Outlet Invert= 385.80'



Summary for Reach 503R: FLOW PATH FROM RICE RD CULVERT TO POND

Inflow Area = 58.560 ac, 25.00% Impervious, Inflow Depth > 2.64" for 25 YR STORM event

inflow = 96.19 cfs @ 12.57 hrs, Volume= 12.871 af

Outflow = 95.90 cfs @ 12.64 hrs, Volume= 12.833 af, Atten= 0%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 4.77 fps, Min. Travel Time= 2.1 min Avg. Velocity = 2.52 fps, Avg. Travel Time= 4.0 min

Peak Storage= 12,231 cf @ 12.60 hrs Average Depth at Peak Storage= 1.35', Surface Width= 27.72' Bank-Full Depth= 3.00' Flow Area= 91.5 sf, Capacity= 723.88 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides Side Slope Z-value= 14.0 5.0 '/' Top Width= 59.00' Length= 608.0' Slope= 0.0255 '/' Inlet Invert= 405.50', Outlet Invert= 390.00'



Summary for Pond 3P: Rice Pond

Inflow Area = 65.757 ac, 24.48% Impervious, Inflow Depth > 2.55" for 25 YR STORM event

Inflow = 101.11 cfs @ 12.61 hrs, Volume= 13.964 af

Outflow = 96.97 cfs @ 12.72 hrs, Volume= 13.662 af, Atten= 4%, Lag= 6.4 min

Primary = 96.97 cfs @ 12.72 hrs, Volume= 13.662 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 391.34' @ 12.72 hrs Surf.Area= 55,878 sf Storage= 59,787 cf

Plug-Flow detention time= 20.1 min calculated for 13.662 af (98% of inflow) Center-of-Mass det. time= 12.5 min (842.2 - 829.7)

Volume	Invert	Avail.Storage	Storage Description
#1	389.80'	285,060 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation Surf.Area Inc.Store Cum.Store
(feet) (sq-ft) (cubic-feet) (cubic-feet)

389.80 25.072 0 0

 389.80
 25,072
 0
 0

 390.00
 25,815
 5,089
 5,089

 392.00
 70,715
 96,530
 101,619

 394.00
 112,726
 183,441
 285,060

Device	Routing	Invert	Outlet Devices
#1	Primary	389.90'	171.9 deg x 2.0' long Sharp-Crested Vee/Trap Weir

Primary OutFlow Max=96.85 cfs @ 12.72 hrs HW=391.34' (Free Discharge) 1=Sharp-Crested Vee/Trap Weir (Weir Controls 96.85 cfs @ 3.02 fps)

POSTDEVELOPMENT

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Summary for Subcatchment 11S: POSTDEV FLOW TO ABUTTER GINGRAS

Runoff

0.00 cfs @ 13.73 hrs, Volume=

0.002 af, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

_	Α	rea (sf)	CN	Description						
		2,556			•	ood, HSG A				
		4,142	30 '	<u> Noods, Go</u>	<u>od, HSG A</u>					
		6,698	33	Neighted A	/eighted Average					
		6,698		100.00% Pe	ervious Are	a				
	Tc	Length	Slope	•	Capacity	Description				
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)					
	3.8	50	0.1400	0.22		Sheet Flow,				
						Grass: Dense n= 0.240 P2= 3.15"				
	0.3	17	0.0300	0.87		Shallow Concentrated Flow,				
			_			Woodland Kv= 5.0 fps				
_	4.1	67	Total							

Summary for Subcatchment 12S: POSTDEV FLOW TO P&W RAILROAD

Runoff

0.08 cfs @ 12.59 hrs, Volume=

0.028 af, Depth> 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

_	Α	rea (sf)	CN	Description						
_		26,710	30	Woods, Go	od, HSG A					
_		41,448	39	>75% Gras	s cover, Go	ood, HSG A				
	68,158 35 Weighted Average									
68,158 100.00% Pervious Area					ervious Are	a				
	Tc (min)	Length (feet)	Slope (ft/ft)	•	Capacity (cfs)	Description				
_	13.9	50	0.0600	0.06		Sheet Flow,				
	0.9	109	0.1500	1.94		Woods: Dense underbrush n= 0.800 P2= 3.15" Shallow Concentrated Flow, Woodland Kv= 5.0 fps				
	14.8	159	Total							

Summary for Subcatchment 13S: POSTDEV OVERLAND FLOW TO CUNHA & SORA

Runoff

1.25 cfs @ 12.36 hrs, Volume=

0.186 af, Depth> 0.56"

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Page 2

А	rea (sf)	CN I	Description							
	30,807 98 Water Surface, HSG A									
	6,132			•	ood, HSG A					
1	38,178			od, HSG A	,					
1	75,117	42 \	Veighted A	verage						
	44,310		-	rvious Area						
	30,807	•	7.59% Imp	pervious Ar	ea					
			•							
Tc	Length	Slope	Velocity	Capacity	Description					
(min)_	(feet)	(ft/ft)	(ft/sec)	(cfs)						
8.4	50	0.0540	0.10		Sheet Flow,					
					Woods: Light underbrush n= 0.400 P2= 3.15"					
2.3	186	0.0710	1.33		Shallow Concentrated Flow,					
					Woodland Kv= 5.0 fps					
1.8	400	0.0090	3.75	59.94	Channel Flow,					
					Area= 16.0 sf Perim= 14.6' r= 1.10'					
					n= 0.040 Earth, cobble bottom, clean sides					
12.5	636	Total								

Summary for Subcatchment 14S: POSTDEV FLOW TO ABUTTER MATHIEU & SWANSON

Runoff = 0.01 cfs @ 12.33 hrs, Volume=

0.002 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

_	A	rea (sf)	CN	Description								
		500	30	Woods, Go	Noods, Good, HSG A							
_		2,555	39	>75% Gras	s cover, Go	ood, HSG A				_		
		3,055	38	Weighted A	verage					-		
		3,055		100.00% Pe	ervious Are	а						
		Length	Slope	•	Capacity	Description						
_	(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)		. <u> </u>			_		
	4.1	21	0.0200	0.08		Sheet Flow,						
						Grass: Dense	n= 0.240	P2= 3.15"				

Summary for Subcatchment 15S: POSTDEV FLOW TO RICE ROAD

Runoff = 0.07 cfs @ 12.37 hrs, Volume=

0.012 af, Depth> 0.40"

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Page 3

	Α	rea (sf)	CN	Description									
		200	98	Paved parking, HSG A									
		1,420	30	Woods, Go	/oods, Good, HSG A								
_		14,011	39	>75% Gras	s cover, Go	ood, HSG A							
		15,631	39	Weighted A	\verage								
		15,431		98.72% Per	rvious Area								
		200		1.28% Impe	ervious Are	a							
						. '							
	Tc	Length	Slope		Capacity	Description							
_	(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)								
	8.3	50	0.0200	0.10		Sheet Flow,							
						Grass: Dense n= 0.240 P2= 3.15"							
	0.2	26	0.0200	2.12		Shallow Concentrated Flow,							
_						Grassed Waterway Kv= 15.0 fps							
	8.5	76	Total			,							

Summary for Subcatchment 22S: BLDG 3 AND PARKING DRAINAGE TO INFILTRATION #1

Runoff = 20.08 cfs @ 12.08 hrs, Volume=

1.399 af, Depth> 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

	Α	rea (sf)	CN I	Description			
		23,213	39	>75% Gras	s cover, Go	ood, HSG A	
*	1	36,909	98 I	Drive, drive	ways & roc	ofs HSG A	
		60,122 23,213		Neighted A			
		36,909	8	35.50% Imp	pervious Ar	ea	
	Tc (min)	Length (feet)	Slope (ft/ft)		Capacity (cfs)	Description	
	5.3	50	0.0600	0.16		Sheet Flow, Grass: Dense n= 0.240 P2= 3.15"	
	0.4	78	0.0220	3.01		Shallow Concentrated Flow, Paved Kv= 20.3 fps	
_	5.7	128	Total				

Summary for Subcatchment 107S: BUILDING 1 ROOF TO INFILTRATION BY RICE ROAD

Runoff = 2.98 cfs @ 12.07 hrs, Volume=

0.219 af, Depth> 5.42"

	Area (sf)	CN	Description		_
	21,120	98	Roofs, HSG A		
•	21,120		100.00% Impervious Area	us Area	

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Page 4

Slope Velocity Capacity Tc Length Description (feet) (ft/ft) (ft/sec) (min) (cfs) 5.0 Direct Entry,

Summary for Subcatchment 108S: BUILDING 2 ROOF TO INFILTRATION BY RICE ROAD

Runoff

2.98 cfs @ 12.07 hrs, Volume=

0.219 af. Depth> 5.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

A	rea (sf)	CN I	Description				
	21,120	98 I	Roofs, HSC	A A	•		
	21,120	,	100.00% Im	pervious A	rea		
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description		
5.0					Direct Entry,		

ary for Subcatchment 109S: AREA DRAINING TO CB'S AT ENTRANCE & AREA DRAINS W. OF CLUB!

Runoff

0.76 cfs @ 12.23 hrs, Volume=

0.071 af, Depth> 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

	Α	rea (sf)	CN	Description							
		1,699	39 :	>75% Gras	s cover, Go	ood, HSG A					
		5,151	98	Paved park	ing, HSG A						
*		2,100	98	Pool and apron							
		13,449	39 :	>75% Gras	s cover, Go	ood, HSG A					
		22,399	58	Neighted A	verage						
		15,148	(37.63% Pei	vious Area	•					
		7,251	;	32.37% lmp	pervious Ar	ea					
	Тс	Length	Slope		Capacity	Description					
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	14.4	50	0.0050	0.06		Sheet Flow,					
						Grass: Dense n= 0.240 P2= 3.15"					
	0.7	90	0.0220	2.22		Shallow Concentrated Flow,					
						Grassed Waterway Kv= 15.0 fps					
	15.1	140	Total								

Summary for Subcatchment 110S: CLUBHOUSE ROOF

Runoff-

0.68 cfs @ 12.07 hrs, Volume=

0.050 af, Depth> 5.42"

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Page 5

	Area (sf)	CN	Description	1		
	4,800	98	Roofs, HS0	3 A		
	4,800		100.00% in	npervious A	rea	
- (mi	Гс Length n) (feet)	•		Capacity (cfs)	Description	
5	.0				Direct Entry.	

Summary for Subcatchment 233S: POSTDEV FLOW TO POND

Runoff :

= 17.13 cfs @ 12.08 hrs, Volume=

1.117 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 25 YR STORM Rainfall=6.10"

	Α	rea (sf)	CN	Description	1							
		30,502	98	Water Surf	/ater Surface, HSG A							
		85,544			5% Grass cover, Good, HSG A							
		45,408	30	Woods, Go	oods, Good, HSG A							
*		12,710	98	Roofs & Dr	Roofs & Driveways HSG A							
*		10,940	98	Roofs & Dr	iveways, H	SG B						
		26,999		>75% Gras	s cover, Go	ood, HSG B						
	,	20,859			od, HSG B							
*		8,700			iveways, H							
		42,423		>75% Grass cover, Good, HSG D								
		<u> 24,134 </u>	77	<u>Woods, Go</u>	od, HSG D							
		08,219		Weighted A								
		45,367			rvious Area							
		62,852		20.39% lmp	pervious Ar	ea						
	_		01	3.4.1.74								
	Tc (arian)	Length	Slope	•	Capacity	Description						
	(<u>min)</u>	(feet)	(ft/ft)		(cfs)							
	0.5	50	0.0400	1.57		Sheet Flow,						
						Smooth surfaces n= 0.011 P2= 3.15"						
	1.1	188	0.0350	2.81		Shallow Concentrated Flow,						
	0.4	00	0.0400	0.50	=	Grassed Waterway Kv= 15.0 fps						
	3.1	92	0.0100	0.50		Shallow Concentrated Flow,						
						Woodland Kv= 5.0 fps						
	4.7	330	Total									

Summary for Subcatchment 504S: OFFSITE AREA DRAINING TO CULVERT AT S. MAIN ST

Runoff = 96.19 cfs @ 12.57 hrs, Volume=

12.871 af, Depth> 2.64"

Rice Pond Village Millbury POSTdevelopment 2- Type III 24-hr 25 YR STORM Rainfall=6.10"

Prepared by Azimuth Land Design, LLC

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Page 6

Area	(ac) C	N Des	cription					
58.	560	70 1/2 8	acre lots, 2	5% imp, H	ISG B			
43.920 75.00% Pervious Area								
14.640 25.00% Impervious Are								
To	Longth	Slope	Volocity	Consoity	Description			
Tc (min)	Length (feet)	(ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
 40.4	3,090	0.0670	1.27	(0,0)	Lag/CN Method,			

Summary for Reach 13R: (new Reach)

Inflow Area = 69.656 ac, 24.10% Impervious, Inflow Depth > 2.37" for 25 YR STORM event

Inflow = 94.51 cfs @ 12.84 hrs, Volume= 13.765 af

Outflow = 94.51 cfs @ 12.84 hrs, Volume= 13.765 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Summary for Reach 504R: FLOW PATH FROM RICE RD CULVERT TO POND

Inflow Area = 58.560 ac, 25.00% Impervious, Inflow Depth > 2.64" for 25 YR STORM event

Inflow = 96.19 cfs @ 12.57 hrs, Volume= 12.871 af

Outflow = 95.90 cfs @ 12.64 hrs, Volume= 12.833 af, Atten= 0%, Lag= 3.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 4.77 fps, Min. Travel Time= 2.1 min Avg. Velocity = 2.52 fps, Avg. Travel Time= 4.0 min

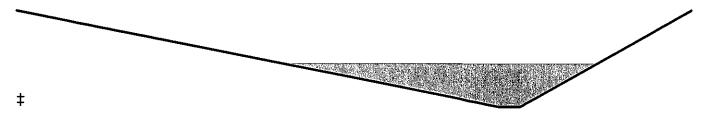
Peak Storage= 12,231 cf @ 12.60 hrs Average Depth at Peak Storage= 1.35', Surface Width= 27.72' Bank-Full Depth= 3.00' Flow Area= 91.5 sf, Capacity= 723.88 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 14.0 5.0 '/' Top Width= 59.00'

Length= 608.0' Slope= 0.0255 '/'

Inlet Invert= 405.50', Outlet Invert= 390.00'



Summary for Reach 505R: FLOW PATH FROM POND OVERFLOW TO CUNHA & SORA

Inflow Area = 65.636 ac, 24.50% Impervious, Inflow Depth > 2.50" for 25 YR STORM event

Inflow = 94.75 cfs @ 12.73 hrs, Volume= 13.649 af

Outflow = 93.97 cfs @ 12.84 hrs, Volume= 13.579 af, Atten= 1%, Lag= 6.3 min

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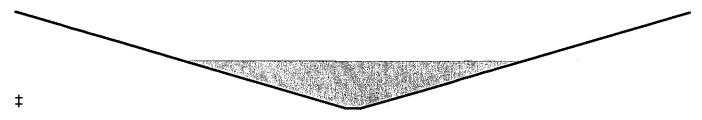
Page 7

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Max. Velocity= 2.58 fps, Min. Travel Time= 3.5 min

Avg. Velocity = 1.49 fps, Avg. Travel Time= 6.1 min

Peak Storage= 19,914 cf @ 12.78 hrs Average Depth at Peak Storage= 1.49', Surface Width= 46.78' Bank-Full Depth= 3.00' Flow Area= 141.0 sf, Capacity= 571.84 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides Side Slope Z-value= 15.0 '/' Top Width= 92.00' Length= 547.0' Slope= 0.0068 '/' Inlet Invert= 389.50', Outlet Invert= 385.80'



Summary for Pond 13P: Rice Pond

Inflow Area = 65.636 ac, 24.50% Impervious, Inflow Depth > 2.55" for 25 YR STORM event

Inflow = 98.60 cfs @ 12.63 hrs, Volume= 13.950 af

Outflow = 94.75 cfs @ 12.73 hrs, Volume= 13.649 af, Atten= 4%, Lag= 6.1 min

Primary = 94.75 cfs @ 12.73 hrs, Volume= 13.649 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 391.33' @ 12.73 hrs Surf.Area= 55,567 sf Storage= 59,014 cf

Plug-Flow detention time= 20.1 min calculated for 13.621 af (98% of inflow) Center-of-Mass det. time= 12.5 min (841.6 - 829.0)

Volume	Inve	ert Avail	.Storage	Storage I	Description	
#1	389.8	80' 28	35,060 cf	Custom	Stage Data (Pr	rismatic) Listed below (Recalc)
Elevatio (fee		Surf.Area (sq-ft)		.Store :-feet)	Cum.Store (cubic-feet)	
389.8	0	25,072		0	. 0	
390.0	0	25,815		5,089	5,089	
392.0	0	70,715	9	6,530	101,619	
394.0	0	112,726	18	3,441	285,060	
Device	Routing	lnv	ert Outle	et Devices		
#1	Primary	389	90' 171 .9	dea x 2.6)' long Sharp-6	Crested Vee/Tran Weir

#1 Primary 389.90' **171.9 deg x 2.0' long Sharp-Crested Vee/Trap Weir**Cv= 2.46 (C= 3.08)

Primary OutFlow Max=94.66 cfs @ 12.73 hrs HW=391.32' (Free Discharge)
1=Sharp-Crested Vee/Trap Weir (Weir Controls 94.66 cfs @ 3.00 fps)

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Summary for Pond 23P: INFILTRATION STRUCTURE 1 NEAR RAILROAD

Inflow Area = 3.676 ac, 85.50% Impervious, Inflow Depth > 4.57" for 25 YR STORM event

Inflow = 20.08 cfs @ 12.08 hrs, Volume= 1.399 af

Outflow = 1.53 cfs @ 11.30 hrs, Volume= 1.316 af, Atten= 92%, Lag= 0.0 min

Discarded = 1.53 cfs @ 11.30 hrs, Volume= 1.316 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 377.80' @ 13.17 hrs Surf.Area= 7,984 sf Storage= 25,619 cf

Plug-Flow detention time= 144.1 min calculated for 1.316 af (94% of inflow)

Center-of-Mass det. time= 122.1 min (880.2 - 758.1)

#1

Discarded

Volume	Invert	Avail.Sto	rage	Storage D	Description
#1	373.50'	14,3	82 cf	Custom S	Stage Data (Prismatic) Listed below (Recalc)
#2	374.00'	29,7	34 cf	retain_it r	FOverall - 39,893 cf Embedded = 35,955 cf x 40.0% Voi retain_it 5.0' x 110 Inside #1
					4.0"W x 60.0"H => 36.41 sf x 8.00'L = 291.3 cf
					96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf
				1 Rows ac	djusted for 2,306.6 cf perimeter wall
		44,1	16 cf	Total Avai	illable Storage
Elevation	Surf	.Area	Inc	.Store	Cum.Store
(feet)	(sq-ft)	(cubi	c-feet)	(cubic-feet)
373.50	-	7,984		- 0	0
383.00		7,984	7	75,848	75,848
Device F	Routing	Invert	Outle	et Devices	

Discarded OutFlow Max=1.53 cfs @ 11.30 hrs HW=373.60' (Free Discharge)
—1=Exfiltration (Exfiltration Controls 1.53 cfs)

Summary for Pond 109P: INFILTRATION AREA 2 TO WEST OF THE ENTRANCE

373.50' 8.270 in/hr Exfiltration over Surface area

Inflow Area = 1.109 ac, 68.65% Impervious, Inflow Depth > 3.67" for 25 YR STORM event

Inflow = 4.05 cfs @ 12.08 hrs, Volume= 0.339 af

Outflow = 0.46 cfs @ 11.60 hrs, Volume= 0.339 af, Atten= 89%, Lag= 0.0 min

Discarded = 0.46 cfs @ 11.60 hrs, Volume= 0.339 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 394.98' @ 12.98 hrs Surf.Area= 2,384 sf Storage= 5,201 cf

Plug-Flow detention time= 87.5 min calculated for 0.339 af (100% of inflow) Center-of-Mass det. time= 87.0 min (840.2 - 753.2)

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Page 9

Volume	Invert	Avail.Storage	Storage Description
#1	392.00'	2,972 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
			16,688 cf Overall - 9,259 cf Embedded = 7,429 cf x 40.0% Voids
#2	392.50'	6,978 cf	retain_it retain_it 4.0' x 31 Inside #1
			Inside= 84.0"W x 48.0"H => 28.87 sf x 8.00'L = 230.9 cf
			Outside= 96.0"W x 56.0"H => 37.33 sf x 8.00'L = 298.7 cf
	:		4 Rows adjusted for 181.2 cf perimeter wall
		9.950 cf	Total Available Storage

9,950 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
392.00	2,384	0	0
399.00	2,384	16,688	16,688

Device Routing Invert Outlet Devices #1 Discarded 392.00' 8.270 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.46 cfs @ 11.60 hrs HW=392.08' (Free Discharge) 1=Exfiltration (Exfiltration Controls 0.46 cfs)

Summary for Pond 110P: INFILTRATION AREA 3 SW OF BUILDING 1

Inflow Area = 0.485 ac,100.00% Impervious, Inflow Depth > 5.42" for 25 YR STORM event

Inflow 0.219 af

2.98 cfs @ 12.07 hrs, Volume= 0.19 cfs @ 11.24 hrs, Volume= Outflow 0.176 af, Atten= 94%, Lag= 0.0 min

Discarded = 0.19 cfs @ 11.24 hrs, Volume= 0.176 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 394.33' @ 13.49 hrs Surf.Area= 3,368 sf Storage= 4,380 cf

Plug-Flow detention time= 166.1 min calculated for 0.175 af (80% of inflow)

Center-of-Mass det. time= 112.2 min (845.6 - 733.3)

Volume	Invert	Avail.Sto	rage	Storage De	escription	
#1	392.00'	3,54			tage Data (Pi verall x 40.0°	rismatic) Listed below (Recalc) % Voids
#2	392.50'	4,17		Inside= 84 Outside= 9	6.0"W x 44.0	x 25 H => 21.33 sf x 8.00'L = 170.6 cf I'H => 29.33 sf x 8.00'L = 234.7 cf 4 cf perimeter wall
		7,7	13 cf	Total Avail	able Storage	
Elevatio		rf.Area (sq-ft)	Inc.	Store -feet)	Cum.Store (cubic-feet)	
392.0	00	1,968		0	0	
396.5	50	1,968	8	3,856	8,856	
Device	Routing	Invert	Outle	t Devices		·
#1	Discarded	392.00'	2.410	in/hr Exfil	tration over	Surface area

Rice Pond Village Millbury POSTdevelopment 2- Type III 24-hr25 YR STORM Rainfall=6.10"Prepared by Azimuth Land Design, LLCPrinted2/21/2024HydroCAD® 10.10-5a s/n 07376 © 2020 HydroCAD Software Solutions LLCPage 10

Discarded OutFlow Max=0.19 cfs @ 11.24 hrs HW=392.50' (Free Discharge) 1=Exfiltration (Exfiltration Controls 0.19 cfs)

PREDEVELOPMENT

Summary for Subcatchment 1S: PREDEV FLOW TO ABUTTER GINGRAS

Runoff = 0.23 cfs @ 12.12 hrs, Volume=

0.027 af, Depth> 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

_	Α	rea (sf)	CN	Description			
		6,858	8 30 Woods, Good, HSG A				
		10,008	39	>75% Gras	s cover, Go	ood, HSG A	
		16,866	35	Neighted A	verage		
		16,866	•	100.00% Pe	ervious Are	a	
	Тс	Length	Slope		Capacity	Description	
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)		
	4.3	50	0.1000	0.19		Sheet Flow,	
						Grass: Dense n= 0.240 P2= 3.15"	
	0.9	100	0.1400	1.87		Shallow Concentrated Flow,	
_						Woodland Kv= 5.0 fps	
	5.2	150	Total				

Summary for Subcatchment 2S: PREDEV FLOW TO P&W RAILROAD

Runoff = 1.79 cfs @ 12.37 hrs, Volume=

0.283 af, Depth> 0.68"

	Α	rea (sf)	CN	Description	_	
	1	79,428	30	Woods, Go	od, HSG A	
		35,859	39	>75% Gras	s cover, G	ood, HSG A
		3,896	98	Paved park	ing, HSG A	1
	2	19,183		Weighted A		
	2	15,287			rvious Area	
		3,896		1.78% lmpe	ervious Are	a
	т.	ما المحمد الم	Clana	\	0	Description
	Tc (min)	Length (feet)	Slope (ft/ft)	•	Capacity (cfs)	Description
-				- · · · · · · · · · · · · · · · · · · ·	(615)	Chart Flaur
	9.4	50	0.0400	0.09		Sheet Flow,
	0.9	91	0.1200	1.73		Woods: Light underbrush n= 0.400 P2= 3.15" Shallow Concentrated Flow,
	0.9	91	0.1200	1.73		Woodland Kv= 5.0 fps
	0.7	197	0.1060	4.99	14.98	Channel Flow,
	5.7	107	0.1000	4.00	14.00	Area= 3.0 sf Perim= 4.0' r= 0.75'
						n= 0.080 Earth, long dense weeds
_	11.0	338	Total			

Summary for Subcatchment 3S: PREDEV OVERLAND FLOW TO CUNHA & SORA

Runoff

=

3.80 cfs @ 12.49 hrs, Volume=

0.509 af, Depth> 1.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

	A	rea (sf)	CN I	Description	I	<u> </u>
	1	48,793	30 \	Woods, Go	od, HSG A	
_		30,807	<u>98</u> \	Water Surfa	ace, HSG A	\
	1	79,600	42	Weighted A	verage	
	1	48,793	3	32.85% Pe	rvious Area	
		30,807	•	17.15% Imp	pervious Ar	ea
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
_	25.0	50	0.0140	·	(4.4)	Sheet Flow,
						Woods: Dense underbrush n= 0.800 P2= 3.15"
	2.3	186	0.0710	.1.33		Shallow Concentrated Flow,
				•		Woodland Kv= 5.0 fps
	1.8	400	0.0090	3.75	59.94	Channel Flow,
						Area= 16.0 sf Perim= 14.6' r= 1.10'
_						n= 0.040 Earth, cobble bottom, clean sides
	29.1	636	Total			

Summary for Subcatchment 4S: PREDEV FLOW TO ABUTTER MATHIEU & SWANSON

Runoff

=

0.09 cfs @ 12.45 hrs, Volume=

0.018 af, Depth> 0.44"

A	rea (sf)	CN [Description		
	21,387	30 V	Voods, Go	od, HSG A	
	21,387	1	00.00% Pe	ervious Are	a
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	50	0.1200	0.08		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.15"
0.4	57	0.1800	2.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.0	107	Total			

Summary for Subcatchment 5S: PREDEV FLOW TO RICE ROAD

Runoff

1.71 cfs @ 12.15 hrs, Volume=

0.156 af, Depth> 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

		rea (sf)	CN I	Description		
		22,350	30	Noods, Go	od, HSG A	***
		30,632	39	>75% Gras	s cover, Go	ood, HSG A
*		5,307	_ 98	Existing roo	of and drive	way
		58,289	41 \	Veighted A	verage	
		52,982	(90.90% Pei	vious Area	
		5,307	9	9.10% Impe	ervious Are	a
				•		
	Tc	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	5.3	50	0.0600	0.16	•	Sheet Flow,
						Grass: Dense n= 0.240 P2= 3.15"
	3.7	212	0.0370	0.96		Shallow Concentrated Flow,
						Woodland Kv= 5.0 fps
•	9.0	262	Total			

Summary for Subcatchment 33S: PREDEV FLOW TO POND

Runoff

23.64 cfs @ 12.22 hrs, Volume=

2.116 af, Depth> 3.53"

	Area (sf)	CN	Description
	30,502	98	Water Surface, HSG A
*	13,200	98	Roofs & Driveways, HSG A
	71,225	39	>75% Grass cover, Good, HSG A
	49,927	30	Woods, Good, HSG A
	14,588	30	Woods, Good, HSG A
*	10,940	98	Roofs & Driveways, HSG B
7	26,999	61	>75% Grass cover, Good, HSG B
	20,859	55	Woods, Good, HSG B
*	8,700	98	Roofs & Driveways, HSG D
	42,423	80	>75% Grass cover, Good, HSG D
	24,134	77	Woods, Good, HSG D
	313,497	61	Weighted Average
	250,155		79.80% Pervious Area
	63,342		20.20% Impervious Area

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Page 4

_	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
	11.9	50	0.0900	0.07		Sheet Flow,
						Woods: Dense underbrush n= 0.800 P2= 3.15"
	3.9	242	0.0430	1.04	•	Shallow Concentrated Flow,
_						Woodland Kv= 5.0 fps
	15.8	292	Total			

Summary for Subcatchment 503S: OFFSITE AREA DRAINING TO CULVERT AT S. MAIN ST

Runoff = 164.56 cfs @ 12.55 hrs, Volume=

22.055 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

_	Area	(ac) C	N Des	cription							
_	58.	560	70 1/2 a	0 1/2 acre lots, 25% imp, HSG B							
_		920 640		0% Pervio 0% Imper							
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description					
	40.4	3,090	0.0670	1.27		Lag/CN Method,		_			

Summary for Reach 3R: (new Reach)

Inflow Area = 69.880 ac, 24.04% Impervious, Inflow Depth > 4.15" for 100YR STORM event

Inflow = 170.93 cfs @ 12.76 hrs, Volume= 24.171 af

Outflow = 170.93 cfs @ 12.76 hrs, Volume= 24.171 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs. dt= 0.03 hrs

Summary for Reach 204R: FLOW PATH FROM POND OVERFLOW TO CUNHA & SORA

Inflow Area = 65.757 ac, 24.48% Impervious, Inflow Depth > 4.34" for 100YR STORM event

Inflow = 169.33 cfs @ 12.68 hrs, Volume= 23.757 af

Outflow = 168.17 cfs @ 12.77 hrs, Volume= 23.663 af, Atten= 1%, Lag= 5.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 2.99 fps, Min. Travel Time= 3.1 min

Avg. Velocity = 1.63 fps, Avg. Travel Time= 5.6 min

Peak Storage= 30,822 cf @ 12.72 hrs

Average Depth at Peak Storage= 1.87', Surface Width= 58.18'

Bank-Full Depth= 3.00' Flow Area= 141.0 sf, Capacity= 571.84 cfs

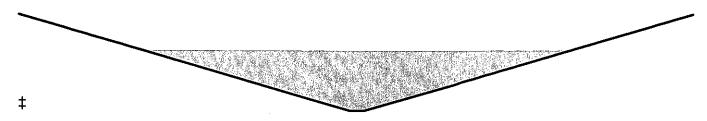
2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 15.0 '/' Top Width= 92.00' Length= 547.0' Slope= 0.0068 '/'

Inlet Invert= 389.50', Outlet Invert= 385.80'

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Page 5



Summary for Reach 503R: FLOW PATH FROM RICE RD CULVERT TO POND

Inflow Area =

58.560 ac, 25.00% Impervious, Inflow Depth > 4.52" for 100YR STORM event

Inflow

164.56 cfs @ 12.55 hrs, Volume=

22.055 af 22.004 af, Atten= 0%, Lag= 3.5 min

Outflow

164.16 cfs @ 12.61 hrs, Volume=

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 5.46 fps, Min. Travel Time= 1.9 min Avg. Velocity = 2.77 fps, Avg. Travel Time= 3.7 min

Peak Storage= 18,293 cf @ 12.58 hrs

Average Depth at Peak Storage= 1.68', Surface Width= 33.87'

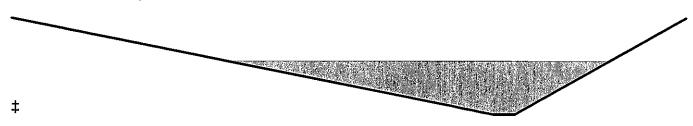
Bank-Full Depth= 3.00' Flow Area= 91.5 sf, Capacity= 723.88 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 14.0 5.0 '/' Top Width= 59.00'

Length= 608.0' Slope= 0.0255 '/'

Inlet Invert= 405.50'. Outlet Invert= 390.00'



Summary for Pond 3P: Rice Pond

Inflow Area =

65.757 ac, 24.48% Impervious, Inflow Depth > 4.40" for 100YR STORM event

Inflow

174.23 cfs @ 12.59 hrs, Volume=

24.120 af 23.757 af, Atten= 3%, Lag= 5.2 min

Outflow Primary 169.33 cfs @ 12.68 hrs, Volume= 169.33 cfs @ 12.68 hrs, Volume=

23.757 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Peak Elev= 391.72' @ 12.68 hrs Surf.Area= 64,322 sf Storage= 82,393 cf

Plug-Flow detention time= 16.0 min calculated for 23.757 af (98% of inflow)

Center-of-Mass det. time= 10.5 min (827.8 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	389.80'	285,060 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Rice Pond Village Millbury PREdevelopment 1	Type III 24-hr	100YR STORM Rainfall=8.50"
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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
389.80	25,072	0	0
390.00	25,815	5,089	5,089
392.00	70,715	96,530	101,619
394.00	112,726	183,441	285,060

Device	Routing	Invert	Outlet Devices	
#1	Primary		171.9 deg x 2.0' long Sharp-Crested Vee/Trap Weir Cv= 2.46 (C= 3.08)	_

Primary OutFlow Max=169.22 cfs @ 12.68 hrs HW=391.71' (Free Discharge) 1=Sharp-Crested Vee/Trap Weir (Weir Controls 169.22 cfs @ 3.37 fps)

POSTDEVELOPMENT

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Page 1

Summary for Subcatchment 11S: POSTDEV FLOW TO ABUTTER GINGRAS

Runoff

=

0.06 cfs @ 12.26 hrs, Volume=

0.009 af, Depth> 0.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

	Α	rea (sf)	CN	Description							
		2,556	39	>75% Gras	75% Grass cover, Good, HSG A						
		4,142	30	Woods, Go	Voods, Good, HSG A						
		6,698	33	Weighted Average							
		6,698		100.00% Pervious Area							
	_										
	Tc	Length	Slope	•	Capacity	Description					
_	(min)	(feet)	(ft/ft)) (ft/sec)	(cfs)	<u> </u>					
	3.8	50	0.1400	0.22		Sheet Flow,					
						Grass: Dense n= 0.240 P2= 3.15"					
	0.3	17	0.0300	0.87		Shallow Concentrated Flow,					
		•				Woodland Kv= 5.0 fps					
	4.1	67	Total								

Summary for Subcatchment 12S: POSTDEV FLOW TO P&W RAILROAD

Runoff

=

0.75 cfs @ 12.37 hrs, Volume=

0.110 af, Depth> 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

	- A	rea (sf)	CN I	Description		
		26,710	30 \	Noods, Go	od, HSG A	
		41,448	39 >	>75% Gras	s cover, Go	ood, HSG A
68,158 35 Weighted Average 68,158 100.00% Pervious Area						
		00,100		100.00701	51 V1000 7 W C	~
	Tc	Length	Slope	Velocity	Capacity	Description
_	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
	13.9	50	0.0600	0.06		Sheet Flow,
						Woods: Dense underbrush n= 0.800 P2= 3.15"
	0.9	109	0.1500	1.94		Shallow Concentrated Flow,
_						Woodland Kv= 5.0 fps
	14.8	159	Total			

Summary for Subcatchment 13S: POSTDEV OVERLAND FLOW TO CUNHA & SORA

Runoff

= .

5.08 cfs @ 12.21 hrs, Volume=

0.501 af, Depth> 1.50"

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Page 2

	Α	rea (sf)	CN I	Description		
		30,807	98 \	Nater Surf	ace, HSG /	4
		6,132				ood, HSG A
	1	38,178			od, HSG A	,
_		75,117		Neighted A	•	
		44,310			vious Area	
		30,807	_		pervious Ar	
		00,007	'	17.00,70 1111)	·
	Тс	Length	Slope	Velocity	Capacity	Description
	(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
_	8.4	50	0.0540	0.10	` ,	Sheet Flow,
	• • •		0.00.0			Woods: Light underbrush n= 0.400 P2= 3.15"
	2.3	186	0.0710	1.33		Shallow Concentrated Flow,
		,	0.0.7			Woodland Kv= 5.0 fps
	1.8	400	0.0090	3.75	59.94	Channel Flow,
				• • • • • • • • • • • • • • • • • • • •		Area= 16.0 sf Perim= 14.6' r= 1.10'
						n= 0.040 Earth, cobble bottom, clean sides
_	12.5	636	Total			•

Summary for Subcatchment 14S: POSTDEV FLOW TO ABUTTER MATHIEU & SWANSON

Runoff = 0.08 cfs @ 12.09 hrs, Volume=

0.007 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

	A	rea (sf)	CN	Description						
		500	30	Woods, Good, HSG A						
_		2,555	39	>75% Gras	>75% Grass cover, Good, HSG A					
		3,055	38	Weighted A	Weighted Average					
		3,055		100.00% Pervious Area						
	Tc (min)	Length (feet)	Slope (ft/ft	•	Capacity (cfs)	Description				
	4.1	21	0.0200	0.08		Sheet Flow, Grass: Dense	n= 0.240	P2= 3.15"		

Summary for Subcatchment 15S: POSTDEV FLOW TO RICE ROAD

Runoff = 0.37 cfs @ 12.15 hrs, Volume=

0.036 af, Depth> 1.21"

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Page 3

	Α	rea (sf)	CN	Description						
-		200	98	Paved parking, HSG A						
		1,420	30	Woods, Go	od, HSG A					
		14,011	39	>75% Gras	s cover, Go	ood, HSG A				
		15,631	39	Weighted A	verage					
		15,431	1	98.72% Pei	rvious Area	l				
		200	,	1.28% impe	ervious Are	a .				
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
_	8.3	50	0.0200	0.10		Sheet Flow,				
			•			Grass: Dense n= 0.240 P2= 3.15"				
	0.2	26	0.0200	2.12		Shallow Concentrated Flow,				
_						Grassed Waterway Kv= 15.0 fps				
	8.5	76	Total							

Summary for Subcatchment 22S: BLDG 3 AND PARKING DRAINAGE TO INFILTRATION #1

Runoff = 29.17 cfs @ 12.08 hrs, Volume=

2.076 af, Depth> 6.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

_	Α	rea (sf)	CN I	Description						
		23,213	39 >	>75% Grass cover, Good, HSG A						
* 136,909 98 Drive, driveways & roofs HSG A										
_	160,122 89 Weighted Average									
23,213 14.50% Pervious Area										
	1	36,909	8	35.50% Imp	ervious Ar	rea				
	Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
	5.3	50	0.0600	0.16		Sheet Flow,				
	0.4	78	0.0220	3.01		Grass: Dense n= 0.240 P2= 3.15" Shallow Concentrated Flow, Paved Kv= 20.3 fps				
	5.7	128	Total							

Summary for Subcatchment 107S: BUILDING 1 ROOF TO INFILTRATION BY RICE ROAD

Runoff = 4.16 cfs @ 12.07 hrs, Volume=

0.307 af, Depth> 7.60"

 Area (sf)	ÇN	Description	
21,120	98	Roofs, HSG A	
21,120		100.00% Impervious Area	

Rice Pond Village Millbury POSTdevelopment 2 Type III 24-hr 100YR STORM Rainfall=8.50" Printed 2/21/2024 Prepared by Azimuth Land Design, LLC

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Page 4

Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
5.0				·	Direct Entry.

Summary for Subcatchment 108S: BUILDING 2 ROOF TO INFILTRATION BY RICE ROAD

Runoff

4.16 cfs @ 12.07 hrs, Volume=

0.307 af, Depth> 7.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

 A	rea (sf)	CN I	Description					
	21,120	98 I	Roofs, HSG A					
	21,120	,	100.00% In	npervious A	Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description			
5.0					Direct Entry,			

ary for Subcatchment 109S: AREA DRAINING TO CB'S AT ENTRANCE & AREA DRAINS W. OF CLUBI

Runoff

1.54 cfs @ 12.22 hrs, Volume=

0.137 af, Depth> 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

	Α	rea (sf)	CN I	Description							
-		1,699	39 >	39 >75% Grass cover, Good, HSG A							
		5,151	98 F	Paved park	ing, HSG A						
*		2,100	98 F	Pool and a	oron						
		13,449	39 >	>75% Gras	s cover, Go	ood, HSG A					
		22,399	58 V	Neighted A	verage						
		15,148	6	87.63% Pei	vious Area						
		7,251	3	32.37% lmp	pervious Ar	ea					
	_					- · · · ·					
	Tc	Length	Slope	Velocity	Capacity	Description					
	<u>(min)</u>	(feet)	(ft/ft)	(ft/sec)	(cfs)						
	14.4	50	0.0050	0.06		Sheet Flow,					
						Grass: Dense					
	0.7	90	0.0220	2.22		Shallow Concentrated Flow,					
_						Grassed Waterway Kv= 15.0 fps					

Summary for Subcatchment 110S: CLUBHOUSE ROOF

Runoff

0.94 cfs @ 12.07 hrs, Volume=

0.070 af, Depth> 7.60"

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Page 5

A	rea (sf)	CN I	<u>Description</u>							
	4,800	98 I	Roofs, HSG A							
	4,800	•	100.00% Impervious Area							
т.	ما المحمد ا	Clama	Mala aite.	Oit	Description					
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	•					
5.0	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(1011)	(1.2.000)	(0.0)	Direct Entry,					

Summary for Subcatchment 233S: POSTDEV FLOW TO POND

Runoff = 32.78 cfs @ 12.08 hrs, Volume=

2.089 af, Depth> 3.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Type III 24-hr 100YR STORM Rainfall=8.50"

	Α	rea (sf)	CN	Description							
		30,502	98	Water Surface, HSG A							
		85,544	39	>75% Gras	s cover, Go	ood, HSG A					
		45,408	30	Woods, Go	od, HSG A						
*		12,710	98	Roofs & Dr	iveways HS	SG A					
*		10,940	98	Roofs & Dr	iveways, H	SG B					
		26,999				ood, HSG B					
		20,859		•	oḍ, HSG B						
*		8,700			iveways, H						
		42,423				ood, HSG D					
		<u> 24,134</u>	77	<i>N</i> oods, Go	od, HSG D						
		08,219		Neighted A							
		45,367			rvious Area						
		62,852	2	20.39% lmp	pervious Ar	ea					
	_										
	Тc	Length	Slope		Capacity	Description					
1)	min)	(feet)	(ft/ft)	(ft/sec)	(cfs)_						
	0.5	50	0.0400	1.57		Sheet Flow,					
						Smooth surfaces n= 0.011 P2= 3.15"					
	1.1	188	0.0350	2.81		Shallow Concentrated Flow,					
						Grassed Waterway Kv= 15.0 fps					
	3.1	92	0.0100	0.50		Shallow Concentrated Flow,					
						Woodland Kv= 5.0 fps					
	4.7	330	Total								

Summary for Subcatchment 504S: OFFSITE AREA DRAINING TO CULVERT AT S. MAIN ST

Runoff = 164.56 cfs @ 12.55 hrs, Volume=

22.055 af, Depth> 4.52"

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Page 6

Area	(ac) C	N Des	cription									
58.	560	70 1/2	1/2 acre lots, 25% imp, HSG B									
43.	43.920 75.00% Pervious Area											
14.	640	25.0	00% Imper	/ious Area								
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description							
40.4	3,090	0.0670	1.27		Lag/CN Method,							

Summary for Reach 13R: (new Reach)

Inflow Area = 69.656 ac, 24.10% Impervious, Inflow Depth > 4.16" for 100YR STORM event

Inflow = 164.97 cfs @ 12.78 hrs, Volume= 24.137 af

Outflow = 164.97 cfs @ 12.78 hrs, Volume= 24.137 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Summary for Reach 504R: FLOW PATH FROM RICE RD CULVERT TO POND

Inflow Area = 58.560 ac, 25.00% Impervious, Inflow Depth > 4.52" for 100YR STORM event

Inflow = 164.56 cfs @ 12.55 hrs, Volume= 22.055 af

Outflow = 164.16 cfs @ 12.61 hrs, Volume= 22.004 af, Atten= 0%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Max. Velocity= 5.46 fps, Min. Travel Time= 1.9 min Avg. Velocity = 2.77 fps, Avg. Travel Time= 3.7 min

Peak Storage= 18,293 cf @ 12.58 hrs

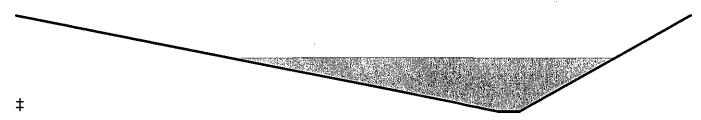
Average Depth at Peak Storage= 1.68', Surface Width= 33.87' Bank-Full Depth= 3.00' Flow Area= 91.5 sf, Capacity= 723.88 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value = 14.0 5.0 '/' Top Width = 59.00'

Length= 608.0' Slope= 0.0255 '/'

Inlet Invert= 405.50', Outlet Invert= 390.00'



Summary for Reach 505R: FLOW PATH FROM POND OVERFLOW TO CUNHA & SORA

Inflow Area = 65.636 ac, 24.50% Impervious, Inflow Depth > 4.34" for 100YR STORM event

Inflow = 164.64 cfs @ 12.69 hrs, Volume= 23.731 af

Outflow = 163.54 cfs @ 12.78 hrs, Volume= 23.636 af, Atten= 1%, Lag= 5.4 min

Rice Pond Village Millbury POSTdevelopment 2 Type III 24-hr 100YR STORM Rainfall=8.50"

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Page 7

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Max. Velocity= 2.97 fps, Min. Travel Time= 3.1 min

Avg. Velocity = 1.63 fps, Avg. Travel Time= 5.6 min

Peak Storage= 30,182 cf @ 12.73 hrs

Average Depth at Peak Storage= 1.85', Surface Width= 57.57'

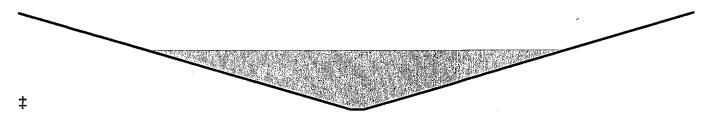
Bank-Full Depth= 3.00' Flow Area= 141.0 sf, Capacity= 571.84 cfs

2.00' x 3.00' deep channel, n= 0.040 Earth, cobble bottom, clean sides

Side Slope Z-value= 15.0 '/' Top Width= 92.00'

Length= 547.0' Slope= 0.0068 '/'

Inlet Invert= 389.50', Outlet Invert= 385.80'



Summary for Pond 13P: Rice Pond

Inflow Area = 65.636 ac, 24.50% Impervious, Inflow Depth > 4.40" for 100YR STORM event

Inflow = 169.04 cfs @ 12.60 hrs, Volume= 24.093 af

Outflow = 164.64 cfs @ 12.69 hrs, Volume= 23.731 af, Atten= 3%, Lag= 5.2 min

Primary = 164.64 cfs @ 12.69 hrs, Volume= 23.731 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs

Peak Elev= 391.69' @ 12.69 hrs Surf.Area= 63,853 sf Storage= 81,054 cf

Plug-Flow detention time= 16.1 min calculated for 23.731 af (98% of inflow)

Center-of-Mass det. time= 10.6 min (827.1 - 816.6)

Volume	Invert	Avail.Sto	rage St	orage D	escription			
#1	389.80	39.80' 285,060 cf		Custom Stage Data (Prismatic) Listed below (Recalc)				
Elevation (feet)	Sı	urf.Area (sq-ft)	Inc.Sto		Cum.Store (cubic-feet)			
389.80 390.00	•	25,072 25,815	5,0	0 189	0 5,089			
392.00		70,715 112,726		30	101,619			
394.00		12,720	183,4	41	285,060			
Device R	outing	Invert	Outlet D	evices				
#1 Pr	rimary	389.90'		eg x 2.0' 6 (C= 3.		Crested Vee/Trap Weir		

Primary OutFlow Max=164.50 cfs @ 12.69 hrs HW=391.69' (Free Discharge)
1=Sharp-Crested Vee/Trap Weir (Weir Controls 164.50 cfs @ 3.35 fps)

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Page 8

Summary for Pond 23P: INFILTRATION STRUCTURE 1 NEAR RAILROAD

Inflow Area = 3.676 ac, 85.50% Impervious, Inflow Depth > 6.78" for 100YR STORM event

Inflow = 29.17 cfs @ 12.08 hrs, Volume= 2.076 af

Outflow = 1.53 cfs @ 10.61 hrs, Volume= 1.448 af, Atten= 95%, Lag= 0.0 min

Discarded = 1.53 cfs @ 10.61 hrs, Volume= 1.448 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 382.92' @ 14.06 hrs Surf.Area= 7,984 sf Storage= 43,848 cf

Plug-Flow detention time= 165.4 min calculated for 1.445 af (70% of inflow)

Center-of-Mass det. time= 98.8 min (849.2 - 750.5)

Volume	Invert Av	ail.Storage	Storage [Description	
#1	373.50'	14,382 cf	Custom	Stage Data (Prismatic) Listed below (Recalc)	
	•	•	•	f Overall - 39,893 cf Embedded = 35,955 cf x 40.0%	Voids
#2	374.00'	29,734 cf	retain_it	retain_it 5.0' x 110 Inside #1	
			Inside= 8	34.0"W x 60.0 "H => 36.41 sf x 8.00 'L = 291.3 cf	
			Outside=	96.0"W x 68.0"H => 45.33 sf x 8.00'L = 362.7 cf	
			1 Rows a	adjusted for 2,306.6 cf_perimeter wall	
		44,116 cf	Total Ava	ailable Storage	
Eleventies.	Court Assa	. laa	Chaus	Cours Chairs	
Elevation	Surf.Area		.Store	Cum.Store	
(feet)	(sq-ft)	(Cubi	c-feet)	(cubic-feet)	
373.50	7,984		0	0	
383.00	7,984	. 7	'5,848	75,848	
Device R	outing I	nvert Outle	et Devices		

#1 Discarded 373.50' 8.270 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.53 cfs @ 10.61 hrs HW=373.60' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.53 cfs)

Summary for Pond 109P: INFILTRATION AREA 2 TO WEST OF THE ENTRANCE

Inflow Area = 1.109 ac, 68.65% Impervious, Inflow Depth > 5.55" for 100YR STORM event

Inflow = 6.00 cfs @ 12.08 hrs, Volume= 0.513 af

Outflow = 0.46 cfs @ 11.21 hrs, Volume= 0.417 af, Atten= 92%, Lag= 0.0 min

Discarded = 0.46 cfs @ 11.21 hrs, Volume = 0.417 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 398.67' @ 13.80 hrs Surf.Area= 2,384 sf Storage= 9,634 cf

Plug-Flow detention time= 156.3 min calculated for 0.416 af (81% of inflow)

Center-of-Mass det. time= 103.0 min (857.0 - 754.0)

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Page 9

<u>Volume</u>	Invert Ava	il.Storage	Storag	ge Description	
#1	392.00'	2,972 cf		m Stage Data (Prismatic) Listed below (Recalc)	
#2	392.50'	6,978 cf	16,688 cf Overall - 9,259 cf Embedded = 7,429 cf x 40.0% \ retain_it retain_it 4.0' x 31 Inside #1 Inside= 84.0"W x 48.0"H => 28.87 sf x 8.00'L = 230.9 cf Outside= 96.0"W x 56.0"H => 37.33 sf x 8.00'L = 298.7 cf 4 Rows adjusted for 181.2 cf perimeter wall		
		9,950 cf		Available Storage	
Elevation (feet)	Surf.Area (sq-ft)		Store c-feet)	Cum.Store (cubic-feet)	
392.00	2,384		0	0	
399.00	2,384	1	6,688	16,688	

Device Routing Invert Outlet Devices

#1 Discarded 392.00' **8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.46 cfs @ 11.21 hrs HW=392.07' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.46 cfs)

Summary for Pond 110P: INFILTRATION AREA 3 SW OF BUILDING 1

Inflow Area = 0.485 ac,100.00% Impervious, Inflow Depth > 7.60" for 100YR STORM event

Inflow = 4.16 cfs @ 12.07 hrs, Volume= 0.307 af

Outflow = 0.19 cfs @ 10.25 hrs, Volume= 0.148 af, Atten= 95%, Lag= 0.0 min

Discarded = $0.19 \text{ cfs } \bar{@} 10.25 \text{ hrs}, \text{ Volume} = 0.148 \text{ af}$

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.03 hrs Peak Elev= 396.13' @ 16.04 hrs Surf.Area= 1,968 sf Storage= 7,422 cf

Plug-Flow detention time= 138.6 min calculated for 0.148 af (48% of inflow) Center-of-Mass det. time= 38.2 min (770.4 - 732.2)

Volume	Invert	Avail.Sto	rage Stor	age Description
#1	392.00'	3,54		tom Stage Data (Prismatic) Listed below (Recalc)
#2	392.50'	4 4-	•	6 cf Overall x 40.0% Voids
#/_	392.50	4, 1		in_it retain_it
				side= 96.0"W x 44.0"H => 29.33 sf x 8.00'L = 234.7 cf
· .			4 Ro	ows adjusted for 94.4 cf perimeter wall
		7,7	13 cf Tota	l Available Storage
Elevatio	n Sur	f.Area	Inc.Store	e Cum.Store
(fee		(sq-ft)	(cubic-feet	
392.0	0	1,968	(0
396.5	0	1,968	8,856	8,856
Device	Routing	Invert	Outlet De	vices
#1	Discarded	392.00'	2.410 in/h	r Exfiltration over Surface area

Rice Pond Village Millbury POSTdevelopment 2 Type III 24-hr 100YR STORM Rainfall=8.50"

Prepared by Azimuth Land Design, LLC

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Page 10

Discarded OutFlow Max=0.19 cfs @ 10.25 hrs HW=392.50' (Free Discharge) 1=Exfiltration (Exfiltration Controls 0.19 cfs)